REPUBLIC OF KENYA

KISII COUNTY GOVERNMENT

ARAB BANK FOR ECONOMIC DEVELOPMENT IN AFRICA

SAUDI FUND FOR DEVELOPMENT

MINISTRY OF HEALTH

TENDER DOCUMENT FOR

PROPOSED CANCER CENTRE AT THE KISII TEACHING AND REFERRAL HOSPITAL

SUPPLYING, INSTALLATION, COMMISSIONING, OPERATION, MAINTENANCE AND HANDOVER OF MEDICAL EQUIPMENT

GENERAL REQUIREMENTS
QUALIFICATION INFORMATION
SPECIFICATIONS

TENDER NO.: MOH/NCCP/ICB/005/2021-2022

MEDICAL EQUIPMENT

CLOSING DATE: 1ST JULY 2022 AT 10.00 A.M. LOCAL TIME

SCHON ASSOCIATES

NARCO ENGINEERING CONSULTANTS

Issue Date: 1st June 2022

Contents

FORM OF TENDER

(To be submitted with Every Lot)

Date:
.....
Invitation of Tenders No.:
.....

To: [Name of the Employer /Issuer of Invitation of Tenders] [Address of the Employer /Issuer of Invitation of Tenders]

Dear Sirs,

Subject: Invitation of Tenders No.....
For *[Name of Project]*

1. Having examined the tender documents, including, in particular, the Conditions of Contract, the Specifications, Drawings and Bills of Quantities *[as well as Addenda Nos. .....and....., if any]* we, the undersigned, offer to supply, install, test, commission and handover *[insert description of the Lots]* (hereinafter referred to as the Works) and to remedy any defects therein, all in conformity with the said tender documents for the sum of:

.....

[Insert amount in figures]

.....

.

[Insert amount in words]

or such other sum as determined in accordance with the said Conditions of Contract and other documents of such contract as may be concluded between us.

2. We undertake, if our Tender is accepted, to commence the Works as soon as reasonably possible after receipt of the Engineer's notice to commence and to complete the whole of the Works within the Time for Completion.

3. We undertake, if our Tender is accepted, to provide a performance bank security in an amount equivalent to …….. percent of the Contract Price for the due performance of the Contract, such performance security being in accordance with the requirements stated in the tender documents and the form prescribed

therein.

4. We agree to abide by this Tender for a period of 120 days from the closing date for the submittal of tenders, and this Tender shall remain valid and binding upon us for the said duration and may be accepted by you at any time before expiry of the period stated.

5. Until a formal contract is prepared and executed, this Tender and your written acceptance thereof shall constitute a binding contract between us.

6. We confirm that we recognize that you are not bound to accept the lowest or any other bid received by you.

Yours truly,

[Name of Tenderer]
By: [Signature of Authorized Representative] [Name of Authorized Representative]
[Designation/Capacity]

Witness: *[Signature]*
[Name] [Occupation] [Address]

PART I – GENERAL REQUIREMENTS

1. The Language of the Tender, Brochures, Equipment Display Panel, Instructions, Manuals and Warranty **must** be in **English**.
2. The tender is open to Original Equipment Manufacturers (OEM) and or their local agents and they are allowed to form a consortium where all the equipment in the LOT may not be provided by one OEM. In the case of a consortium, the consortium agreement must be provided with the nomination of the lead member that will be responsible for the tender.
3. Tenderers must bid for a WHOLE Lot or multiple Lots but NOT part of a Lot. Failure to comply with this condition will lead to disqualification for the incomplete Lot.
4. The specifications provided describe the basic requirements for equipment. Tenderers are requested to submit with their offers the detailed specifications, drawings, catalogues, etc for the products they intend to supply.
5. Tenderers must indicate on the specifications sheets whether the equipment offered comply with each specific requirement.
6. All the dimensions and capacities of the equipment to be supplied shall not be less than those required in these specifications. Deviations from the basic requirements, if any, shall be explained in detail in writing with the offer, with supporting data such as calculation sheets, etc. The Employer reserves the right to reject the products, if such deviations shall be found critical to the use and operation of the products.
7. The tenderers are requested to present information along with their offers as follows:
   a) Shortest possible delivery period of each product.
   b) Information on proper representative and/or workshop for back-up service/repair and maintenance including their names and addresses.
   c) provide information for all the activities and areas of specialties including relevant licenses, registration, and certifications.
   d) Manufacturers authorization for all the products being supplied specifying name, model number and country of origin and status of equipment production for all such equipment without any alteration, in the case where the bidders are not OEMs.
   e) Documentary evidence of the instruments proposed for in the form of brochures or catalogues.
8. The following general requirements will apply to the tenderers participating in this tender for assurance of support of products and services being offered.
   a) The service provider should have a strong office base established in the country with demonstrated support service.
   b) The service provider should have a direct Business Channel office in Kenya to handle the entire Region for not less than 5 years
   c) There has to be proof of investment in capacity building especially in the Customer Support with Well-trained factory Engineers.

d) There has to be clear evidence of regular update / follow up on various technical trainings from the manufacturers to keep up to date with the challenges in new technology.

e) There has to be proof of investment in all relevant support Tools required to maintain large install base.

f) There has to be a demonstration of current market share in the region and proof of current customer support capacity, with respect to uptime, downtime and contractual service delivery.

g) There has to be proof of continuous availability of spare parts and consumables required for the proper operation of the equipment

h) There has to be written proof of support for the equipment being supplied for the next 10 years in terms of technical and spare parts availability.

i) Bidder to provide a written proposal for delivery, installation, commissioning, supply of parts and training.

j) Bidder to provide a written proposal for service, maintenance, and reagents for 2 years post warranty for the following medical equipment:

    1. Imaging Equipment (eg. X-Ray, Ultrasound, CT-Scan, MRI)
    2. Laboratory Equipment (eg. Biochemistry and Haematology Equipment)
    3. Radiotherapy Equipment (eg. Linear Accelerator and Brachytherapy)
    4. ICU & Operating Theatre (eg. Ventilators and Anesthetic machines)

PART II – QUALIFICATION INFORMATION

This shall apply to every supplier whether bidding for a single Lot or a Multiple of Lots.

MANDATORY REQUIREMENTS

Item	Description	Yes	No
1	Copy of a valid Certificate of Incorporation or /Business Registration		
2	Copy of Pin Number from Kenya Revenue Authority (KRA)/ Internationally Recognized body		
3	Copy of Valid Tax Compliance from their respective country of residence		
4	Copy of Current & valid Single Business Permit		
5	The bidder should show evidence of a strong office base established in the country and the region with demonstrated support service for not less than 12 months		
6	The bidder shall establish to the Employer's satisfaction, proof of similar contracts (Hospitals) successfully completed in the last 10 years indicating the contract sums and Client references		
7	Detailed project work plan and delivery schedule is required. Bidders will be evaluated against time to deliver the full functionality and adoption of the facility		
8	Written power of attorney of the signatory of the tender to commit the bidder for Consortiums, a joint venture agreement and power of attorney to commit the others.		
9	Financial Capability (As supported by Audited Accounts for the last five (5) years		
10	The Bidder shall provide details of line(s) of credit available to the bidder, including amount(s) and name of bank(s) making available such line(s) of credit and contact details		
11	The bidders and must provide information for all the activities and areas of specialties including relevant licenses, registration, and certifications.		
12	Attach copies of Recommendation letters from three of your major clients having undertaken similar assignment		
13	Documentary evidence of the equipment/instruments proposed in the form of brochures or catalogues		

Item	Description	Yes	No
14	The bidder shall provide a manufacturer authorization specifying name, model number and country of origin and status of equipment production for all such equipment without any alteration		
15	Total Compliance to Specifications with Clause-by-Clause Statement of Compliance (SOC) of the response in the stipulated format		
16	The bidder should demonstrate Proof of availability of local training capacity		
17	Every Tender (Lot or Lots) must be accompanied by a Bid Bank Guarantee of 2% of Total Tender Amount in the tender currency.		
	Bidders must meet ALL the mandatory requirements to qualify for Technical Evaluation		

PART III - INSTRUCTIONS TO TENDERERS

A. GENERAL

1. Purpose of Tender Invitation

Tenders are invited by **The Ministry of Health**.
(hereinafter referred to as the Purchaser) for the supply of **Medical Equ**ipment (the Goods) required for the **Kisii Cancer Centre** Project (the Project) and described in the tender documents accompanying these Instructions.

2. Interpretation

The terms used in these Instructions shall have the same meanings assigned to them in Article I (Definitions and Interpretation) of Part I (General Conditions of Contract) of the tender documents, subject to any amendments stated in Part II (Special Conditions of Contract). The words "tender" and "bid" are used here interchangeably and shall have the same meaning and any derivative of either shall have the same meaning as the corresponding derivative of the other.

3. Financing

The Purchaser I the Government of the **Republic of Kenya**
(hereinafter referred to as the Beneficiary) has applied for I obtained financing from **BADEA and SBF**(hereinafter referred to as the financing institution(s)) for the Project and part of such financing will be applied towards meeting the cost of the Goods. However the proceeds of such financing will only be paid by the financing institution(s) at the request of the Beneficiary in accordance with the loan(s)/ financing agreement(s).

4. Eligibility

4.1 . Except as otherwise expressly stated in these Instructions, this invitation to bid is open to all suppliers having the legal capacity to bid and enter into contracts. Bidders shall not at the time of tendering or thereafter be ineligible to bid or subject to boycott under the rules applied by the financing institution(s) referred to in Clause 3 of these Instructions.

4.2. Unless the bidders are manufacturers or producers of the type of goods required and will manufacture or produce the Goods, they must be authorized agents or marketing representatives of such manufacturers or producers.

4.3. No bidder shall be affiliated or associated with a firm engaged by the Purchasers as consultants for the preparation of designs specifications or other documents for procurement of the Goods.

5. Eligibility of Goods and Services

Goods and incidental services required under the tender documents shall not be produced wholly or partly in any country subject to boycott under the rules applied by the financing institution(s) referred to in Clause 3 of these Instructions.

6. Language

The tender, contract documents, correspondence and other related documents shall be in **English** Language(s).

7. Tender Documents

The tender documents comprise all the following:

a) Invitation to Tender.
b) Instructions to Tenderers.
c) Form of Tender.
d) Form of Tender Security.
e) Conditions of Contract:

Part I : General Conditions of Contract.

Part II: Special Conditions of Contract.

f) Technical Specifications.
g) Price Schedule.
h) Form of Agreement.
i) Form Or Performance Security.
j) Form of Bank Guarantee for Advance Payment

The above-mentioned tender documents and other related documents, as may be issued by the Purchaser or agreed with the successful bidder before award of the Contact, shall apply in accordance with the order of precedence stated in the Contract Agreement.

8. Receipt of Tender Documents and Contact Person

The tenderer shall confirm in writing by mail, telex or facsimile transmission receipt of the tender documents and advise the Purchaser of the name, address and facsimile number of the person authorized to receive, on behalf of the prospective tenderer, any further information and instructions by the Purchaser and/or any addenda to the tender documents.

9. Costs of Bidding

The tenderer shall bear all costs associated with the preparation and submission of its tender. The Purchaser shall, under no circumstances, be responsible for such costs.

10. Single Bids

No bidder may submit either separately or as a partner in a joint venture more than one bid, except, however, where alternative bids are allowed.

11. Closing Date for Submittal of Bids

Bids shall be submitted and delivered by mail, courier service or by the bidder or any agent thereof in person not later than **11:00** hours on **8th July 2022** at the address of the Employer stated below:

The Principal Secretary,
Ministry of Health,
Afya House Building, Cathedral Road,
P.O. Box 30016-00100,
NAIROBI.

Any bid received after the closing time stated in this Clause will be rejected and returned unopened to the bidder submitting such bid.

12. Amendment of Tender Documents

The Purchaser may, at any time before the closing time for submittal of bids, amend the tender documents by issuing an addendum or addenda in writing to all prospective bidders who obtained the tender documents. Such addendum or addenda shall form part of the tender documents and all prospective bidders shall promptly acknowledge by mail, telex or facsimile transmission the receipt of the same. The time for submittal of bids may be extended as appropriate by the Purchaser to enable prospective bidders to take any addendum into account in the preparation of their bids.

13. Clarification of Tender Documents

Any prospective bidder may at any time, but not later than 14 days before the closing date for submittal of bids, request in writing clarification of any matter stated in the bidding documents and the Purchaser will respond to such request in writing by circular letter to all prospective bidders who obtained the tender documents, but without identifying the source of the request for clarification.

B. PREPARATION OF TENDERS

14. Forms and Schedules

The bidder shall use, fill-in and furnish the Form of Tender (shown as Annex I to the Tender Documents), Price Schedule (s), Form of Tender Security and any other forms and schedules contained in the tender documents. The tenderer shall also submit with its bid any information or material required under these Instructions and may, if

necessary, provide additional sheets. Failure to use and fill-in the forms which are mandatory in accordance with the above may result in rejection of the bid. All entries shall either be typed or printed in indelible ink, without interlineations or erasures.

15. Bid Prices

15.1. The bidder shall state in the price schedule the unit prices, where applicable, and the total price of its bid.

15.2. The unit rates and prices and the total price of the bidder shall be deemed to include all taxes, duties and other levies payable by the bidder in any country. But insofar as the bidder is liable to pay any taxes, duties or levies imposed under the laws of the Purchaser's country, the unit rates and prices and the total price quoted by the bidder shall not be deemed to include such taxes, duties and levies except insofar as they have been in force 28 days before the closing date for submittal of bids.

15.3. Prices to be indicated in the price schedule shall be stated in the following manner:

(a) For goods to be supplied locally from the Purchaser's country, the price of the Goods shall be stated including all custom duties, sales and other taxes and levies with a breakdown showing the following:

(i) the price of the Goods ex-works or factory or ex-warehouse.

(ii) taxes, duties and levies including, without limitation, excise taxes, sales taxes and custom duties paid or payable on materials and components for the manufacture or assembly of the Goods the price of which is quoted ex-works (ex-factory) or on previously imported goods quoted ex-warehouse or showroom.

(iii) the price for inland transportation, insurance and other local costs incidental to delivery of the Goods, if so required in the tender documents, to their final destination.

(iv) the price of other incidental services required in the tender documents in connection with the supply of the Goods.

(b) For goods to be supplied from outside the Purchaser's country, the price of the Goods shall be stated CIF, FOB, CFR port of destination, CIP or CPT (named place), as required in accordance with the terms of delivery stated in the tender documents. The following components of the price, if any, shall be identified and stated:

(i) the price for inland transportation, insurance and other local costs incidental to delivery of the Goods from the port of entry to their final destination, if so required in the tender documents.

(ii) the price of other incidental services required in the tender documents in connection with supply of the Goods.

15.4. The terms ex-works, CIF, FOB and other abbreviations, referred to in these Instructions or in the tender documents in connection to the terms of delivery of the Goods, shall be interpreted in accordance with and governed by the current edition of Incoterms published by the international Chamber of Commerce.

15.5. The statement of components of the price referred to in Clause 15.3 of these Instructions is solely required for the purpose of comparison of bids.

15.6. Unless otherwise stated in the tender documents, the prices of the Goods quoted by the bidder shall be fixed and not subject to any adjustment.

16. Bid Currencies

16.1. Except as otherwise stated in the tender documents, prices of goods and incidental services, which will be supplied by the bidder from within the country of the Purchaser, shall be quoted in the currency of the Purchaser's country. But the bidder may quote part of its total price in one or more foreign currencies (not exceeding three) if it will procure part of the materials for, or components of, the Goods from outside the Purchaser's country. The bidder shall justify quotation in a combination of local and foreign currencies by reference to the quantities and costs of such imported materials or components of the Goods.

16.2. Unless otherwise stated in the tender documents, prices of the Goods and incidental services to be supplied from outside the Purchaser's country shall be quoted in the currency of the bidder's home country or, if so allowed in the bidding documents, in a currency widely used in international trade. However, the bidder may quote part of its total price in one or more other currencies (not exceeding three) if it will procure part of the materials for, or components of, the Goods from outside its home country. The bidder shall justify quotation in a combination of currencies by references to the quantities of such materials and/or components procured from outside its home country.

17. Evidence of Eligibility and Qualifications of the Bidder

The bidder shall submit with its tender documents establishing, to the satisfaction of the Purchaser, the eligibility and qualifications of the bidder at the time of submission of its bid. Such documents shall include the following:

(i) An authenticated copy of a recent certificate of its registration in its home country and a certificate from the Chamber of Commerce of that country that it carries on business in the said country.

(ii) If the bidder will not be the manufacturer or producer of the Goods, evidence that it is an authorized agent or marketing representative of the manufacturer or producer or that it has been specifically authorized by the manufacturer or producer to supply the Goods to the Purchaser.

(iii) Evidence of financial, technical and production capability of the bidder to perform the Contract.

(iv) If the bidder does not carry on business in the Purchaser's country, evidence that the bidder is or will be represented by an agent in that country capable of performing the supplier's obligations relating to maintenance, repair and stockpiling of spare parts, as stipulated in the tender documents.

18. Confirmation of Eligibility and Compliance of the Goods with the Tender Documents

18.1. The bidder shall state the country or countries of origin of the Goods and incidental services, if any, in order to enable the Purchaser to ascertain compliance with the requirement of eligibility stated in Clause 5 of these Instructions. Documentary evidence, in the form of certificate(s) of origin, confirming such compliance shall be furnished at the time of shipment.

18.2. The bidder shall furnish with its bid documentary evidence of conformity of the Goods to the bidding documents. Such evidence may be in the form of literature, drawings and data and shall consist of the following:

(i) a detailed description of the essential technical performance characteristics of the Goods.

(ii) a list giving full particulars, including available sources and current prices of spare parts, special tools and other items necessary for the proper and continuing functioning of the Goods for years after commencement of the use thereof or such other period as stated in the tender documents.

(iii) a detailed comparison of the technical specifications of the Goods proposed to be supplied by the bidder with the technical specifications stated in the bidding documents, so as to demonstrate conformity of the Goods to the latter technical specifications or otherwise indicate deviations therefrom. For the purpose of such comparison, it should be noted that references in the bidding documents to standards for workmanship, materials or equipment and any brand names or catalogue

numbers are intended to be descriptive only. Alternative standards, brand names and/or catalogue numbers may be accepted by the Purchaser provided it is demonstrated to its satisfaction that they are equal or better than those stated in the tender documents.

19. Period of Tender Validity

Tenderers shall remain bound by their tenders for a period of **120** days from the final closing date for submittal of bids. Any tender stated to be valid for a shorter time may be rejected by the Purchaser.

20. Tender Security

20.1. The tender shall be accompanied by a tender security in the form of a certified cheque or of a bank guarantee issued or endorsed by a bank acceptable to the Purchaser. Such bank guarantee shall be in the form prescribed in the tender documents and shown in Annex II thereto and shall be valid for the same period of the required tender validity.

20.2. Any tender not accompanied by the required tender security will be rejected. The tender security of a joint venture must be in the name of the joint venture partners submitting the tender.

20.3. . The tender securities of unsuccessful tenderers will be returned to them within 30 days after the expiration of the period of tender validity.

20.4. The tender security of the successful tenderer will be released promptly after signature of the Agreement and submittal by the said tenderer of the said tender of the performance security required under Article IV of the General Conditions of Contract.

20.5. The tender security of a tenderer shall be forfeited by it:

(a) If the tenderer withdraws its tender before expiry of the period of tender validity.

(b) In the case of the successful tenderer, if it fails within the prescribed time limit either to sign the Agreement or furnish the required performance security.

21. Signature of Tender

The tender and copies thereof shall be signed by the tenderer or a person duly authorized on its behalf. Proof of such authorization in the form of a power of attorney shall accompany the tender. All pages of the bid where entries or amendments have been made shall be initialed by the tenderer or on its behalf by a person duly authorized as aforesaid.

C. SUBMISSION OF TENDERS

22. Format of Tender

Tenders shall be submitted in one original comprising all documents listed in Clause 23 of these Instructions, together with the section containing the form of bid and Appendix to the bid and clearly marked "ORIGINAL". In addition the tenderer shall submit **One (1)** copies of the bid each clearly marked "COPY". In case of any discrepancy between the Copies and Original, the Original shall prevail.

23. Contents of Tender

The tender shall, in accordance with the requirements stated in the tender documents, comprise the following:

(a) The tender form and completed Price Schedule,

(b) The tender security,

(c) Documentary evidence confirming eligibility of the Bidder and the Goods,

(d) The completed schedules of supplementary information,

(e) All information on any subcontract envisaged.

24. Sealing and Marking of Tenders

24.1. The tenderer shall put and seal the Original and each Copy of its tender in separate envelopes marked "ORIGINAL" and "COPY". The envelopes shall then be put in an outer envelope which shall be sealed. All such envelopes shall be addressed to the Purchaser at his address stated in Clause 11 of these Instructions, bear the name and identification number of the Project or Contract and a warning that they shall not be opened before the date for opening of bids.

24.2. The inner envelopes shall state the name and address of the tenderer for returning the tender to it in case it is not received at or before the closing time for submittal of bids.

25. Modification, Substitution or Withdrawal of Tenders

The tenderer may modify, substitute or withdraw its tender by written notice to the Purchaser before the closing time for submittal of bids. Such modification, substitution or withdrawal shall be contained in a sealed envelope marked as "Modification", "Substitution" of "Withdrawal of Tender". No modification, substitution or withdrawal of a tender will be accepted after the closing time for submittal of bids.

D. BID OPENING AND EVALUATION

26. Bid Opening

26.1. Bids will be opened by the Purchaser in a session to which all bidders will be invited, the time and place being stated in the invitation addressed to the tenderers. Each bidder may attend in person, or designate an authorized representative to attend on its behalf, and shall sign a register of attendance.

26.2. Envelopes marked "Withdrawal" or "Substitution" will be opened first and the name of the bidder submitting the same shall be announced. Bids for which notice of withdrawal thereof or substitution therefor was duly received before the closing time for submittal of bids will not be opened.

26.3. The remaining bids, will then be opened and the Purchaser will announce the bidders' names, the bid prices, including any alternative bid prices, the presence (or absence) of tender security and any such other details as the Purchaser may consider appropriate. The envelopes marked "Modifications" will then be opened and their content read out in appropriate detail.

26.4. The Purchaser will prepare minutes of the tender opening session, including the information announced during the session. Such minutes are for the administrative purposes of the Purchaser and the bidders shall not be entitled to receive copies thereof.

27. Confidentiality of Process of Evaluation of Bids

All information concerning the examination, clarification and evaluation of bids and the recommendation for award are confidential and will not be disclosed to bidders or to any person not officially concerned with such process until award to the successful bidder. Any attempt by any bidder to influence the process of evaluation of bids or award will lead to the rejection of its bid.

28. Clarification of Bids

The Purchaser may request any bidder to clarify any matter in its bid, including the breakdown of its unit rates. Such request will be made in writing, but no bidder will be allowed to make, through any clarification given by it, any change in the price or substance of its bid.

29. Determination of Responsiveness of Bids

29.1. Prior to the detailed evaluation of bids the Purchaser will examine each tender to determine whether it: (a) meets the eligibility criteria set forth in Clauses 4 and 5 of these instructions, (b) has been properly signed, (c) is accompanied by the required bid security, (d) is valid for the period required and, (e) is substantially responsive to the requirements of the tender documents. For this latter purpose, a substantially responsive tender is one which conforms to all terms, conditions and

specifications stated in the tender documents without any material deviation or reservation. A material deviation or reservation is one which: (i) affects in a substantial way the price, scope, quality, performance or the required timing of execution and completion of the works, or (ii) limits in any substantial way, inconsistent with the tender documents, the rights of the Purchaser or obligations of the tenderer, and (iii) whose rectification would unfairly affect the competitive position of the tenderers who have presented substantially responsive bids.

29.2. If a tender is found not to be substantially responsive, it may not subsequently be made responsive by correction or withdrawal of the non-conforming deviation or reservation and it will be rejected by the Purchaser.

30. Correction of Errors

30.1. The tenders determined to be substantially responsive will be checked by the Purchaser for any arithmetical errors. The Purchaser shall have the right to correct such errors using the following method:

(a) Where there is a discrepancy between the amounts stated in figures and the amount stated in words, the latter shall govern.

(b) Where there is an error in any amount resulting from the multiplication of a unit rate for an item by the quantity thereof, the unit rate shall govern and the product of the multiplication shall be corrected accordingly, unless in the opinion of the Purchaser there is an obviously gross misplacement of the decimal point in the unit rate, in which case the line item total stated will govern and the unit rate will be corrected accordingly.

(c) The total tender price will be recalculated on the basis of correction of errors in the manner stated in paragraph (b) above, or if there are no such errors by correcting any errors in the summation of the prices for the various line items in the Price Schedule(s). The total price arrived at after either of these corrections shall be deemed to be the correct total price of the tender, unless the total price stated in the tender is lower than the corrected total tender price, in which case the former shall be deemed as the correct tender price and the tenderer shall be deemed to have offered a discount to be applied pro rata to the prices of all items in the schedule of prices.

30.2. The correction and adjustment of the tender prices and total tender price resulting from the application of the methods for correction stated above shall be binding on the tenderer and if the tenderer does not accept the corrected amount of its bid, it shall forfeit its tender security.

E. EVALUATION AND COMPARISON OF TENDERS

31. The Bids to be Evaluated:

Only bids determined to be substantially responsive will be evaluated and compared with one another by the Purchaser.

32. Currency of Evaluation

For the purpose of evaluation and comparison of the bids, all bid prices will be converted to the currency of the Purchaser's country at the selling rates of exchange published on the day of opening of bids by the Central Bank or an institution performing the functions of a central bank in the purchaser's country.

33. Determining the Lowest Evaluated Bid

33.1. For evaluation of the bids, the Purchaser will determine the evaluated bid price for each bid by adjusting the bid price, as determined in accordance with Clauses 30 and 32 of these Instructions, as follows:

(a) excluding provisional sums.

(b) making an appropriate adjustment on sound technical and/or financial grounds for any quantifiable acceptable deviations or reservations or alternative offers.

(c) making an allowance in financial terms for completion time or times, which are different, if allowed, from those stated in the tender documents.

(d) taking into account the cost of mandatory spare parts and services incidental to the supply of goods, if such services are required.

(e) taking into account the availability in the Purchaser's country of spare parts and after-sales services for any equipment to be supplied by the bidder.

(f) taking into account the projected operating and maintenance costs during the life of any equipment to be supplied by the bidder as well as the performance and productivity of such equipment.

(g) applying any other criteria stated in the bidding documents.

33.2. The estimated effect of price adjustment provisions in the Conditions of Contract over the period of execution of the Contract shall be disregarded in the evaluation of bids.

34. Preference for Certain Bidders

34.1. The Purchaser will grant a margin of preference in the comparison of bids for goods manufactured or produced in the Purchaser's country and/or in the country of member countries of the financing institution(s)1, provided the following conditions are satisfied:

(i) the cost of the goods net of taxes and duties, includes a value added in one of the countries referred to above of not less than 20% of the exfactory bid price of the goods.

(ii) the bidder is owned or beneficially owned to the extent of not less than 50% by nationals of that country.

34.2. The margin or preference to be accorded to the bidder eligible therefore will not exceed the amount of custom duties and other import taxes or the CIF or CIP price (or equivalent) on the basis of the lowest evaluated bid or 15% of such price, whichever is lower.

F. AWARD OF CONTRACT

35. Award

Subject to Clause 36 and to the application of Clause 34 of these Instructions, the Purchaser will award the Contract to the successful bidder satisfying the requirements of qualifications under Clause 17 of these Instructions and whose bid has been determined to be substantially responsive to the bidding documents and who has offered the lowest evaluated bid as determined in accordance with Clause 33 of these Instructions.

36. Annulment of Tender Procedure

The Purchaser reserves the right to accept or reject any tender or to annul the tendering process and reject all tenders at any time prior to the award of the Contract, without thereby incurring any liability to the affected tenderer or tenderers or any obligation to inform the affected tenderer or tenderers of the grounds for the Purchaser's action.

(1) If the Goods are wholly or partly financed by the Arab Bank for Economic Development in Africa, insert after the word "institution(s)" the expression "and any African Country."

37. Notification of Award

37.1. Prior to expiration of the period of validity of bids, as such period may be extended with the agreement of the successful bidder, the Purchaser will notify the successful bidder in writing by registered letter or by cable, telex or facsimile, that its bid has been accepted. This letter (hereinafter and in the Conditions of Contract called the "Letter of Acceptance") shall specify the sum which the Purchaser will pay to the Supplier in consideration of the supply of the Goods, the remedying of any defects therein as prescribed by the Contract and the provision of any incidental services required in the tender documents (such sum hereinafter and in the Conditions of Contract called "the Contract Price").

37.2. Pending signature and entry into force of the Contract, the notification of award will constitute a contract between the Purchaser and the successful bidder.

38. Signature of Contract

The successful bidder shall, on such date as notified to it by the Purchaser, sign the Agreement (in the form shown in Annex III) constituting the Contract for the supply of the Goods and any incidental services required in the tender documents.

39. Furnishing of Performance Security

Within 30 days of receipt of the Letter of Acceptance or notification of contract award, the successful bidder shall furnish the Purchaser with a Performance Security in accordance with the General Conditions of Contract, being in conformity with the form prescribed for this purpose in the tender documents (Annex IV).

40. Failure to Sign Contract or Furnish Performance Security

Failure of the successful bidder to comply with the requirements of Clause 38 and/or Clause 39 of these Instructions shall constitute a breach of contract and cause for annulment of the award, forfeiture of the bid security, and any such other remedy the Purchaser may take under the Contract. The Purchaser may also resort to awarding the Contract to the next ranked bidder or call for new bids.

PART IV - GENERAL CONDITIONS OF CONTRACT

ARTICLE-I
DEFINITIONS & INTERPRETATION

1-1 In the Contract, unless the context otherwise requires, the following terms shall have the meaning assigned to each of them hereunder:

(a) "Goods" means any equipment, machinery, merchandise or material to be supplied under the Contract and includes any accessories or spare parts required thereunder.

(b) "Supplier" means the person, firm, company or entity supplying the Goods.

(c) "Purchaser" means the entity or organization purchasing the Goods and stated in the Special Conditions.

(d) "Contract" or "Agreement" means the agreement entered into between the Supplier and the Purchaser for the supply of the Goods including all documents listed therein as constituting part thereof.

(e) "Contract Price" means the price of the Goods required to be paid by the Purchaser to the Supplier pursuant to the Contract.

(f) "General Conditions" means the General Conditions of Contract provided for herein.

(g) "Special Conditions" means the Special Conditions of Contract provided for in Part II of the Conditions of Contract.

(h) "Specifications" means specifications of the Goods as shown in the Bidding Documents.

(i) "The Services" means such ancillary services as transportation and insurance of the Goods, as provided for in the Contract, as well as incidental services to the supply of the Goods, as may be required under the Contract, such as installation and commissioning, provision of technical assistance, training and other services.

1-2 In the Contract, unless the context otherwise requires, words denoting the singular include the plural and vice-versa, and references in any document constituting part of the Contract to articles, clauses or sections are references to articles, clauses or sections of that document, while reference to a specified Appendix or Annex is a reference to that Appendix or Annex of the Contract.

ARTICLE-II
APPLICATION OF THE GENERAL CONDITIONS, CONTRACT DOCUMENTS

2-1 The Contract Documents shall be as defined in the Contract Agreement and shall be taken as mutually explanatory of one another. In case of ambiguity or discrepancy, the Contract Documents shall prevail in the order specified in the Contract Agreement.

2-2 The Contract Documents constitute the entire agreement between the parties and shall supersede any previous correspondence between the parties not specifically incorporated in the Contract Documents.

ARTICLE-III
THE SUPPLIER TO INFORM HIMSELF FULLY

The Supplier shall be deemed to have examined the General Conditions, Special Conditions, Specifications, Appendices, Drawings and other Contract Documents and to have investigated and taken into account any conditions relevant to local conditions within the Purchaser's country that may affect the Supplier's performance of its obligations under the Contract.

ARTICLE-IV
PERFORMANCE SECURITY

4-1 Within 30 (thirty) days after the Supplier's receipt of notification of award of the Contract in the form of Letter of Acceptance, the Supplier shall furnish a performance security to the Purchaser in an amount equivalent to 10% of the Contract Price. The performance security shall cover the Warranty Period specified in the Special Conditions.

4-2 The performance security shall be denominated in the currency of the Contract or in another freely convertible currency acceptable to the Purchaser, and shall be in one of the following forms and issued by a bank acceptable to the Purchase:

(a) An unconditional and irrevocable bank guarantee in the form provided in Annex-IV hereto.

(b) A standby letter of credit, the amount of which shall be payable to the Purchaser on the presentation of a simple statement that the Supplier has failed to carry out its obligations under the Contract.

4-3 The performance security shall be discharged by the Purchaser not later than 30 (thirty) days following the date of fulfillment of the Supplier's obligations under the Contract including the Warranty obligations of the Supplier stated in Article XVIII hereof as supplemented by the Special Conditions.

ARTICLE-V
PATENTS

The Supplier warrants that the Goods and any materials used in their manufacturing shall not be such as to cause the Purchaser to become liable for anyinfringement of any patent, registered design, trademark, proprietary know-how or copyright or anything

analogous or similar and the Supplier shall indemnify and hold harmless the Purchaser against any liability (howsoever arising or described) that may be incurred by the Purchaser as a result of the breach by the Supplier of the terms of this provision.

ARTICLE-VI
TIME SCHEDULE FOR DELIVERY

The Supplier shall, prior to the signing of the Contract Agreement, provide to the Purchaser for approval a time schedule for delivery of the Goods which shall be within the time specified in the Bid and according to the specific requirements (if any) stated in the Special Conditions or in any of the Contract Documents. The approved time schedule shall be binding upon signing of the Contract Agreement.

ARTICLE-VII
INSPECTION AND TESTING BEFORE SHIPMENT

7-1 The Purchaser or its designated agent or representative, shall be entitled at all reasonable times during manufacture, storage and packing of the Goods to inspect and examine them and to witness, at the Purchaser's own cost, tests on the Supplier's premises of the materials, workmanship and performance of the Goods or any component part thereof, and if part of the Goods is being manufactured on other premises, the Supplier shall obtain for the Purchaser permission to inspect, examine and witness tests as if the Goods were being manufactured on the Supplier's premises. Such inspection, examination or testing shall not release the Supplier from any obligation under the Contract.

7-2 The Supplier shall give the Purchaser not less than twenty-one (21) days notice in writing of the date on, and the place at which any Goods will be ready for testing and the Purchaser shall give the Supplier ten (10) days notice in writing of its intention to attend the tests. If the Purchaser fails to attend at the place so named on the date the Supplier has stated in its notice, the Supplier may proceed with the tests and the Purchaser shall be deemed to have waived its right to attend. The Supplier shall forthwith forward to the Purchaser duly certified copies of the test reports.

7-3 Where the Specifications provide for tests on the premises of the Supplier or of any Sub-Supplier, the Supplier, except insofar as otherwise specified in the Contract, shall provide free of charge such adequate office space, reasonable facilities, labour, materials, electricity, fuel, stores, apparatus and instruments as may be required for carrying out such tests efficiently.

7-4 As and when the Purchaser is satisfied that the Goods or any part thereof shall have passed the tests referred to in this Article which it has attended, the Purchaser shall issue to the Supplier a Shop Inspection Certificate to that effect within seven (7) days after the tests have been performed.

7-5 In case the Purchaser is not attending any shop test of which it was given due notice, the Supplier may issue the certificate after the part or parts of the Goods subject of such notice shall have successfully passed the tests, and it shall submit such certificate to the Purchaser via special courier service or by facsimile. If within ten (10) days after receipt of such certificate by the Purchaser, no objection has been made by the Purchaser, this certificate shall be deemed to have been accepted by the Purchaser.

7-6 If after inspecting, examining, or testing the Goods or any part thereof the Purchaser shall decide that such Goods or any part thereof are defective, it may require the Supplier to rectify the defects or replace the defective parts of the Goods.

ARTICLE-VIII
PACKING

8-1 The Supplier shall provide such packing of the Goods as is required in the Special Conditions or in any of the Contract Documents.

8-2 Without prejudice to the generality of Section 8-1 hereof:

(a) The final packing shall be such that the weight and dimensions of packages are within reasonable limits in order to facilitate handling, storage and transportation.

(b) Each crate, case box, package or bundle shall have labels and/or tags made from strong waterproof material and marked in indelible and non-fading ink, securely attached thereto. These labels or tags shall indicate at least the name of the manufacturer, the type of Goods or components and the quantity it contains so that it can be easily checked upon delivery. A packing list shall be included in each crate or box.

(c) Each package delivered under the Contract shall be consecutively numbered and shall also be marked with a code number or other identification to be approved by the Purchaser so that various components of the Goods which are shipped disassembled and which may not be interchangeable can be identified, collected and stored at site together. Additional information and/or colour codings that may reasonably be required by the Purchaser to facilitate identification, shipment to stores or site handling and storage will also be provided.

(d) In addition to labels and markings indicated above, all packages, cases or boxes shall be clearly and boldly marked on two opposite sides and on the top as follows:

CONSIGNEE (The Purchaser)
DESTINATION
CONTRACT NUMBER
NAME OF SUPPLIER
WEIGHT AND DIMENSIONS
SERIAL NUMBER
CODE NUMBER

ARTICLE-IX
DELIVERY AND DOCUMENTS

9-1 Delivery of the Goods shall be made by the Supplier in accordance with the terms specified by the Purchaser in its Schedule of Requirements and the Special Conditions.

9-2 For the purposes of the Contract, "FOB", "CIF", and "CIP" and other trade terms used to describe the obligations of the parties shall have the meanings assigned to them by the current edition of the International Rules for the Interpretation of the Trade Terms published by the International Chamber of Commerce, commonly known as INCOTERMS.

9-3 Shipping documents to be provided by the Supplier shall be as stipulated in the Special Conditions.

ARTICLE-X
INSURANCE

Where the Goods are to be supplied under the Contract on CIF, CIP or C&I basis, the Goods shall be fully insured by the Supplier in a freely convertible currency against loss or damage incidental to manufacture or acquisition, transportation, storage and delivery in an amount equal to that, and in the manner, stipulated in the Special Conditions.

ARTICLE-XI
TRANSPORTATION

11-1 Where the Goods are required to be supplied FOB, transportation of the Goods up to the vessel receiving the Goods shall be arranged and paid for by the Supplier.

11-2 Without prejudice to the provisions of Section 11-1 hereof, the responsibility for arranging transportation of the Goods and the costs thereof shall depend upon the basis on which the Goods are to be delivered. In all cases the responsibilities of either party shall be governed by the INCOTERMS.

11-3 In all cases, transportation of the Goods after delivery shall be the responsibility of the Purchaser.

ARTICLE-XII
INCIDENTAL SERVICES AND SPARE PARTS

12-1 The Supplier shall provide such incidental services as specified in the Special Conditions.

12-2 The Supplier shall provide such spare parts as are required in the Special Conditions. The Supplier also undertakes to provide, on the request of the Purchaser, spare parts necessary for the operation and proper functioning of the Goods. Such undertaking shall be valid and binding for the period indicated in the Special Conditions.

ARTICLE-XIII
CHANGE ORDERS - VARIATIONS

The Purchaser shall be entitled to:

(a) Increase or decrease the quantity of the Goods or any item or items thereof within the limit of the percentage stated in the Special Conditions, and the Contract Price shall be increased or decreased accordingly by applying the unit price stated in the Contract for the Goods or item thereof subject of increase or decrease in quantity pursuant to this provision.

(b) Make any change or modification in the designs, specifications and/or schedule of delivery of the Goods under the contract. However in case of such modification or in case of a variation in the quantity of the Goods or any item thereof exceeding the percentage stated in the Special Conditions, the Supplier and the Purchaser shall negotiate in good faith and agree on an increase or decrease in the Contract Price, as may be reasonable in the circumstances, and shall agree on the manner of payment of any agreed increase.

ARTICLE-XIV
BASIS AND PAYMENT OF CONTRACT PRICE

14-1 Unless otherwise stipulated in the Special Conditions, the Contract Price shall be fixed and not subject to revision.

14-2 Payment of the Contract Price shall be made in the manner stated in the Special Conditions.

14-3 Should the Supplier require an advance payment, such advance payment, not exceeding 20% of the Contract Price, may be made upon the submission of an invoice and a Bank Guarantee in the form provided in Annex-V hereto.

14-4 Requests for payment shall be in writing and shall include all documents required under the Contract and satisfy all conditions prescribed therein.

ARTICLE -XV
ASSIGNMENT

The Supplier shall not assign or transfer any of its rights or obligations under the Contract without the written consent of the Purchaser.

ARTICLE-XVI
EXTENSION OF TIME FOR PERFORMANCE OF THE SUPPLIER'S OBLIGATIONS

16-1 The Supplier shall guarantee and strictly comply with the delivery dates and time limits set forth in the Contract, which shall be deemed of the essence of the Contract. In the event of any delay arising in any phase of performance by the Supplier of his obligations under the Contract, the Supplier shall promptly give notice to the Purchaser of the delay or expected delay with the reasons therefore, not later than seven (7) days after the occurrence of the alleged cause of delay. The Supplier shall at all times use its best efforts to act with diligence to cure any such delay.

16-2 If the Supplier shall deem that any delay justifies an extension of time in accordance with the provisions hereof, it shall submit a request in writing to the Purchaser for extension of time for its performance under the Contract. The Purchaser will grant the Supplier such extension of time if the Purchaser is satisfied, after substantiation of the Supplier's written request therefor, that:-

(i) such delay in the Supplier's performance was due to unforeseeable causes beyond the Supplier's control or caused by a Force Majeure event, as defined in Article XIX hereof; and

(ii) the Supplier has, from the occurrence of the event causing such delay, used its best efforts to cure any delay of the Supplier's performance resulting therefrom. Any extension of time granted by the Purchaser in accordance with the provisions of this Article shall be notified to the Supplier in writing and shall be for that period of time which the Purchaser deems justified and reasonable under the circumstances.

ARTICLE-XVII
LIQUIDATED DAMAGES

17-1 To the extent that the time for performance of the Supplier's obligations under the Contract has not been extended in accordance with the provisions of Section 16-2 hereof and subject to the provisions of Article XIX hereof, should the Supplier fail to perform any of its obligations under the Contract, and in particular its obligation to effect the shipment of any item of the Goods by the time or times specified in the Delivery Schedule, the Purchaser shall have the right to deduct from the Contract Price or demand and receive from the Supplier, as liquidated damages for delay for every week or part of a week of delay after the date scheduled for performance or delivery according to the Delivery Schedule, the amount specified in the Special Conditions.

17-2 The total liability of the Supplier for liquidated damages under the Contract shall be limited to ten per cent (10%) of the Contract Price.

17-3 If the Purchaser shall demand the payment of any of the liquidated damages specified herein, the Supplier shall pay to the Purchaser the said liquidated damages by means of telegraphic or telex transfer remittance within thirty (30) days after receipt by the Supplier of the Purchaser's invoice.

17-4 The payment of liquidated damages pursuant to this Article shall be without prejudice to any other right or remedy that the Purchaser may be entitled to under the Contract or by law.

ARTICLE-XVIII
WARRANTY

18-1 The Supplier warrants that the Goods are new, unused and are manufactured in accordance with the current state of the art. The Supplier also warrants that the Goods and any part thereof, whether manufactured by the Supplier or procured from a sub-supplier shall be free from any defect in design, materials or workmanship.

18-2 The warranty stated herein shall remain .valid for the period specified in the Special Conditions (the Warranty Period). The Warranty Period shall start after the Goods have been delivered to the final destination indicated in the Contract.

18-3 If at any time within the Warranty Period, the Purchaser alleges the existence of a defect in the Goods the particulars of such defect shall be promptly notified to the Supplier who shall be afforded a reasonable opportunity for inspection of the same.

18-4 Promptly upon receipt of such notice the Supplier shall either remedy, repair or replace the Goods.

18-5 The Warranty Period shall be extended by any period during which the Goods shall have been inoperative by reason of any defect therein or omission on the part of the Supplier. Further, in the event that any part or parts are replaced in accordance with this Article (either by the Supplier or by its sub-supplier(s)), the Warranty Period for such part or parts shall be extended for a further period, which shall be the greater of six calendar months from the date of the replacement of such part or parts, or the un- expired portion of the Warranty Period. A similar extension to the initially extended Warranty Period shall occur if the replacement part or parts need to be replaced again during the initially extended Warranty Period.

18-6 The Purchaser, or any of its duly authorized representatives, shall promptly notify the Supplier by telex/telegram or facsimile of the discovery of any defect for which a claim is to be made under this Article. Such notice shall include full particulars as to the nature of the defect and the extent of such defect which at the date of the notice is apparent. The Supplier shall have no obligation under the Warranty for any defects discovered during the Warranty Period, unless notice of such defects is received by the Supplier no later than thirty calendar days after the expiry of the Warranty Period. The Supplier shall have no obligation with respect to defects discovered after the expiration of the Warranty Period, as such period may be extended pursuant to Article 18-5 hereof.

18-7 The Supplier shall remedy at its expense any defect against which the Goods or any part thereof is warranted under this Article by making all necessary repairs and replacements at its expense in his Plant or such other place as directed by the Purchaser. If the Supplier delays or fails to remedy the defect within 21 days of sending the notice to it, the Purchaser or its authorized representatives shall in their discretion cause the necessary repairs or replacements to be made elsewhere for the account of the Supplier, provided, however, that the Purchaser shall have used reasonable endeavours to mitigate the cost of such repairs or replacement. For the avoidance of doubt, the Supplier shall reimburse the Purchaser for all costs reasonably incurred by the Purchaser in effecting repairs at any place other than the Supplier's Plant.

18-8 The Supplier shall guarantee all repairs and replacements effected to the Goods other than by the Supplier during the Warranty Period, provided that the Purchaser shall have given the Supplier reasonable notice to enable the Supplier to attend to and/or supervise or direct such repairs or replacements. For the avoidance of doubt, it is agreed that if the Supplier fails to attend to or supervise such repairs, after having been given notice, it shall nonetheless guarantee any and all such repairs or replacements that are effected to the Goods.

ARTICLE-XIX
FORCE MAJEURE

19-1 In the event of any delay brought about by war, hostilities, blockade, revolution, insurrection, mobilization, civil commotion, act of the public enemy, strikes, lock- outs, plagues or other epidemics, quarantines, earthquakes, accidents, fire (not caused by negligence of the Supplier, its servants or agents), storm damage or any identical or similar event affecting the Supplier's performance of its obligations under the Contract in general, and the delivery of the Goods in accordance with the Delivery Schedule of the Goods in particular, the Supplier shall be allowed such extension of time as may be agreed with the Purchaser subject, expressly to a detailed written application for such extension being lodged with the Purchaser within ten working days of the occurrence of such Force Majeure.

19-2 The Supplier shall not be entitled to extension of time, under this Article or Section 16-2, for the delivery of the Goods or the performance of any other obligation of the Supplier under the Contract, unless:

(i) the Supplier has duly given the notices provided for in Section 16-1 and in 19-1 above; and

(ii) the delay has not in any way been caused or contributed to by any error, neglect or default of the Supplier or any its directors, servants or agents; and

(iii) the Supplier has taken all reasonable steps to avoid or mitigate the delay whether before or after the occurrence of the event causing the delay.

19-3 The Purchaser shall be entitled to dispute the occurrence of any event of Force Majeure or the duration thereof or whether any event constitutes an event of Force Majeure as defined above or whether the occurrence of such event of Force Majeure actually delays the delivery of the Goods or the performance of any other obligation of the Supplier thereby entitling the Supplier to any extension of time as set out above or the duration of such extension of time requested.

19-4 In the event that the Purchaser exercises any of its rights under Section 19-3 above and, if an agreement cannot be reached between the Supplier and the Purchaser on the matter, such matter shall be referred to arbitration in accordance with Article XXV hereof.

19-5 At all times, the onus shall be on the Supplier to establish the facts entitling it to rely on this Article and in particular, without prejudice to the generality of the foregoing, that the requirements set out in Paragraphs (i), (ii) and (iii) of Section 19-2 hereof have been satisfied.

19-6 If a Force Majeure event occurs and its effect continues for a period of 90 days, either party may give to the other notice of termination of the contract which shall take effect 14 days after the giving thereof. If, at the end of the 14 - day period, the effect of the force majeure continues, the Contract shall terminate.

ARTICLE-XX
DEFAULT AND TERMINATION

20-1 Subject to the provisions of Articles XVI and XIX hereof, in the event:

(a) the Supplier fails to provide the Performance Security in accordance with Article IV hereof; or
(b) the Supplier fails to deliver the Goods or any part thereof within the Time Schedule of Delivery specified in the Contract; or
(c) the Supplier, having delivered part of the Goods, fails or refuses to remedy any defect brought to its notice by the Purchaser; or
(d) the Supplier shall have otherwise defaulted in the performance of any of its obligations under the Contract;

the Purchaser may, by 30 (thirty) days' notice, terminate the Contract. The Contract shall be deemed terminated if the default is not remedied before the expiry of the 30 (thirty) days.

20-2 If the Purchaser fails to pay to the Supplier any amount due to the Supplier within 60 (sixty) days of the request for payment, and such amount or any part thereof is not contested by the Purchaser within 30 (thirty) days of the receipt of the request, the Supplier may, by a written notice of 30 (thirty) days (after the expiry of the initial 60 days period), terminate the Contract. The Contract shall be deemed terminated if the Purchaser fails to remedy the default before the expiry of the 30 (thirty) days notice.

20-3 If the Supplier shall have become voluntarily or involuntarily dissolved, or become bankrupt or insolvent (howsoever such bankruptcy or insolvency may be evidenced) or shall have taken steps to compound with its creditors, or proceedings are commenced for its voluntary or involuntary winding-up, or if the Supplier shall carry on its business under a receiver for the benefit of its creditors or any of them, the Contract shall thereupon be terminated without any notice, court proceedings or other legal procedure of any kind, all of which are hereby expressly waived.

20-4 In the event that the Contract is terminated pursuant to any of the above provisions of this Article or if the Contract is terminated under the provisions of Article 19-6 hereof, the Supplier shall be entitled, insofar as the price of any part of the Goods delivered or Services executed is not covered by payments made prior to the date of termination, to such price at the rates and prices stated in the Contract. Subject to the foregoing, the Supplier shall also be entitled to:

(a) the price of any part of the Goods ordered by the Purchaser, which have been shipped to the Purchaser or of which the Purchaser is legally liable to accept delivery, such Goods becoming the property of the Purchaser upon payment therefore by the Purchaser;

(b) the price of any part of the Goods ordered by the Purchaser which are ready for shipment to the Purchaser, where manufacture and assembly of the same, whether by the Supplier or by a sub-supplier thereof, is complete, provided that such part of the Goods becomes the property of the Purchaser, upon payment therefore by the Purchaser;

Provided that the Supplier shall not be entitled to payment under (a) and (b) above unless and until the Purchaser shall have received such part of the Goods at the final destination and accepted the same.

20-5 Notwithstanding anything contained in this Article or in any of the Contract Documents, if the Contract is terminated as a result of the default of the Supplier, the Purchaser shall be entitled to purchase all, or any part of the Goods not supplied by the Supplier and obtain any of the Services not executed by the Supplier, from another source as the Purchaser may, in its sole discretion, decide and shall be entitled to deduct from the payments due to the Supplier or claim and recover from the Supplier any cost the Purchaser has incurred over and above the amount of the Contract Price and also to recover, by way of deduction from the amounts due to the Supplier or otherwise, the amount of any damages or loss suffered by the Purchaser as a result of the default of the Supplier in carrying out its obligations.

ARTICLE-XXI
NON-WAIVER

21-1 Failure of or delay by either party to exercise any rights or remedies provided for herein or by law or to properly notify the other party in the event of breach, shall not release the other party from any of its obligations under the Contract (including warranties in the case of the Supplier) and shall not be deemed a waiver of any right of that party to insist upon strict performance of the Contract or as a waiver of any rights or remedies which that party may have under the Contract and shall not be deemed as acquiescence in any subsequent default in the performance of the terms and conditions of the Contract.

21-2 The shipping or delivery by the Supplier or receiving or acceptance of or payment by the Purchaser for the Goods or for any designs or drawings therefor shall not be deemed a waiver of any rights in respect of any prior failure by the Supplier to comply with any of the provisions of the contract. No purported oral modifications to the Contract by the Purchaser shall operate as a waiver of any of the terms thereof.

ARTICLE-XXII
LANGUAGE - NOTICES

22-1 Any document, order, request or communication to either party shall be in writing in the language or one of the languages specified in the Special Conditions. Should any document be in a language other than the above, certified translation of the same in the language or one of the languages specified in the Special Conditions shall be provided.

22-2 Any notice or request to be given or to be made by any party to the other under the Contract or in connection therewith may be given by telex, facsimile or letter. Such notice or request shall be deemed to have been duly given when it shall be delivered by hand, mail, telex or facsimile to the other party at its address specified in the Contract or any other address as that party may designate by notice to the other.

ARTICLE-XXIII
APPLICABLE LAW

The Contract shall be subject to and shall be construed in accordance with the laws for the time being in force in the country of the Purchaser.

ARTICLE-XXI V
T AXE S

24-1 Any taxes, dues, fees, stamp duties or any other levies in the country of the Supplier or any other place outside the country of the Purchaser shall be borne by the Supplier.

24-2 Any taxes, dues, fees, stamp duties or any other levies in the country of the Purchaser for the importation of the Goods or in relation to any matter relating to the Contract, other than income tax imposed on the personnel of the Supplier providing incidental services required by the Contract, shall be borne by the Purchaser.

ARTICLE-XXV
SETTLEMENT OF DISPUTES

Any dispute between the parties to the Contract and any claim by either party against the other arising from the Contract and which could not be settled amicably by the parties within 60 (sixty) days from the date of notice by either party to the other, shall be submitted to [the court of competent jurisdiction in the Purchaser's country/arbitration by an Arbitral Tribunal as provided for in the Special Conditions]*.

(*) State as appropriate.

PART V - SPECIAL CONDITIONS OF CONTRACT

1. General

The Special Conditions of Contract herein stated shall supplement the General Conditions of Contract. Wherever there is a conflict, these Special Conditions shall prevail over the General Conditions.

2. Definitions The Purchaser is **Ministry of Health**

3. Performance Security

The performance security shall be equal to 10% of the total Contract Price and shall be valid **to the end of Defects Liability Period.**

4. Inspection and Testing

The inspection and testing required by the Purchaser shall be carried out according to the following procedure:

Equipment to be factory tested to the relevant British standards and test certificate issued.

The contractor shall supply all instruments and equipment necessary to carry out site tests and shall arrange with other sub-contractors for the testing of associated equipment which may affect the performance of the plant installed under this sub-contract works.

5. Delivery and Documents

i) The Supplier shall, upon shipment, notify the Purchaser by cable, telex or facsimile of the full details of the shipment including description and quantity of goods, the liner or vessel, the bill of lading number and date of shipment, port of loading and port of delivery.

ii) The Supplier shall promptly forward the following documents to the Purchaser:

−Original of negotiable, clear, on board bill of lading and a non-negotiable copy of the bill of lading.

−4 copies of the packing list indicating contents.

−Insurance certificate.

- Inspection and/or testing certificate issued by the authorized inspection agency.
- Certificate of origin.

The document mentioned above shall be received by the Purchaser at least one week prior to the arrival of the Goods.

6. Schedule of Delivery

The delivery of Goods shall be according to the following Schedule of Requirements:

……

……

……

7. Insurance

The comprehensive insurance, referred to under Article X of the General Conditions of Contract shall be equal to 110% of the "CIF/CIP" value of the goods on "all risks" basis, including war risks and strikes.

8. Contract Price

The Contract Price shall not be subject to any revision or adjustment unless explicitly stated herein.

9. Payment of Contract Price

i) The method and terms of payment of the Contract Price to the Supplier shall be as follows:

a) **The supplier will be entitled to payment from time to time for materials and/or any work carried out under this Sub-Contract, the value of which shall be determined by the Consultant Engineer and included in Payment Certificate to the Main Contractor under the Main Contract. The Nominated Sub-Contractor will be informed by the Quantity Surveyor when such payments are certified and should he not receive from the Main Contractor the payment due within the period stipulated in the Conditions of Sub-Contract he should immediately report to the Architect and the Engineer.**

b) **Unless otherwise agreed by the Architect all materials relating to this Sub-Contract must be delivered to the site before payment for such items may be certified.**

c) **Materials delivered to site will be valued and amount certified shall be a maximum of 70% of the equipment/material contract value.**

ii) The currency or currencies in which payment is to be made to the Supplier under this Contract shall be in accordance with the Contract Price currency which has been quoted in the Supplier's tender, including other currencies which the Supplier shall have indicated in its bid as required by him, unless otherwise stated herein .

iii) Unless payments are to be made by letter of credit, payments shall be effected by
the Purchaser within a period not exceeding …. days of receiving the Supplier's invoice and other documents required under Section 5 (ii) hereof, except for any advance payment required which shall be made within the aforesaid period
against the Supplier's invoice and the bank guarantee provided for in Section 14.3 of the General Conditions.

10. Change Orders and Variations

The change orders and variations referred to under Article XIII of the General Conditions may take any one or more of the following forms:

i) Amendment of design or specifications of certain components which are required to be specially designed or manufactured for the Purchaser.

ii) The method of shipment or packing.

iii) Increase or decrease of quantities limited to **15%** of the original quantities of goods specified in the Contract.

iv) Place of delivery.

11. Subcontracting

The Supplier shall notify the Purchaser in writing of any subcontract it intends to conclude for manufacturing or supplying part(s) of the Goods. Such notification, in its original tender or later, shall not relieve the Supplier from any liability or obligation under the Contract. The total amount of subcontracts shall not exceed
.....
% of the
Contract Price.

12. Packing

The Supplier shall provide packing that shall be sufficient to withstand rough handling during loading, transport or storage. Further specific requirements of packing shall be as follows:

Meet the manufacturer's recommended material/Equipment packaging standards

.....

.....

.....

13. Transportation

i) If Goods are required to be supplied on CIF or C&F price basis, transport of the Goods shall be arranged and paid for by the Supplier up to the destination specified in the Contract.

ii) If Goods are required to be supplied on FOB price basis, the Supplier shall arrange and pay for transport of the Goods up to and including loading of the Goods on board the vessel.

iii) Other requirements of transportation of the Goods are as follows:

……

……

……

14. Spare Parts

The Supplier shall carry sufficient ex-stock supply of consumable (fast-moving) spare parts required for operation for a period of not less than **2 years**. Other spare parts shall be supplied as promptly as possible, but in any case within six months of placement of order and establishment of a letter of credit.

15. Incidental Services

The incidental services required under Section 12.1 of the General Conditions are

(i)……

(ii)……

(iii)……...

16. Change Orders - Variations

The percentage specified for the purpose of Article XIII of the General Conditions is ……% of the quantity of the Goods or an item of the Goods, as the case maybe.

17. Liquidated Damages

The liquidated damages payable under Article XVII of the General Conditions shall be.....*(state currency and amount)* for each week of delay.

18. Warranty Period

The warranty period under Section 18.2 of the General Conditions shall be

At least 2 years from the date of Commissioning.

19. Language(s) of the Contract

The **English** language(s) is/are designated for the purpose of Section 22.1 of the General Conditions. In case the Contract is made in more than one language and in case of divergence between the texts in different languages, the text in the **English** language shall prevail.

20. Notices

The following addresses are designated for the purpose of Section 22.2 of the General Conditions.

For the Purchaser:

Mailing Address:

……

……

……

……

Telex:……

Fax:……

Email:……

For the Supplier:

Mailing Address:

……

……

……

……

Telex:……

Fax:……

Email:……

21. Settlement of Disputes

The formation of the Arbitral Tribunal and the rules relating to arbitration for settlement of disputes pursuant to Article XXV of the General Conditions shall be in accordance with the following:

……

……

……

PART VI – MINIMUM EQUIPMENT NEEDED

LOT 1: OUTPATIENT EQUIPMENT

	CONSULTING ROOMS	
S/NO.	**EXPECTED EQUIPMENT**	QTY
1	Examination couch	4
2	Emergency Trolley	2
3	Diagnostic set (Wall mounted)	4
4	Blood pressure Machine (Wall Mounted)	4
5	Electrical suction machines	3
6	Wall mounted Examination lights	4
7	Oxygen flow meters	2
8	Stethescopes	8
9	Wall suction units	2
10	X-ray viewer	4
	DRESSING AND TREATMENT ROOM	
11	Procedure trolley	2
12	Portable electrical suction units	2
13	Examination couch	2
	TRIAGE (2No.)	
14	Weighing Scale	2
15	Blood pressure Machine	2
16	Thermometer	5

LOT 2: ONCOLOGY (RADIOTHERAPY) EQUIPMENT

S/NO.	EXPECTED EQUIPMENT	QTY
	CT-SIMULATOR	
1	CT-Simulator	1
	CANCER TREATMENT	
2	Digital Linear Accelerator	1
3	Brachytherapy Unit	1
4	Anaesthetic machines	1
5	Brachytherapy Table	1
6	General Purpose Suction Unit	1
7	Operation Light (LED)	1
8	Patient Trolley	2
9	Emergency/Resuscitation Trolley	1
10	Patient Monitor	1
11	Infusion Pump	2
12	Oxygen Flow meters	1

LOT 3: IMAGING EQUIPMENT

S/NO.	EXPECTED EQUIPMENT	QTY
	CT-SCANNER ROOMS	
1	1.5T MRI	1
2	Patient Monitor (MRI Compartible)	1
	GENERAL X-RAY ROOMS	
3	Digital general system with fluoroscopy x-ray	1
4	LEAD APRONS with hangers	15
	ULTRASOUND ROOMS	
5	Premium Ultrasound system (With Cardiac Echo)	1
6	High-end ultrasound systems	1
7	Portable ultrasound	1
8	Ultrasound examination couches	2
9	Biopsy systems for prostates	5
	MAMMOGRAPHY	
10	Mammography Unit	1
11	Resuscitation/Emergency Trolley	1
12	Wheelchairs	2
13	Patient stretchers	2
14	Portable Electric suction units	1
15	Mobile X-ray System	1

LOT 4: ONCOLOGY (CHEMOTHERAPY) EQUIPMENT

S/NO.	EXPECTED EQUIPMENT	QTY
	CHEMOTHERAPY	
1	Examination light	10
2	Oxygen Flow meters	5
3	Wall suction Units	4
4	Portable Electrical Suction Units	2
5	Patient Lifting Hoist	1
6	Patient Trolley with side rails	3
7	Patient Weighing scale	2
8	Aneroid Sphygmomanometer	4
9	Stethoscope	4
10	Thermometer	5
11	Emergency/ Resuscitation Trolley	1
12	Biosafety cabinet + accessories	1
13	Infusion pumps	5
14	Syringe Pumps	10
15	Patient Beds	5
16	Reclining Chairs	15

LOT 5: INPATIENT SERVICES EQUIPMENT

S/NO.	EXPECTED EQUIPMENT	QTY
	GENERAL WARD BED REQUIREMENTS	
1	Oxygen flow meters	20
2	Wall Suction Units	15
3	Ward bed complete with drip stand, Bedside locker and over-bed table	42
4	Drip stand (Portable)	8
5	Thermometers (Digital)	15
6	Blood pressure Machine (Aneroid)	10
	GENERAL WARD REQUIREMENTS	
7	Wheelchairs	5
8	Diagnostic sets	5
9	Portable Electric suction units	5
10	Nebulizers	2
11	Macerators	1
12	Commode chairs	3
13	X-ray viewer	2
14	Emergency/ Resuscitation Trolley	2
15	Procedure trolley	3
16	Fluid warmer	3
17	Patient Trolleys	3
	PAEDIATRICS WARD REQUIREMENTS	
18	Baby cots	4
19	Reclining chairs	4
20	Radiant heaters	4
21	Portable Examination lamp	4
22	Weighing Scale	2

LOT 6: DIAGNOSTIC LABORATORIES EQUIPMENT

S/NO.	EXPECTED EQUIPMENT	QTY
	ROUTINE LABORATORY	
1	Binocular Microscope	3
2	Incubator/Oven	2
3	Laminar Flow Hood	2
4	Fridge (2 to 8 deg)	2
5	Freezer (-20 deg)	2
6	Centrifuge refrigerated	1
7	Water bath	2
8	Block heaters	2
9	Microtomes	1
10	Tissue Embedding Station	1
11	Tissue Processors	1
12	Paraffin Dispenser	1
13	Thermometer, glass, min/max -20°C/100°C	4
14	Thermometer, min/max -30°C/60°C	4
15	Timer, 60 min, mechanical	2
16	Timer, digital	2
17	Stainer	1
18	Coagulometer	1
19	Balance electronic	2
20	Hematology Analyzer	1
21	Biochemistry analyzer	1
22	Immune analyzer	1
23	Electrophoresis unit	1
24	Blood gas analyzer	1
25	Centrifuge	2
26	Vortex mixer	2
27	Digital weighing scale	1
28	pH meter	2

S/NO.	EXPECTED EQUIPMENT	QTY
29	Flow cytometer	0
30	Roller/shaker mixer	2
31	Blood donor chairs	2
32	Water Distillation Unit	1
33	Lab deionizer	1
34	Slide Scanner	1

LOT 7: PHARMACY EQUIPMENT

S/No.	EXPECTED EQUIPMENT	QTY
	PHARMACY	
1	Pharmaceutical Refrigerators	3
2	Balance, Precision	4
3	Balance, Heavy duty	2
4	Tablet Counter	2
5	DDA cupboards	2
6	Magnetic Stirrer with Hot plate	1
7	Laminar flow system	1
8	Electronic weighing scale	2
9	Pestle & Motor	2

LOT 8: OPERATION THEATRES EQUIPMENT

S/NO.	EXPECTED EQUIPMENT	QTY
	2 GENERAL SURGERY	
1	Anaesthetic machines	4
2	Operation tables (with kidney Bridge)	3
3	Operation theatre LED lights with inbuilt IP Camera & voice capability	2
4	Electrosurgical units (with bipolar resection capability)	4
5	Digital X-ray viewer	4
6	Electrocautery LEEP Machine	1
7	Thermo-Ablation Device	1
8	Cryotherapy Unit	1
	THEATRE RECOVERY	
9	Fluid warmer	2
10	Patient Trolleys	8
11	Refrigerators	2
12	Instrument Trolleys	4
13	Resuscitaire	2
14	C-Arm	1
15	Syringe pumps	5
16	Infusion pumps	5
17	Operation Microscope (Transplant Procedures)	1
18	Endoscopy tower	1
19	Complete Laparoscopic towers with 4K image quality (Either on pendant or trolley)	1

LOT 9: INTENSIVE CARE UNIT (CRITICAL CARE) EQUIPMENT

S/NO.	EXPECTED EQUIPMENT	QTY
	CRITICAL CARE UNIT (BED REQUIREMENT)	
1	Ventilators	5
2	Neonatal Ventilators	2
3	Patient ICU bed	4
4	Stethoscope	4
5	Autoclavable laryngoscopes	3
6	Bair Hugger	4
7	Blood Sugar Machines	1
8	Blood warmers	2
9	Pacemakers	2
10	Drug Fridges	1
11	Food Fridge	1
12	Endoscopic laryngoscope	1
13	Non-Invasive ventilators	2
14	Diagnostic set	4
15	Pneumatic Pumps	3
16	Portable Examination lamp	2
17	Transport ventilators	2
18	Syringe pumps	6
19	Infusion pumps	6
20	Feeding pumps	4
21	Endoscopy Machine	1
22	Electrical suction units	2
23	Emergency Trolley	1
24	General purpose Trolley	4
25	Dressing Trolley	4
26	Patient Trolleys	2
27	Baby Cots	2
28	CPAP machine	2

S/NO.	EXPECTED EQUIPMENT	QTY
29	Ripple mattress (to be included in Beds)	0
30	Transport resuscitation kit	2
	ICU LAB	
31	Blood Gas Analyzer	1

LOT 10: BIOMEDICAL CALIBRATION EQUIPMENT

S/NO	EXPECTED EQUIPMENT	QTY
	BIOMEDICAL WORKSHOP	
1.	Electronic Tool Box	5
2.	Variable output isolation transformer	1
3.	Patient Monitor Analyzer (Patient Simulator)	1
4.	Defibrillator Analyzer	1
5.	Electrical Safety Analyzer	1
6.	Gas Flow Analyzer	2
7.	Oxygen Analyzer	1
8.	Electro Surgical Analyzer	1
9.	Radiation Analyzer	1
10.	Infusion and Syringe Pump Analyzer	1
11.	Ultrasound Wattmeter	1
12.	Medical Scope Meter Oscilloscope	1

LOT 11: CENTRAL STERILIZATION SUPPLIES DEPARTMEMT (CSSD)

S/NO.	EXPECTED EQUIPMENT	QTY
	STERILIZATION UNIT	
1	Autoclave	2
2	Washer Disinfection	1
3	Ultrasonic washer unit	1
4	Dissembling and sorting Table	1
5	Water Jet System	1
6	Hydrogen Peroxide Low Temperature Plasma Sterilizer	1
7	Working table (stainless steel)	1
8	Packaging and sorting Table	2
9	Cart/ Cabinet for storage and execrating sets	1
10	Package sealing machine	2
11	Pressure steam gun/ Water for cart washing	1
12	Carrying Carts and shelves (stainless steel) for storage.	4
13	Table flash Autoclave	1
14	Gas Plasma sterilizer	1

LOT 12: INSTRUMENTS

S/NO.	DESCRIPTION	QTY
1.	Basic Surgery set / Minor tray	2
2.	Dressing set	2
3.	Laparotomy set	2
4.	Suture set	2
5.	Examination/suturing, vaginal/cervical set	2
6.	Catheter placement set	2
7.	Basic Rectal Surgery set	2
8.	Cervix Conization set	2
9.	Vaginal Hysterectomy set	2
10.	Abdominal Hysterectomy set	2
11.	Prostatectomy set	2
12.	Tracheostomy set	2
13.	Urology set	2
14.	Lumbar Puncture set, Adult	2
15.	Lumbar Puncture set, Paediatrics	2
16.	Pleural Biopsy set	2
17.	Mastectomy set	2
18.	Gynecologic biopsy set	2
19.	Lobectomy and segmental lung set	2
20.	Thoracotomy set	2

LOT 13: MONITORING EQUIPMENT

S/No.	Section	Equipment	Qty
1.	Consulting Rooms	Patient monitor	4
2.	Out Patient Services	Defibrillator	1
3.	Triage	Vital Signs Monitor	2
4.	Radiotherapy	Patient Monitor	1
5.	Imaging Dept.	MRI Compatible Monitor	1
6.	Imaging	Patient Monitor	1
7.	Chemotherapy	Vital Signs Monitor	3
8.	Chemotherapy	Defibrillator	1
9.	Inpatient Services	Vital Signs Monitors	5
10.	Inpatient Services	Defibrillator	2
11.	Operation Theatres	OR Patient Monitor	2
12.	Theatre Recovery	Patient Monitor	4
13.	Operation Theatre	Transport Patient Monitor	2
14.	Operation Theatre	Defibrillator	2
15.	ICU	Patient Monitor	4
16.	ICU	Central Monitoring System	1
17.	ICU	Defibrillator	1
18.	ICU	Transport Monitor	1
19.	ICU	12 lead ECG Machine	1

PART VII – TECHNICAL SPECIFICATIONS

4.1 SUMMARY OF TECHNICAL SPECIFICATIONS

The Goods and Related Services shall comply with the following Specifications and Standards:

LOT NO.	***Item No***	***Name of Goods or Related Service***	***Technical Specifications and Standards***	***COMPLIED YES/NO***	***COMMENTS***
	[insert item No]	*[insert name]*	*[insert TS and Standards]*		

4.2 DETAILED TECHNICAL SPECIFICATIONS AND STANDARDS

LOT 1: OUTPATIENT EQUIPMENT

LOT 1-1: Examination couch

Item Code No.	Department	Section	Item Description
LOT 1-1	Outpatient	Consulting Room	Examination Couch

1. General Description

Examination Couch Stainless Steel with Mattress

2. Composition

1.1.	Main unit				

3. Description of the medical supply unit design type

3.1 Constructed from round polished SS Pipes
3.2 Fully adjustable headrest. Top of Polished SS Sheet.
3.3 Top is upholstered and covered with washable plastic material
3.4 Legs fitted with thick high-quality nylon gromets.
3.5 5 cm 50PU density foam cushioned top covered with leathered Rexene of 2mm thickness
3.6 Top dimensions – L = 72inch X W= 24inch H= 32 inches
3.7 All the Stainless Steel should be seamless conforming to 304 grade/ 16 gauge and polished finished
3.8 Box with three drawers and three cabinets.
3.9 Should have sliding footstep.
3.10 The head section should be raised with mechanical pneumatic

LOT 1-2: Resuscitation Trolley

Item Code No.	Department	Section	Item Description
LOT 1-2	Outpatient	Consulting Room	Resuscitation/Emergency trolley

1. General Description

Resuscitation trolley for use in ICU. Epoxy coated mild steel, with drawers, protection perimeter and defibrillator holder. The Unit should be mobile on four castors, 2 lockable

2. Composition

2.1.	Main unit,		

3. Performance Specifications

3.1. Main Unit

3.1.1. Should be durable with Ergonomic handle and should have easy grip

3.1.2. Height should be 40-45”

3.1.3. Should have 6-8 drawers of sizes 3x3”,2x6”,1x9”

3.1.4. Should have interchangeable 3”,6”,9” drawers which run smoothly on good quality channels

3.1.5. Should have provision of side storage which allows storage of variety accessories like can, storage bins, glove storage, sharp container set

3.1.6. An over bridge can with baskets, shelves and bins to keep important things

3.1.7. Should have AMS top surface & advance polymer material which is easy to clean. It should not dent, chip flake or corrode

3.1.8. Should be easily rolling and has toe brakes

3.1.9. Should have I.V. pole with clamps ach 3” drawer should have provision for 25-30 compartments

3.1.10. Should have twin swivel castors & central lock

3.1.11. Should be CE and ISO 9001/2000 and FDA approved

3.1.12. Should have CPR board & O2 cylinder holder

LOT 1-3: Diagnostic set

Item Code No.	Department	Section	Item Description
LOT 1-3	Outpatient	Consulting Room	Diagnostic Set

1. General Description

Diagnostic Set Wall Mounted

2. Composition

2.1.	Main unit				

3. Description of the medical supply unit design type

3.1. 3.5-volt Ophthalmoscope and otoscope set suitable for Wall-mounting with locking collars and locking device. Must include light intensity rheostat in the handle and automatic on/ off cradle switches. All screws, wall plugs etc. necessary for mounting the unit on the wall must be included.

i. Ophthalmoscope, mirror type with 3.5 volt Halogen/LED lamp, sliding focusing device from -25 to +40 diopters and five apertures including a slit, pinhole, large hole fixation or white line grid and red-free filter.
ii. Otoscope, fibre-optic with 3.5 volt Halogen/LED lamp 2mm, 3mm, 4mm and 5mm polypropylene flanged specula.
iii. Two spare lamps for ophthalmoscope and two spare lamps for the otoscope.
iv. Wall mounting facility with locking collars, mains operated and +-3m spiral cord with sealed 3pin plug.
v. Locking device to secure Ophthalmoscope and otoscope heads to handles

Specula for item No. ii and spare lamps must be freely available.

LOT 1-4: Blood pressure Machine

Item Code No.	Department	Section	Item Description
LOT 1-4	Outpatient	Consulting Room	Blood Pressure Machine (Aneroid Type)

1. General Description

Sphygmomanometer - Aneroid Type

2. Composition

2.1.	Main unit				

3. Description of the medical supply unit design type

3.1. Should be aneroid type,

3.2. Should have ISI mark.

3.3. Should have a measuring range from 0 to 300 mmHg,

3.4. Should be provided with adult arm cuffs of size medium & large and paediatric cuff.

3.5. The dial mano meter markings and graduations should be permanent and clearly visible and filled with pigments, with diameter of minimum diameter of 160 mm.

3.6. Body & Bezel – Aluminum die casted (Powder coated), screw type bezel

3.7. Sensing-corrugated phosphorous bronze twin capsule bellows.

3.8. Movement mechanism – Brass

3.9. Connection: brass, nickel plated for 3-4 mm rubber hose.

3.10. Dial – Aluminum

3.11. Pointer – White coated, thin & sharp made of phosphorous Bronze

3.12. Window lenses – Clear plastic.

3.13. All plastic parts, if any used should not crack, flake, peel or disintegrate in normal use.

3.14. The inflating rubber bag should be capable of withstanding an internal pressure of 450 mmHg without leaking.

3.15. The Machine shall be wall mounted

3.16. The inflating bulb should be soft and should not have any joints or ridges.

3.17. The fastening arrangements of the cuff should be of hook and loop type (Velcro)

3.18. The threading and fastening arrangement of the cuff should show no sign of slip or failure when subjected to the maximum test conditions.

3.19. The rubber tubes used should have an internal diameter of 3 ± 0.5mm and the external diameter should not be less than 8mm.

3.20. The tubes should be fitted with male and female leur connectors.

Item Code No.	Department	Section	Item Description
LOT 1-4	Outpatient	Consulting Room	Blood Pressure Machine (Aneroid Type)
3.21. Should provide a carry bag to keep the whole system safe and sound. All parts should be replaceable in case of breakage.			

LOT 1-5: Electrical Suction Machines

Item Code No.	Department	Section	Item Description
LOT 1-5	Outpatient	Consulting Room	Electrical Suction Machines
1. General Description			
n machine suitable for use in theatre, for both adult and pediatric use. Should be constructed from coated non-corrosive, extreme heat resistance material and electrically insulated and mobile on antistatic castors φ 60 mm, 2 No. lockable, with high level push handle.			
2. Composition			
2.1.	Main unit		
3. Performance Specifications			
3.1.	Main Unit		
3.1.1.	High flow rate	40 litres per minute.	
3.1.2.	Suction vacuum	Maximum 700mmHg	
3.1.3.	Suction pump	oil free	
3.1.4.	Jars	2 X 2 liter polycarbonate autoclavable and unbreakable complete with overflow devices and valves.	
3.1.5.	Vacuum gauge	Graduated in mmHg and kPa.	
3.1.6.	Vacuum control	Adjustable at the front panel	
3.1.7.	Switch	Main on front panel and foot switch (water proof type)	
3.1.8.	Cable towage	On back with reversible cleats	
3.1.9.	Anti-bacterial filters	Available preferable autoclavable	
3.1.10.	Suction tubing connection	Antistatic neoprene or silicone	
3.1.11.	Safety	Overflow pump protection	
3.1.12.	Handle	High level push handle type	
3.1.13.	Movements	Mobile on four antistatic castors 2 No. lockable.	
4.	Physical characteristics		
4.1.	Main unit	Mobile on castors with push handle	
5.	Operating environment		
5.1.	Power Requirements	240V, A/c 50 Hz, Single phase, 3 Pin Plug BS standard, 3m long cord with PE	

Item Code No.	Department	Section	Item Description
LOT 1-5	Outpatient	Consulting Room	Electrical Suction Machines
5.2.	Ambient temperature	10^{o} C to 40^{o} C	
5.3.	Relative humidity	20% to 90%	
6.	Accessories	The following accessories will be provided as startup kits.	
6.1.	Sterilizable, silicone tubing	5 Set	
6.2.	Bacterial filters	1 Box	
6.3.	Foot switch	1 No.	
6.4.	Cannula with handle for general purpose	4 Sets	
7.	Quality standards		
7.1.	Manufacturing standards	EN 10079-1, IEC 60601-1, ISO 9001, ISO 13485	
	Conformity to standards	CE and FDA marked	
8.	Local back up service		
8.1.	Available	Should be available locally	
8.2.	Capacity to service equipment	Agent shall have adequate facilities, spare parts, and qualified and skilled technical staff	
9.	Delivery point		
9.1.	See Schedule	For inspection and testing	
9.2.	Nil		
10.	Pre installation requirements		
	Nil		
11.	Installation and testing		
	Complete installation and setup of the machine as per manufacturer's instructions		
12.	Training		
12.1.	User Training	On site user training on operation and daily up keep	
12.2.	Maintenance training	Onsite maintenance training on preventive maintenance	
13.	Technical documentations		

Item Code No.	Department	Section	Item Description		
LOT 1-5	Outpatient	Consulting Room	Electrical Suction Machines		
13.1.	User manuals	2 Sets			
13.2.	Service Manual	1 Set			
13.3.	Drawings	Nil			
14.	Commissioning				
14.1.	Testing and commissioning of the machine to the satisfaction of the user.				
15.	Warranty				
15.1.	Equipment	Minimum of one year after commissioning on all parts.			
15.2.	Equipment System	Nil			

LOT 1-6: Wall Mounted Examination Lights

Item Code No.	Department	Section	Item Description
LOT 1-6	Outpatient	Consulting Room	Wall Mounted Examination Lights

1. General Description

The LED technology should be of highly engineered optical system which delivers the precisely controlled natural white light that is so important for an accurate examination.

2. Composition

2.1.	Main unit				

3. Description of the medical supply unit design type

Should have mobile Floor Stand
SLSE50-CM or Wall/Ceiling Mount

STANDARD DESIGN FEATURES

3.1. High-intensity of 39,000 lux (3623 fc) at 24" (61 cm)

3.2. 4000 K color temperature

3.3. CRI (Color Rendering Index) of 92

3.4. Natural white light

3.5. LED light module with at least 40,000-hour life

3.6. Universal input voltage

3.7. Drift-free K-arm with 42" (107 cm) arm range

3.8. IEC 60601-1/ 60601-2-41 certified

3.9. Should have European CE or USA certificate

3.10. Should be supplied with European or USA country of origin certificate.

LOT 1-7: Oxygen Flow Meters

Item Code No.	Department	Section	Item Description
LOT 1-7	Outpatient	Consulting Room	Oxygen Flow meters

1. General Description

Oxygen Flow meter with Humidifier:

2. Composition

2.1.	Main unit				

3. Description of the medical supply unit design type

3.1. Should be duly USFDA or CE marked by the European notified body

3.2. The Flowmeter should be fitted with BS standard Medical Oxygen Probe.

3.3. Back Pressure Compensated flow meter will be of accurate gas flow measurement with control within a range of 0 to 15 Lpm.

3.4. It should meet strict precision and durability standard.

3.5. The flow meter body should be made of brass chrome plated materials.

3.6. The flow tube and shroud components should be made of clear, impact resistant polycarbonate.

3.7. Flow Tube should have large and expanded 0 – 5 lpm range for improved readability at low flows.

3.8. Inlet filter of stainless-steel wire mesh to prevent entry of foreign particles.

3.9. The humidifier bottle should be made of unbreakable & Reusable of polycarbonate material and autoclavable at 134 degree centigrade.

LOT 1-8: Stethescope

Item Code No.	Department	Section	Item Description
LOT 1-8	Outpatient	Consulting Room	Stethescope

1. General Description					
Stethescope:					
2. Composition					
2.1.	Main unit				
3. Description of the medical supply unit design type					
3.1. Patient friendly Non-Chill Rim 3.2. Solid stainless steel / anodized aluminium chest piece 3.3. Frame should be stainless steel 3.4. Excellent Acoustic Diaphragm and comfortably fit with soft sealing ear tips 3.5. Anatomically correct headset & comfortably angled 3.6. Single lumen tubing in a variety of popular colours 3.7. Y PVC tubing 3.8. European CE certification or USFDA certification or equivqlent certification 3.9. Quality Certificate of manufacturer like OHSAS-18001 or ISO 9001- 14001/9001-2008/ 9001-13485 should be attached to ensure quality					

LOT 1-9: Wall Suction Units

Item Code No.	Department	Section	Item Description
LOT 1-9	Outpatient	Consulting Room	Wall Suction Unit
4. General Description			
Ward Wall Vacuum Units:			
5. Composition			
5.1. Main unit			
6. Description of the medical supply unit design type			
6.1. Should be duly USFDA or CE marked by the European notified body			
6.2. Vacuum Unit should be wall mounted and should consists of Suction Controller/ Regulator & Collection bottle of 1000ml. with mounting arrangement.			
6.3. The Vacuum unit should be fitted with BS standard Vacuum probe.			
6.4. The vacuum regulator should be step-less adjustable and have large vacuum gauge providing indication of the suction supplied by the regulator.			
6.5. Safety trap should be provided inside the jar to safeguard the regulator from overflowing.			
6.6. The unit should be consisting of reusable 1000ml. shatter resistant bottle, each made up of poly carbonate material and fully autoclavable at 1340C.			

LOT 1-10: X-Ray Viewer

Item Code No.	Department	Section	Item Description
LOT 1-10	Outpatient	Consulting Room	X-ray Viewer

1. General Description

X-RAY-VIEW BOX (LED Light)

2. Composition

2.1.	Main unit				

3. Description of the medical supply unit design type

A) Product & Manufacturer Quality Standards:

3.1. Should be FDA/ CE approved product.

3.2. Manufacturer and Supplier should have ISO 13485 certification for quality standards.

B) TECHNICAL CHARACTERISTICS

3.3. Should be ultra-thin X ray film illuminator using LED light

3.4. It should have a thickness of 30 mm

3.5. It should be suitable for viewing 14''x17' film.

3.6. Should have position to insert 8 films in 2 rows.

3.7. The LED light must have a life span of more than 50,000 hours.

3.8. It should have easy insertion & removal of the film.

3.9. It should have homogeneous illumination more than 95% and maximum intensity of over 10,000 lux.

3.10. It should have an on-off switch along with digital feather touch dimmer and a button to set the intensity

3.11. It should have fully electronic continuous brightness control, with adjustment range of approximately 90%.

3.12. It should be directly connected to power supply without any external adapters.

3.13. It should have flicker free high frequency light for reduction of eye strain.

3.14. It should have external fuses for protection against power surge.

3.15. 10 step Digital dimmer facility with step up/step down intensity of 500 lux or less.

3.16. Should have automatic film sensor

3.17. Should have facility to switch on only the section where the film needs to be viewed.

C) Power supply:

3.18. 240V, AC, 50Hz. Single phase

LOT 1-11: Procedure Trolley – Dressing and Treatment Room

Item Code No.	Department	Section	Item Description
LOT 1-11	Outpatient	Consulting Room	Procedure Trolley

1. General Description

Procedure/Dressing Trolley

2. Composition

2.1.	Main unit				

3. Description of the medical supply unit design type

3.1. Overall approx. Size: 780mmL x 500mmW x 900mmH

3.2. Approximate shelf dimension 750mmL x 500mmW.

3.3. Tubular CRC frame mounted on four castors of minimum 100mm dia and should be pre-treated and epoxy coated finish.

3.4. Two S.S. of 304 grade shelves with protective railings on three sides.

3.5. Should have provision for holding bowel and bucket.

3.6. Warranty: 2year

LOT 1-12: Portable Electrical Suction Units

Item Code No.	Department	Section	Item Description
LOT 1-12	Outpatient	Dressing and Treatment Room	Portable Electrical Suction Unit

1. General Description		
n machine suitable for use in theatre, for both adult and pediatric use. Should be constructed from coated non-corrosive, extreme heat resistance material and electrically insulated and mobile on antistatic castors φ 60 mm, 2 No. lockable, with high level push handle.		
2. Composition		
2.1.	Main unit	
3. Performance Specifications		
3.1.	Main Unit	
3.1.1.	High flow rate	40 litres per minute.
3.1.2.	Suction vacuum	Maximum 700mmHg
3.1.3.	Suction pump	oil free
3.1.4.	Jars	2 X 2 liter polycarbonate autoclavable and unbreakable complete with overflow devices and valves.
3.1.5.	Vacuum gauge	Graduated in mmHg and kPa.
3.1.6.	Vacuum control	Adjustable at the front panel
3.1.7.	Switch	Main on front panel and foot switch (water proof type)
3.1.8.	Cable towage	On back with reversible cleats
3.1.9.	Anti-bacterial filters	Available preferable autoclavable
3.1.10.	Suction tubing connection	Antistatic neoprene or silicone
3.1.11.	Safety	Overflow pump protection
3.1.12.	Handle	High level push handle type
3.1.13.	Movements	Mobile on four antistatic castors 2 No. lockable.
4.	Physical characteristics	
4.1.	Main unit	Mobile on castors with push handle
5.	Operating environment	
5.1.	Power Requirements	240V, A/c 50 Hz, Single phase, 3 Pin Plug BS standard, 3m long cord with PE
5.2.	Ambient temperature	10^{o} C to 40^{o} C
5.3.	Relative humidity	20% to 90%

Item Code No.	Department	Section	Item Description
LOT 1-12	Outpatient	Dressing and Treatment Room	Portable Electrical Suction Unit

6.	Accessories	The following accessories will be provided as startup kits.			
6.1.	Sterilizable, silicone tubing	5 Set			
6.2.	Bacterial filters	1 Box			
6.3.	Foot switch	1 No.			
6.4.	Cannula with handle for general purpose	4 Sets			
7.	Quality standards				
7.1.	Manufacturing standards	EN 10079-1, IEC 60601-1, ISO 9001, ISO 13485			
	Conformity to standards	CE and FDA marked			
8.	Local back up service				
8.1.	Available	Should be available locally			
8.2.	Capacity to service equipment	Agent shall have adequate facilities, spare parts, and qualified and skilled technical staff			
9.	Delivery point				
9.1.	See Schedule	For inspection and testing			
9.2.	Nil				
10.	Pre installation requirements Nil				
11.	Installation and testing				
	Complete installation and setup of the machine as per manufacturer's instructions				
12.	Training				
12.1.	User Training	On site user training on operation and daily up keep			
12.2.	Maintenance training	Onsite maintenance training on preventive maintenance			
13.	Technical documentations				
13.1.	User manuals	2 Sets			
13.2.	Service Manual	1 Set			
13.3.	Drawings	Nil			
14.	Commissioning				

Item Code No.	Department	Section	Item Description
LOT 1-12	Outpatient	Dressing and Treatment Room	Portable Electrical Suction Unit
14.1.	Testing and commissioning of the machine to the satisfaction of the user.		
15.	Warranty		
15.1.	Equipment	Minimum of one year after commissioning on all parts.	
15.2.	Equipment System	Nil	

LOT 1-13: Examination Couch - Dressing and Treatment Room

Item Code No.	Department	Section	Item Description
LOT 1-13	Outpatient	Consulting Room	Examination Couch

1. General Description

Examination Couch Stainless Steel with Mattress

2. Composition

1.2.	Main unit				

3. Description of the medical supply unit design type

3.11 Constructed from round polished SS Pipes

3.12 Fully adjustable headrest. Top of Polished SS Sheet.

3.13 Top is upholstered and covered with washable plastic material

3.14 Legs fitted with thick high-quality nylon gromets.

3.15 5 cm 50PU density foam cushioned top covered with leathered Rexene of 2mm thickness

3.16 Top dimensions – L = 72inch X W= 24inch H= 32 inches

3.17 All the Stainless Steel should be seamless conforming to 304 grade/ 16 gauge and polished finished

3.18 Box with three drawers and three cabinets.

3.19 Should have sliding footstep.

3.20 The head section should be raised with mechanical pneumatic

LOT 1-14: Weighing Scale – Triage

Item Code No.	Department	Section	Item Description
LOT 1-14	Outpatient	Consulting Room	Weighing Scale

1. General Description

2. Composition

2.1.	Main unit				

3. Description of the medical supply unit design type

3.1. Mobile Weighing Scale with height meter
3.2. Capacity approx. 0-160kg
3.3. With circular scale/readout
3.4. With mechanical height rod able to measure between 70cm-2000cm
3.5. With BMI display
3.6. Easy to clean platform with reset to zero function
3.7. With flat tread area platform approximately 360mm (W) X 630mm (D)
3.8. Height approx. 1000mm
3.9. With mechanical column scale
3.10. Displays weight with BMI function
3.11. Graduation approximately 500g.
3.12. Warranty 2 years
3.13. With Calibration Certificate
3.14. FDA/ CE Marked
3.15. With heavy duty transport castors
3.16. Operator and service manuals to be provided

LOT 1-15: Blood Pressure Machine – Triage

Item Code No.	Department	Section	Item Description
LOT 1-15	Outpatient	Consulting Room	Blood Pressure Machine (Aneroid Type)

1. General Description

Sphygmomanometer - Aneroid Type

2. Composition

2.1.	Main unit				

3. Description of the medical supply unit design type

3.1. Should be aneroid type,
3.2. Should have ISI mark.
3.3. Should have a measuring range from 0 to 300 mmHg,
3.4. Should be provided with adult arm cuffs of size medium & large and paediatric cuff.
3.5. The dial mano meter markings and graduations should be permanent and clearly visible and filled with pigments, with diameter of minimum diameter of 160 mm.
3.6. Body & Bezel – Aluminum die casted (Powder coated), screw type bezel
3.7. Sensing-corrugated phosphorous bronze twin capsule bellows.
3.8. Movement mechanism – Brass
3.9. Connection: brass, nickel plated for 3-4 mm rubber hose.
3.10. Dial – Aluminum
3.11. Pointer – White coated, thin & sharp made of phosphorous Bronze
3.12. Window lenses – Clear plastic.
3.13. All plastic parts, if any used should not crack, flake, peel or disintegrate in normal use.
3.14. The inflating rubber bag should be capable of withstanding an internal pressure of 450 mmHg without leaking.
3.15. The inflating bulb should be soft and should not have any joints or ridges.
3.16. The fastening arrangements of the cuff should be of hook and loop type (Velcro)
3.17. The threading and fastening arrangement of the cuff should show no sign of slip or failure when subjected to the maximum test conditions.
3.18. The rubber tubes used should have an internal diameter of 3 ± 0.5mm and the external diameter should not be less than 8mm.
3.19. The tubes should be fitted with male and female leur connectors.
3.20. Should provide a carry bag to keep the whole system safe and sound. All parts should be replaceable in case of breakage.

LOT 1-16: Thermometer – Triage

Item Code No.	Department	Section	Item Description
LOT 1-18	Outpatient	Consulting Room	Thermometer

1. General Description

Digital Thermometer

2. Composition

2.1.	Main unit				

3. Description of the medical supply unit design type

3.1. Range of temperature measurement 32 ^{0}C- 42^{0}C (89.60F-109.40F)
3.2. Can be calibrated in both centigrade and Fahrenheit, but if only one option is available, then Centigrade is preferable.
3.3. Buzzer signal function.
3.4. Takes 10-15 seconds to measure temperature.
3.5. Can be used in the armpit/axilla, orally and rectally.
3.6. Accuracy of temperature ± 0.1 0C and ± 0.2 F.
3.7. User's interface: LCD display
3.8. Manufacturer should be ISO13485 approved
3.9. Product should be FDA/CE approved

LOT 1-17: Vital Signs Monitor

Item Code No.	Department	Section	Item Description
LOT 1-17	Outpatient	Triage	Vital Signs Monitor

1. General Description

l signs Monitor suitable for use in operating theaters. Should be capable of continuous measuring/ monitoring of the following parameters in adults, neonatal and pediatric.

- SpO_2
- Temperature
- Blood pressure
- Pulse Rate
- ECG

2. Composition					
2.1.	Main unit				
3. Performance Specifications					
3.1.	Main Unit				
3.1.1.	The unit should be a model or type on current production capable of measuring/monitoring the following parameters				
3.1.2.	2, with reusable sensor	0 - 100% ± 3%			
3.1.3.	Pulse Rate	30-300 bpm ± 1%			
3.1.4.	Temperature	$0\text{-}50^0C \pm 0.1\%$			
3.1.5.	NIBP	Mean 10- 300mmHg ± 5 mmHg			
3.1.6.	IBP	Mean 50 – 300mm Hg ± 1 mmHg			
3.2.	Display	At least 12 inches color touch screen type/rotary knob			
3.2.1.		6 to 8 waveforms mode with large font			
3.3.	Printer	Inbuilt, thermal array or equivalent			
3.3.1.		Two speed, selectable			
3.3.2.		Port for external printer			
3.4.	Networking	Port for networking with Ethernet or equivalent Or Serial Port RS 232			
3.5.	Input				
3.6.	Storage	Capable of storing patient data			
4.	Safety requirements				
4.1.	Audio and visual alarm	For all parameter.			
4.2.	Alarm setting limits	Adjustable by user			

Item Code No.	Department	Section	Item Description
LOT 1-17	Outpatient	Triage	Vital Signs Monitor
4.3.	Low battery indicator	Audio and visual alarm	
4.4.	Internal battery	Provided, rechargeable, can operate for at least 3 hours	
5.	Physical characteristics		
5.1.	Main unit		
5.2.	Dimensions	Portable with a recharge dock or equivalent recharging un it	
6.	Operating environment		
6.1.	Power Requirements	240V, A/c 50 Hz, Single phase, 3 Pin Plug, 3m long cord BS type with PE	
6.2.	Ambient temperature	10^{o} C to 40^{o} C	
6.3.	Relative humidity	20% to 90%	
7.	Accessories	The following accessories will be provided as startup kits.	
7.1.	SpO_2 connection cable and sensor (finger probe), reusable	2 Sets	
7.2.	Adult cuff	2 Sets	
7.3.	Peadiatric cuff	2 Sets	
7.4.	Temperature connection cable and probe (reusable)	2 Sets	
7.5.	Recording paper	2 sets of 5 rolls	
7.6.	ECG Cable	1 No.	
7.7.	Grounding lead	1 No.	
8.	Quality standards		
8.1.	Manufacturing standards	IEC 60601-1, ISO 9001, ISO 13485	
8.2.	Conformity to standards	Directive 2004 / 108 / EC, CE and FDA approved	
9.	Local back up service		
9.1.	Available	Should be available locally	
9.2.	Capacity to service equipment	Agent shall have adequate facilities, spare parts, consumables and qualified and skilled technical staff	
10.	Delivery point		
10.1.	See Schedule	For inspection and testing	
10.2.	Nil		

Item Code No.	Department	Section	Item Description
LOT 1-17	Outpatient	Triage	Vital Signs Monitor
11.	Installation and testing		
	Complete installation and setup of the machine as per manufacturer's instructions		
12.	Training		
12.1.	User Training	On site user training on operation and daily up keep	
12.2.	Maintenance training	Onsite maintenance training on preventive maintenance	

LOT 2: ONCOLOGY EQUIPMENT

LOT 2-1 CT Simulator

Item Code No.	Department	Section	Item Description
LOT 2-1	Oncology	CT Simulator Room	CT Simulator

Section A: General Requirements

These specifications describe the requirements for the supply, delivery, installation, Commisioning and acceptance testing of a CT Simulator for advanced simulation in planning conventional 3-D CRT, IMRT and VMAT treatments for the Kisii Cancer Centre Project.

Clause	Specification	Type	Yes/No	Details
1.	**Basic Requirements** *(M refers to mandatory requirement and D desired requirements)*			
1.1	Tenderers are invited to submit offers for the supply and installation of ONE complete set of Computed Tomography Simulator, its associated accessory and ancillary equipment items (hereinafter referred as the "Equipment") and related services for the Kisii Cancer Centre (KCC). The offer shall be comprehensive without hidden costs.	M		
1.2	The Equipment on offer shall be specifically designed for clinical use and shall be able to fulfil all the specific requirements of KCC.	M		
1.3	Both the hardware and software of the Equipment on offer shall have an upgradable architecture. Tenderers shall provide detailed information on the pathway of technology upgrade.	M		
1.4	The provision of all hardware and software licenses in this contract shall be valid for the entire serviceable life of the Equipment on offer.	M		
1.5	The functions/ features of the proposed model shall be ready in the market on the Tender closing date. Tenderers shall provide documentary proof to substantiate that their products are in compliance with this requirement.	M		
1.6	Itemized prices of the Equipment on offer shall be included in the Tender returns.	M		
1.7	Tenderers shall state if there is any proposal of marketing a new or more technologically advanced product other than that quoted for in the Tender within 12 months from the date of	M		

Item Code No.	Department	Section	Item Description
LOT 2-1	Oncology	CT Simulator Room	CT Simulator

Section A: General Requirements

These specifications describe the requirements for the supply, delivery, installation, Commisioning and acceptance testing of a CT Simulator for advanced simulation in planning conventional 3-D CRT, IMRT and VMAT treatments for the Kisii Cancer Centre Project.

Clause	Specification	Type	Yes/No	Details
	Tender return. Should a new or more technologically advanced product become available within these 12 months and no such statement has been made, the successful Tenderer shall replace the supplied or installed product with the new product without any charge to KCC at the discretion of KCC.			
1.8	Tenderers shall provide future information pertaining to the new features of the Equipment on offer anticipated to be available at the time of installation.	M		
1.9 1	The wining tenderers shall provide equipment layout drawings for the floor area used by the Equipment as well as the network layout drawings for areas involved.	M		
1.10	The Equipment on offer shall be fully functional according to the specifications and compatible with the building and building service provisions at KCC. The Equipment on offer shall be designed, manufactured and installed to operate with optimum performance and to the complete satisfaction of the end-user of KCC. All components, items and parts of the Equipment on offer are deemed to have been allowed for by the Tenderers in their Tender price. There shall be no missing items that prohibit full functioning of the Equipment on offer.	M		
1.11 1	The successful Tenderer shall coordinate and cooperate with the end-user and other involved parties in the delivery, storage, installation, testing and commissioning of the Equipment and all other related works until the installation is satisfactorily completed and accepted.	M		
1.12 1	Tenderers are required to state the details of all environmental conditions, service conditions, service connections and tolerance limits required for the Equipment on offer to ensure	M		

Item Code No.	Department	Section	Item Description
LOT 2-1	Oncology	CT Simulator Room	CT Simulator

Section A: General Requirements

These specifications describe the requirements for the supply, delivery, installation, Commisioning and acceptance testing of a CT Simulator for advanced simulation in planning conventional 3-D CRT, IMRT and VMAT treatments for the Kisii Cancer Centre Project.

Clause	Specification	Type	Yes/No	Details
	satisfactory operation of the equipment, e.g., the temperature, humidity, ventilation, electrical supply and power requirements, water supply and flow etc.			
1.13 1	The successful Tenderer shall also be responsible for liaising with other contractors of KCC to undertake the interfacing with KCC's plants/ systems for the works related to the installation. Tenderers can obtain the information of other contractors from KCC as and when necessary.	M		
1.14 1	Tenderers shall acquaint themselves with the conditions and provisions of the building and building services of the installation site relating to and in connection with the installation and operation of the CT Simulator. Additional cost, if any, incurred to the successful Tenderer arising from incompatibilities, inadequacies and/or other site constraints found in the installation stage shall be deemed to have been borne in the submitted Tender price.	M		
1.15 1	Tenderers shall guarantee to maintain the functionality and technical performance specifications of the Equipment on offer for at least 10 years effective from the date of acceptance under normal operation and maintenance conditions.	M		
2.	**Total Solution Requirements** Tenderers shall provide the following for KCC's consideration:			
2.1	A detailed proposal on how the CT Simulator and image workstations on offer can be connected to the Picture Archiving and Communication System (PACS), Radiology Information System (RIS) and Hospital Information System (HIS) of KCC to achieve an effective and efficient digital image/ data exchange for filmless operation.	M		

Item Code No.	Department	Section	Item Description
LOT 2-1	Oncology	CT Simulator Room	CT Simulator

Section A: General Requirements

These specifications describe the requirements for the supply, delivery, installation, Commisioning and acceptance testing of a CT Simulator for advanced simulation in planning conventional 3-D CRT, IMRT and VMAT treatments for the Kisii Cancer Centre Project.

Clause	Specification	Type	Yes/No	Details
2.2	A proposal and a policy on software and hardware upgrades of the Equipment on offer during and after the warranty period.	M		
2.3	A proposal and a policy on technology substitution to ensure that immature obsolescence can be avoided. The proposal shall include the commitments of the Tenderers to supply and install the state-of-the-art software and hardware technology on the date of delivery.	M		
2.4	A proposal on technical and specialist support on operational and functional aspects of the Equipment on offer during and after the warranty period. The proposal shall include the commitments of the Tenderers to provide the proposed support. Tenderers shall specify if local and/or overseas specialists shall provide such support. The qualifications and expertise of the specialists who provide such support shall be indicated in the Tender returns.	M		
2.5	A proposal on training of KCC staff on equipment operation and applications as well as technical training for the biomedical team of the client. The proposal shall include commitments of the Tenderers on future training provisions in the event of hardware and software upgrades.	M		
2.6	A proposal for maintenance arrangements and service support during the warranty period and a proposal for post warranty Comprehensive Maintenance Contract (CMC) for at least 5 years.	M		

- END OF SECTION A -

SECTION B: APPLICABLE DOCUMENTS AND STANDARDS

The following documents shall be applicable for these Specifications to the extent specified hereinafter:

- International Electrotechnical Commission, Medical Electrical Equipment, Part 1: General requirements for Safety, Rep. IEC 601-1, IEC, Geneva (1988)

- International Electrotechnical Commission, Medical Electrical Equipment, Part 2-29: Particular requirements for the safety of radiotherapy simulators, Rep. IEC 601-2-29, IEC, Geneva (1999)

- International Electrotechnical Commission, Radiotherapy simulators: Guidelines for functional performance characteristics, Rep. IEC 61170, IEC, Geneva (1993)

- International Electrotechnical Commission, Medical Electrical Equipment: Requirements for the safety of radiotherapy treatment planning systems, Rep. IEC 62083, IEC, Geneva (2000)

- "Setting up a Radiotherapy Programme: Clinical, Medical Physics, Radiation Protection and Safety Aspects", IAEA, Vienna (2008) (http://www-pub.iaea.org/MTCD/publications/PDF/pub1296_web.pdf)

- "Radiation Protection and Safety of Radiation Sources: International Basic Safety Standards", IAEA, Vienna (2014) (http://www-pub.iaea.org/MTCD/Publications/PDF/Pub1578_web-57265295.pdf)

- "Quality Assurance Programme for Computed Tomography: Diagnostic and Therapy Applications" IAEA Human Health Series 19, Vienna (2012) (http://www-pub.iaea.org/books/IAEABooks/8751/Quality-Assurance- Programme-for-Computed-Tomography-Diagnostic-and-Therapy-Applications)

- All the applicable International Atomic Energy Agency Safety Standards.

In the event of conflict between the documents listed above and the content of these Specifications, the content of the Specifications shall take precedence to the extent of the conflict.

SECTION C: FUNCTIONAL AND PERFORMANCE REQUIREMENTS

The System shall meet the following functional and performance requirements:

- The simulator shall be a CT scanner for radiotherapy treatment simulation.

- The CT scanner shall have a carbon fibre flat table-top with indexing facilities (for all kinds of immobilization system used in radiotherapy) identical to that of linear accelerators units at the Site.

- The CT scanner shall have conventional in-built lasers or light beams, which indicate the coincidence of the centre of rotation and scan position.

- An external radiotherapy laser system shall be incorporated to provide reference marks on patient skin or on any immobilization device. It is desirable for the external lasers to have easy alignment adjustability and to have positional stability with time.

- The entire CT Simulation system must be interconnected (all the workstations, any laser systems, printers etc.) and the CT scanner shall be capable of being networked with all radiotherapy treatment planning systems at the Site to allow transfer of CT data sets to the treatment planning systems in DICOM format.

SECTION D: MAIN CT SIMULATOR REQUIREMENTS

Section B: Main CT Simulator Requirements				
Clause	**Specification**	**Type**	**Yes/No**	**Details**
1.	**CT Scanner:**			
1.1	The CT scanner shall be a whole body spiral, multi-slice (minimum 64 slices per rotation) CT scanner;			
2.	**Gantry System**			
2.1	The continuously rotating tube-detector assembly shall be driven by slip-ring technology or equivalent.	M		
2.2	Rotational time per $360^{o} \leq 0.6$ second, preference given to one with fastest time.	M		
2.3	Diameter of gantry aperture ≥ 80 cm.	M		
2.4	Scan field of view (FOV) shall be 50 cm or larger.	M		
2.5	Extended FOV shall be minimum 70 cm or larger.	M		
2.6	Gantry tilting of at least $\pm 30^{o}$.	M		
2.7	A touch panel control unit that provides visual guidance on anatomical positioning shall be located on each side of the CT table on the front cover of the gantry housing.	M		

Section B: Main CT Simulator Requirements				
Clause	**Specification**	**Type**	**Yes/No**	**Details**
1.	**CT Scanner:**			
1.1	The CT scanner shall be a whole body spiral, multi-slice (minimum 64 slices per rotation) CT scanner;			
2.8				
2.9	A digital display of the patient couch vertical height and horizontal position shall be incorporated in the gantry.	M		
2.10	Laser lights (axial/ sagittal/ coronal) for scan plane localization with an accuracy of ± 2 mm or better.	M		
2.11	Integrated intercom system for 2-way communication between the operator at the control console and the patient inside the gantry.	M		
2.12	Electrical and/or mechanical interlocks to disable the triggering of X-ray exposure when the doors of the scan room are not properly closed.	M		
2.13	Auto-light instruction/ X-ray indication during examination for patients with impaired hearing.	M		
2.14	Tenderers are required to provide details on the effective cooling methods for dissipation of heat generated from the high-voltage generator, X-ray tube and gantry assembly.	M		
3.	**Couch:**			
3.1.	The couch top material must be carbon fibre, flat bed type, with minimum dimensions of 235 cm x 40 cm, having horizontal moving range of 170 cm or more.			
3.2.	The speed of horizontal movement must be variable with a maximum speed of at least 100 mm per second.			
3.3.	The accuracy (reproducibility) of the table top must be better than ± 0.25 mm.			
3.4.	The scannable range should be at least 120 cm.			
3.5.	It must be able to take a maximum weight of 180 kg or more without any change in stated performance specifications (such as the positioning accuracy);			

Section B: Main CT Simulator Requirements				
Clause	**Specification**	**Type**	**Yes/No**	**Details**
1.	**CT Scanner:**			
1.1	The CT scanner shall be a whole body spiral, multi-slice (minimum 64 slices per rotation) CT scanner;			
4.	**Data Acquisition System**			
4.1.	Stable, low drift with high dose efficiency and good linearity.	M		
4.2.	Decay time for detector scintillator ≤ 3 μs.	M		
4.2.1.	Preference will be given to the shortest decay time. Tenderers shall quote the value for reference.	D		
4.3.	Afterglow ≤ 0.1 % after 3 ms.	M		
4.3.1.	Preference will be given to the lowest afterglow after 3 ms. Tenderers shall quote the value for reference.	D		
4.4.	X-ray photon absorption efficiency ≥ 95 % at 120 kVp.	M		
4.5.	Detector geometric efficiency along z-axis ≥ 70 %.	M		
4.6.	Automatic calibration of detectors. Tenderers shall state the method of calibration employed.	M		
4.7.	Number of detector rows ≥ 16.	M		
4.7.1.	Preference will be given to a detector with a maximum number of detector rows. Tenderers shall quote the maximum number of detector rows for reference.	D		
4.8.	Number of acquisition channels ≥ 16.	M		
4.8.1.	Preference will be given to a detector with a maximum number of acquisition channels. Tenderers shall quote the maximum number of acquisition channels for reference.	D		
4.8.2.	Number of slices acquired simultaneously per gantry rotation shall be at least 16.	M		
4.8.3.	Preference will be given to a maximum number of slices acquired simultaneously per gantry rotation. Tenderers shall quote the maximum number of slices for reference.	D		
4.8.4.	Preference will be given to a maximum number of slices reconstructed per gantry rotation. Tenderers shall quote the maximum number of slices for reference.	D		

Section B: Main CT Simulator Requirements				
Clause	**Specification**	**Type**	**Yes/No**	**Details**
1.	**CT Scanner:**			
1.1	The CT scanner shall be a whole body spiral, multi-slice (minimum 64 slices per rotation) CT scanner;			
4.9.	The total number of detector elements shall be ≥ 19,500.	M		
4.10.	The minimum slice thickness for data acquisition shall be ≤0.75 mm.	M		
4.10.1.	Preference will be given to a minimum slice thickness ≤ 0.6mm.	D		
4.11.	The maximum detector coverage at the isocenter along the z-direction shall be ≥ 19 mm.	M		
4.11.1.	Preference will be given to a maximum detector coverage. Tenderers shall quote the maximum detector coverage for reference.	D		
4.12.	The maximum detector coverage at the isocenter along the z-direction for the thinnest slice available shall be ≥ 10 mm.	M		
4.12.1.	Preference will be given to a maximum detector coverage for the thinnest slice available. Tenderers shall quote the maximum detector coverage for the thinnest slice available for reference.	D		
4.13.	Preference will be given to a detector that integrates the electronic components (microchips, conductors etc.) directly at the photo diode to minimize electronic noise and improve the signal-to-noise ratio (SNR) for optimized dose efficiency and image quality.	D		
	X-ray Generator			
4.14.	Three-phase, high frequency inverter system with microprocessor control.	M		
4.15.	kVp range: from 80 kVp to 140 kVp in at least three user-selectable steps.	M		
4.16.	The mA range from 30 mA to 400 mA, with step size of 5 mA or both better.			
4.17.	Peak anode heat dissipation rate of at least 800 kHU / min or better.			
4.18.	Rated power output ≥ 50 kW.	M		
4.19.	Incorporation of protection circuits for the safe operation of the X-ray generator.	M		
5.	**X-ray Tube**			

Section B: Main CT Simulator Requirements				
Clause	**Specification**	**Type**	**Yes/No**	**Details**
1.	**CT Scanner:**			
1.1	The CT scanner shall be a whole body spiral, multi-slice (minimum 64 slices per rotation) CT scanner;			
5.1.	The X-ray tube shall be of dual focus, heavy duty and durable type. Please state the size of the focal spots;	M		
5.2.	Small focal spot size (IEC 60336/2020) shall be ≤ 0.5 mm^2.	M		
5.3.	Large focal spot size (IEC 60336/2020) shall be ≤ 1.4 mm^2.	M		
5.4.	Effective anode heat storage capacity ≥ 7.5 MHU.	M		
5.5.	Preference will be given to the offer with the highest effective anode heat storage capacity. Tenderers shall quote the value for reference.	D		
5.6.	Incorporated with a heat overload protection system for the X-ray tube.	M		
5.7.	The radiation leakage of the X-ray tube housing shall comply with the current standard of IAEA/KENRA	M		
6.	**Patient Supporting System**			
6.1.	A motorized carbon fiber flat couch with indexed immobilization features shall be provided to mimic the treatment couch of the radiation treatment machines used in KCC. Tenderers shall provide detailed listing of integrated immobilization accessories that will be delivered with the system.	M		
6.2.	The flat couch shall be designed in such a way that it allows an easy and fast attachment of standard treatment immobilization casts, head rests, head rings of the stereotactic frames, and other accessories onto the CT couch during CT scanning in a similar way as that on the treatment couch during radiotherapy treatment.	M		
6.3.	The flat couch shall include an indexing system as used on the treatment couch of the radiation treatment machines of KCC.	M		
6.4.	Minimum table height ≤ 580 mm (measured from the side edge of the couch to the finished floor level).	M		

Section B: Main CT Simulator Requirements				
Clause	**Specification**	**Type**	**Yes/No**	**Details**
1.	**CT Scanner:**			
1.1	The CT scanner shall be a whole body spiral, multi-slice (minimum 64 slices per rotation) CT scanner;			
6.5.	Table vertical travel speed shall be variable with a maximum speed ≥ 30 mm/second.	M		
6.6.	Longitudinal scan range of the table shall be 170 cm or more.	M		
6.7.	Maximum table longitudinal travel speed shall be ≥ 100 mm/second.	M		
6.8.	Accuracy of the table longitudinal positioning shall be ± 0.25 mm or better at a patient load of 180 kg.	M		
6.9.	Maximum patient load for scanning shall be ≥ 200 kg.	M		
6.10.	The table horizontal and vertical motions shall be independent.	M		
6.11.	Foot pedals controlling vertical table movement on either side of the table.	M		
6.12.	Manual override of motorized table movement.	M		
6.13.	Remote control of table movement at the control console.	M		
6.14.	The performance and accuracy of the CT table motions shall meet the recommendations of the Report of the AAPM Radiation Therapy Committee Task Group No. 66 (TG-66). Tenderers shall provide full details of the compliance.	M		
6.15.	Provision of an intravenous (IV) pole integrable with the CT table.	M		
6.16.	Provision of table side rails for attaching additional accessories.	M		
7.	**Operation and Control Console**			
7.1.	The operation and control console on offer shall be capable of executing scanning procedure, controlling all examination functions, performing image reconstruction and data processing.	M		
7.2.	The image reconstruction and analysis functions can be performed in the background while scanning.	M		
7.3.	**Hardware requirement:**	M		
7.3.1.	Provision of a keyboard, bar code scanner, mouse or trackball as input devices.	M		

Section B: Main CT Simulator Requirements				
Clause	**Specification**	**Type**	**Yes/No**	**Details**
1.	**CT Scanner:**			
1.1	The CT scanner shall be a whole body spiral, multi-slice (minimum 64 slices per rotation) CT scanner;			
7.3.2.	Two LCD colour monitors with screen size not less than 19" diagonally, resolution not less than 1280 × 1024.	M		
7.3.3.	The host computer CPU shall be of the latest model available in the market. Tenderer shall quote the type and the speed of the host CPU on offer.	M		
7.3.4.	RAM size for system operations shall be at least 16.0 GB.	M		
7.3.5.	Tenderers shall offer a hard disk of the highest capacity compatible with the scanner for raw data and image data storage but not less than 1TB.	M		
7.3.6.	Hard disk capacity for image data storage shall be 1TB or higher.	M		
7.3.7.	Tenderers shall quote the number of uncompressed 512×512 images that can be stored at their storage capacity provided. Not to be less than 200,000. The largest capacity available in the market shall be offered by the Tenderers.	M		
7.3.8.	Provision of one number of DVD/CD-R drive and/or MOD drive for reading and writing of DICOM image data and 3D objects. 200 recording media compatible to either device on offer shall be provided.	M		
7.3.9.	Uninterrupted Power Supply (UPS) for data protection of not less than 30 minutes capacity in the event of power failure shall be provided for the host computer.	M		
7.3.10	The host computer shall be capable of multi-tasking all scanning control, system operation and image archiving.	M		
7.3.11	Reconstruction matrix shall be 512×512 or larger.	M		
7.3.12	The system offer shall be capable of off-centred reconstruction.	M		
7.3.13	The speed of image reconstruction with full image quality (512×512 matrix) shall be 16 images/second or faster. The faster the better	M		

Section B: Main CT Simulator Requirements				
Clause	**Specification**	**Type**	**Yes/No**	**Details**
1.	**CT Scanner:**			
1.1	The CT scanner shall be a whole body spiral, multi-slice (minimum 64 slices per rotation) CT scanner;			
7.3.14	Interpolation technique shall be incorporated. Tenderers shall specify the type of interpolation used.	M		
7.3.15	At least three different reconstruction algorithms on raw data shall be incorporated. Tenderers shall provide details of the algorithms.	M		
7.3.16	Preset scan protocols for different anatomical regions.	M		
7.3.17	Not less than 90 user-defined examination protocols for different anatomical regions covering the whole body.	M		
7.3.18	Multiple user-recordable auto-voices for patient instructions during scanning.	M		
7.3.19	Display of CTDI and DLP values on the operating console.	M		
7.3.20	Auto-viewing of acquired images.	M		
7.3.21	Auto-transfer of acquired images to the image servers in RT Centre of KCC.	M		
7.3.22	Auto-transferring for 2D post-processing.	M		
7.3.23	Auto-transferring for 3D reconstruction.	M		
7.3.24	Capable of fetching patient information from Radiology Information System (RIS) via DICOM modality worklist.	M		
7.3.25	Data link directly with the CT image processing consoles or equivalent and all image post-processing workstations on offer.	M		
7.3.26	Provision of interfacing with one contrast medium injector with initialization of injection at the operating console.	M		
8.	**CT Scanner Performance**			
8.1.	Dedicated scan protocols for infants and children shall be incorporated.	M		
8.2.	An automatic on-line exposure control shall be provided to modulate the tube current during a scanning procedure for reducing the overall dose to patients. Tenderers shall provide details of this feature.	M		

Section B: Main CT Simulator Requirements				
Clause	**Specification**	**Type**	**Yes/No**	**Details**
1.	**CT Scanner:**			
1.1	The CT scanner shall be a whole body spiral, multi-slice (minimum 64 slices per rotation) CT scanner;			
8.3.	Tube current adjustment according to the patient size.	M		
8.4.	Tube current modulation along the z-axis.	M		
8.5.	Angular tube current modulation.	M		
8.6.	Tube current modulation along z-axis and angular modulation shall be available concurrently.	M		
8.7.	Provision of automatic kVp and scan parameters selection depending on the selected type of examination.	D		
8.8.	The CTDIvol at 120 kVp for 32 cm body phantom shall be 9.5 mGy/100 mAs or lower.	M		
8.9.	The CTDIvol at 120 kVp for 16 cm head phantom shall be 16 mGy/100 mAs or lower.	M		
8.10.	The system shall provide warning messages before the start of a scan to alert users to optimize the scanning technique if a set of prescribed scan sequences exceeds the maximum tube loading.	M		
8.11.	Synchronized scanning and contrast injection between the CT scanner and injector shall be available.	D		
8.12.	The system shall support multiple volume scans to be programmed in a single session.	M		
8.13.	**Scout Scan (Topogram) Mode**			
8.14.	Selection of at least 2 scans perspectives including PA and lateral.	M		
8.15.	Scan length at the maximum FOV ≥ 1,750 mm.	M		
8.16.	Maximum scan speed ≥ 100 mm/sec.	M		
8.17.	Automatic positioning of the patient to the selected slice location from the quick overview scans with an accuracy of ±1 mm or better.	M		
1.1.	A display of cut lines on the scout view in relation to the position of the planned slices.	M		
1.2.	Capable of manual interruption of the scout scan once desired anatomy has been covered.	M		

Section B: Main CT Simulator Requirements				
Clause	**Specification**	**Type**	**Yes/No**	**Details**
1.	**CT Scanner:**			
1.1	The CT scanner shall be a whole body spiral, multi-slice (minimum 64 slices per rotation) CT scanner;			
1.3.	**Axial Scan Mode**			
1.4.	Maximum scanning speed ≤ 0.6 second per rotation. The faster the speed the better.	M		
1.5.	Scan length at the maximum FOV ≥ 1,600 mm. Please state the max scan length at Max FOV.	M		
1.6.	Slice thickness shall be selectable and executable from ≤ 0.75 mm (FWHM) to ≥ 10 mm (FWHM) with not less than 3 intermediate selections in between.	M		
1.7.	Simultaneous scanning, reconstruction and display of images shall be supported.	M		
1.8.	The fastest scan cycle time (scan, reconstruction and display) at 512×512 matrix ≤ 2 seconds.	M		
1.9.	**Dynamic Scan Mode:**			
1.10.	Maximum scanning speed ≤ 0.5 second per rotation.	M		
1.11.	Maximum duration of one single acquisition ≥ 60 seconds.	M		
1.12.	Multiple series of scans can be programmed into a single run with pauses in between.	M		
1.13.	Minimum pause interval between scans of multiple series ≤ 5 seconds.	M		
1.14.	Spiral scan triggered by the arrival of contrast medium. Tenderers shall provide details on the triggering mechanism.	M		
1.15.	One or more regions of interest (ROI) can be used for scan triggering by the arrival of contrast medium.	M		
1.16.	Interval of CT number measurement for scan triggering ≤ 0.5 second.	M		
1.17.	Allow manual triggering of continuous volume spiral scan by monitoring CT number against time.	M		
1.18.	**Spiral (Helical) Scan Mode**			
1.19.	Maximum scanning speed ≤ 0.5 second per rotation.	M		
1.20.	Maximum duration of one single acquisition ≥ 100 seconds.	M		

Section B: Main CT Simulator Requirements				
Clause	**Specification**	**Type**	**Yes/No**	**Details**
1.	**CT Scanner:**			
1.1	The CT scanner shall be a whole body spiral, multi-slice (minimum 64 slices per rotation) CT scanner;			
1.21.	Maximum length of a single-spiral scan without cooling delay ≥ 1,500 mm.	M		
1.21.1.	Preference will be given to a maximum scan length ≥ 1,900 mm.	D		
1.22.	Maximum scanning speed ≥ 70 mm/second.	M		
1.23.	Minimum delay for X-ray start time ≤ 3 seconds.	M		
1.24.	Multiple volume scans can be programmed into a single run with breathing pauses in between.	M		
1.25.	Minimum inter-scan delay ≤ 5 seconds.	M		
1.26.	Maximum number of programmable multiple volume scan groups ≥ 6.	M		
1.27.	Slice thickness selection shall be independent of pitch value.	M		
1.28.	Variable pitch factor shall be selectable:	M		
1.28.1.	Pitch factors shall be selectable from a range of 0.625 to 1.5 or wider.	M		
1.28.2. **1**	Achievable image quality shall be the same for all volume pitch settings. Tenderers shall state the recommended pitch for optimal image quality.	M		
1.29.	Capable of multi-directional volume scan groups.	M		
1.30.	Reconstructed slice thickness shall be selectable from ≤ 0.65 mm to ≥ 7.5 mm with intermediate selections in between.	M		
1.31.	Prospective and retrospective reconstruction at any table position in 0.1 mm increment.	M		
1.32.	Prospective overlapping and contiguous reconstruction across multiple continuous scan boundaries.	M		
1.33.	Automatic modification of the shape of x-ray beam to block unused portion of x-ray at the beginning and end of a spiral scan to minimize unnecessary radiation.	D		
2.	**Respiratory Gating Scan Mode**			
2.1.	A full package of respiratory gating system (Varian Respiration Gating for Scanners	M		

Section B: Main CT Simulator Requirements				
Clause	**Specification**	**Type**	**Yes/No**	**Details**
1.	**CT Scanner:**			
1.1	The CT scanner shall be a whole body spiral, multi-slice (minimum 64 slices per rotation) CT scanner;			
	(RGSC) or Elekta) including software and hardware that is compatible with the CT Simulator on offer shall be provided.			
2.2.	All relevant acquisition and analysis software for accounting the effect of respiratory motion of the patient during a scan shall be included.	M		
2.3.	Maximum continuous scan time allowed shall be 100 seconds or longer.	M		
2.3.1.	Preference will be given to the offer with maximum continuous scan time of 200 seconds or longer.	D		
2.4.	The system shall automatically calculate optimal scan parameters for 4D CT after the user has entered the estimated respiratory rate of the patients.	D		
2.5.	Provision of a dedicated scan protocol for slow breathers with respiratory rate ≤ 6 bpm. The scan range for this scan protocol shall be longer than 34 cm. Tenderers shall provide information to substantiate this feature.	D		
2.6.	Image representations in average, minimum and maximum intensity projection formats.	M		
2.7.	Image analysis and processing in axial, sagittal and coronal views.	M		
2.8.	Multi-phase reconstruction.	M		
2.9.	Prospective respiratory gating: Allows CT acquisition to be synchronized with an amplitude or phase defined trigger signal from the respiratory curve in a mode of either free breathing or deep inspiration breath hold.	M		
2.10.	Retrospective respiratory gating: 4D images acquisition with the respiratory waveform tracked and recorded with an external respiratory gating system.	M		
2.11.	Provide spiral (helical) mode for retrospective 4D CT study.	M		
2.12.	Provide hardware and software interface for connection with the respiratory gating system provided.	M		

Section B: Main CT Simulator Requirements				
Clause	**Specification**	**Type**	**Yes/No**	**Details**
1.	**CT Scanner:**			
1.1	The CT scanner shall be a whole body spiral, multi-slice (minimum 64 slices per rotation) CT scanner;			
2.13.	Online display and record of the respiratory curve on the control console.	M		
2.14.	A wireless visual coaching device shall be provided and installed for coaching the patients in various respiratory-gated CT image acquisitions.	M		
2.15.	The successful Tenderer shall confirm with KCC for the model and technical details of the respiratory gating system before the installation of the system on the CT Simulator offered.	M		
3.	**Image Quality**			
3.1.	Low contrast detectability shall be better than 5.0 mm at 0.3 % contrast in a 10 mm slice taken with a CATPHAN phantom (20 cm) or equivalent. Tenderers shall state the acquisition parameters at which the detectability is measured.	M		
3.2.	Maximum high contrast spatial resolution shall be equal to or better than 14 lp/cm at 0 % MTF or equivalent. Tenderers shall state the acquisition parameters at which the spatial resolution is measured.	M		
3.2.1.	Preference will be given to a maximum high contrast spatial resolution ≥ 17.4 lp/cm at 0 % MTF.	D		
3.3.	Cross field uniformity (maximum deviation in a 20 cm water phantom) shall be +/- 5 HU or better.	M		
3.4.	Image reconstruction matrix shall be 512 × 512 or larger.	M		
3.5.	Provision of latest iterative reconstruction algorithms or modified filtered back projection process to reduce noise components for better image quality and radiation dose reduction.	M		
4.	**Image Presentation**			
4.1.	Display of scan date, time and patient demographic data automatically on the screen of the control console and film.	M		

Section B: Main CT Simulator Requirements				
Clause	**Specification**	**Type**	**Yes/No**	**Details**
1.	**CT Scanner:**			
1.1	The CT scanner shall be a whole body spiral, multi-slice (minimum 64 slices per rotation) CT scanner;			
4.2.	Display matrix ≥ 1024 × 1024.	M		
4.3.	Image display by number or by anatomical location.	M		
4.4.	Visualization filter selection ≥ 6.	M		
4.5.	Multiple image display with user-selectable image layouts.	M		
4.6.	Image rotation and flip.	M		
4.7.	Magnification or zoom capability.	M		
4.8.	Display of slice lines representing the slice positions on the corresponding scout view.	M		
4.9.	Reference image display for localization of the scan plan. Simultaneous display of axial CT image and corresponding quick overview image on a reduced scale.	M		
4.10.	Continuous window/ level adjustment, not less than 3 presets for different predetermined regions.	M		
4.11.	Dual-window display.	M		
4.12.	CT number display range: -1000 to +3000 Hounsfield Units (HU) or better.	M		
4.13.	Graphic and text annotations.	M		
4.14.	Cine display for not less than 500 images per series at 512 × 512 matrix.	M		
4.15.	Cine display speed control with not less than 10 frames/second at 512 × 512 matrix.	M		
5.	**Image Analysis**			
5.1.	Display of grid coordinates for spatial reference.	M		
5.2.	Selection of region of interest (ROI) for:	M		
5.2.1.	Area calculation.	M		
5.2.2.	Volume calculation.	M		
5.2.3.	Mean value, standard deviation, pixel number, minimum and maximum CT numbers.	M		
5.2.4.	Histograms.	M		

Section B: Main CT Simulator Requirements				
Clause	**Specification**	**Type**	**Yes/No**	**Details**
1.	**CT Scanner:**			
1.1	The CT scanner shall be a whole body spiral, multi-slice (minimum 64 slices per rotation) CT scanner;			
5.3.	Display of one to three ROIs or more on a single image.	M		
5.4.	Measurement of CT number at 5 × 5 pixels or less.	M		
5.5.	At least 3 measurements of distance, angle, and area can be displayed at one time.	M		
5.6.	Different cursor types available: cross-hair, box, circle etc.	M		
5.7.	Plotting of variation of CT numbers across an image.	M		
5.8.	Plotting of variation of CT numbers at an selected ROI across time for sequential images.	M		
5.9.	Image annotation and labelling.	M		
6.	**Image Processing**			
6.1.	Concurrent scanning, image reconstruction, filming and archiving.	M		
6.2.	Selectable priority queue for prospective and retrospective image reconstruction from raw data sets.	M		
6.3.	Display field of view shall be variable in size and centre.	M		
6.4.	Provision of a reconstruction algorithm to reconstruct image by using a truncated projection dataset.	M		
6.5.	Provision of software for reduction of volume artefacts, motion artefacts to increase image quality.	M		
6.6.	Retrospective image reconstruction using different image reconstruction algorithms and visualization filters.	M		
6.7.	Real-time multi-planar reconstruction along different axis.	M		
6.8.	Reconstruction along different axis shall be isotropic in size.	M		
6.9.	Provision of algorithms for surface and volume rendering.	M		
6.10.	Provision of a software package for the cerebral and body perfusion evaluation following contrast bolus injection.	M		

Section B: Main CT Simulator Requirements				
Clause	**Specification**	**Type**	**Yes/No**	**Details**
1.	**CT Scanner:**			
1.1	The CT scanner shall be a whole body spiral, multi-slice (minimum 64 slices per rotation) CT scanner;			
6.11.	Provision of a reconstruction algorithm in which calculated single energy CT projection and image data is reconstructed into CT images that contain relative electron density values independent of the kV used.	O		
6.12.	Provision of metal artifact reduction functions to reduce streak artifacts in the images caused by large, high density metal objects such as prosthetic hips and surgical screws.	M		
6.13.	The metal artifact reduction algorithm shall base on single energy adaptive raw data mixing or equivalent and shall not require special acquisition protocols.	M		
6.14.	The metal artifact reduction functions shall be applicable in retrospective reconstruction of image data associated with metal artefacts.	M		
6.15.	Preference will be given to the provision of dedicated algorithms for precise metal artifact reduction for different implants such as hip implants, dental filling, neuro coils, thoracic coils, pacemakers, etc.	D		
6.16.	Preference will be given to metal artifact reduction functions that can be used in combination with iterative reconstruction and extended FOV.	D		
7.	**Filming and Archiving**			
7.1.	Drag and drop filming.	M		
7.2.	One button print image series.	M		
7.3.	One button print image page.	M		
7.4.	Multi-image formats.	M		
7.5.	DICOM 3.0 basic grayscale print service class.	M		
7.6.	DICOM print to DICOM-compliant printer.	M		
7.7.	Image storage and retrieval in DICOM 3.0 format using DVD/CD media with a DICOM viewer.	M		

Section B: Main CT Simulator Requirements				
Clause	**Specification**	**Type**	**Yes/No**	**Details**
1.	**CT Scanner:**			
1.1	The CT scanner shall be a whole body spiral, multi-slice (minimum 64 slices per rotation) CT scanner;			
8.	**Multi-format Dry Imager**			
8.1.	ONE multi-format dry imager with built-in automatic film processor using dry processing technology capable of accepting digital image data.	M		
8.2.	DICOM 3.0 compatible, Print SCP, capable of printing images from the CT Simulator on offer and other imaging modalities in KCC.	M		
8.3.	DICOM 3.0 conformance statement of the imager shall be provided.	M		
8.4.	The successful Tenderer shall undertake to supply and install all the interfaces, cabling, and components essential for the full operation of the imager.	M		
8.5.	The warm up time for the dry imager and for the first printing of a 14”×17” dry film shall be less than 15 minutes.	M		
8.6.	Capable of printing not less than two formats on one film.	M		
8.7.	The imager shall have at least one film tray online, with an additional or swappable second film tray of different film size.	M		
8.8.	Capacity of each tray shall be more than 100 sheets of films.	M		
8.9.	Each film tray can accept different film sizes, which is user selectable. Changing from one film size to another shall not require special tools.	M		
8.10.	Loading and unloading films from the tray can be done under daylight.	M		
8.11.	Multiple film sizes: 14”×17”, 11”×14” and 8”×10”.	M		
8.12.	Spatial resolution: 250 dpi or higher.	M		
8.13.	Grey scale: 12 bits or better.	M		
8.14.	Maximum optical density shall be 3.0 or higher.	M		
8.15.	Output rate: ≥ 50 films per hour for 14”×17” film size and ≥ 70 films per hour for	M		

Section B: Main CT Simulator Requirements				
Clause	**Specification**	**Type**	**Yes/No**	**Details**
1.	**CT Scanner:**			
1.1	The CT scanner shall be a whole body spiral, multi-slice (minimum 64 slices per rotation) CT scanner;			
	8"×10" film size at 250 dpi or higher resolution.			
8.16.	Imager calibration shall not be required on each imager start- up. The calibration is done only as required or at user desired time points.	M		
8.17.	Image memory: at least 256 MB.	M		
8.18.	Density and contrast setting shall be adjustable.	M		
8.19.	Built-in densitometer for film quality control.	M		
8.20.	The dry imager on offer shall have at least one network interface (Ethernet) for DICOM print.	M		
8.21.	Five boxes (at least 100 sheets/box) of dry film shall be provided, film size(s) to be determined by the end-user.	M		
9.	**Thin Client Post Processing Workstations**			
9.1.	Provision of a server-client post-processing system for the CT Simulator. The successful Tenderer shall provide and install one set of server and two sets of independent client workstations for 4D data review, virtual simulation and radiotherapy planning purposes at KCC. The successful Tenderer must also provide cable connections and installation of the server and client workstations such that all the client workstations can communicate with the CT Simulator console. The image processing features for the workstations shall be similar to that of the console workstation as stated in Clause 9. The thin-client solution for the CT Simulator shall provide the following features:	M		
9.1.1.	Advanced 3D post-processing system that supports server- client architecture shall be provided.	M		
9.1.2.	The system should be based on Oracle, SQL or other equivalent database.	M		

Section B: Main CT Simulator Requirements				
Clause	**Specification**	**Type**	**Yes/No**	**Details**
1.	**CT Scanner:**			
1.1	The CT scanner shall be a whole body spiral, multi-slice (minimum 64 slices per rotation) CT scanner;			
9.1.3.	Client operating system should be compatible with Windows 10 or higher.	M		
9.1.4.	Load balancing and auto-bandwidth compression.	M		
9.1.5.	Provision of anti-virus, anti-spyware and anti-hacking solution. The solution provided shall not affect the normal performance of the CT Simulator on offer.	M		
9.1.6.	Provision of at least TWO concurrent user licenses with a maximum number of slices for concurrent rendering ≥ 24,000.	M		
9.2.	**Hardware requirements for the server:**	M		
9.2.1.	The server shall have load balancing capability.	M		
9.2.2.	The server shall be capable of doing auto compression of images depending on available bandwidth.	M		
9.2.3.	**Processor**: 2 × Intel 8 Core or higher.	M		
9.2.4.	RAM size for system operation ≥ 64 GB.	M		
9.2.5.	RAID with Flash-based Cache of 1 GB or better.	M		
9.2.6.	Graphical Processing Unit: 2 × NVIDIA GPU with a total of 16 GB internal memory on-board.	M		
9.2.7.	Capacity for image data storage ≥ 1 TB.	M		
9.2.8.	The number of uncompressed 512 × 512 images that can be stored at the storage capacity ≥ 1,000,000.	M		
9.2.9.	Operating System: Windows Server 2008 R2, 64 Bit - Enterprise Edition or higher.	M		
9.2.10.	Keyboard, mouse and administrator monitor.	M		
9.2.11.	One set of DVD/CD-R drive for reading and writing of DICOM image data and 3D objects. The DVD/CD-R drive shall meet the following requirements: a. DICOM 3.0 standard b. Support DICOM 3.0 point to point send, receive and pull/query protocol	M		

Section B: Main CT Simulator Requirements				
Clause	**Specification**	**Type**	**Yes/No**	**Details**
1.	**CT Scanner:**			
1.1	The CT scanner shall be a whole body spiral, multi-slice (minimum 64 slices per rotation) CT scanner;			
9.2.12.	Uninterrupted Power Supply (UPS) of appropriate kVA with at least 30 minutes backup for the server shall be provided.	M		
9.3.	**Requirements for the client workstations:**	M		
9.3.1.	The successful Tenderer shall provide two sets of client workstations each with the following hardware requirements:	M		
9.3.2.	CPU: 64 bit dual processor (Intel Xeon or equivalent).	M		
9.3.3.	Processor frequency: ≥ 2.5 GHz.	M		
9.3.4.	OS: Windows 8, 64 bit Edition or equivalent or higher	M		
9.3.5.	RAM: ≥ 16 GB.	M		
9.3.6.	Dual image monitors, keyboard, mouse/trackball and hard disk.	M		
9.3.7.	The monitors shall be of medical grade LCD colour monitor with the following features:	M		
9.3.8.	Screen size not less than 21-Inch in diagonal.	M		
9.3.9.	Resolution not less than 1600 × 1200 matrix landscape type or 1200 × 1600 matrix portrait type, adjustable by rotation.	M		
9.3.10.	Viewing angle > 178^{o} for both horizontal and vertical.	M		
9.3.11.	Brightness > 420 cd/m^2.	M		
9.3.12.	Contrast ratio > 1500:1.	M		
9.3.13.	All associated software and hardware supporting dual monitor display shall be provided.	M		
9.3.14.	The workstation shall each be provided with DVD/CD recording device with the latest and fastest speed in the market, or other optical disc drive appropriate for the reading and saving of images.	M		
9.3.15.	Not less than 50 recording media compatible with the device on offer shall be provided for each workstation.	M		
9.3.16.	A portable image viewing application software shall be included in the DVD/CD	M		

Section B: Main CT Simulator Requirements				
Clause	**Specification**	**Type**	**Yes/No**	**Details**
1.	**CT Scanner:**			
1.1	The CT scanner shall be a whole body spiral, multi-slice (minimum 64 slices per rotation) CT scanner;			
	so that exported DICOM images could be viewed on a MS Windows-based personal computer.			
9.4.	**Network functions:**			
9.4.1.	The successful Tenderer shall undertake to install and connect the server and client workstations in such a way that it is fully communicable in both ways with the local RT network, the Radiology RIS & PACS and HMIS	M		
9.4.2.	The workstations shall be able to retrieve and send images from and to the local RT network and the Radiology RIS & PACS through network.	M		
9.4.3.	The workstations on offer shall be fully DICOM compatible and shall include the DICOM Viewer software.	M		
9.4.4.	Image transfer protocols shall support DICOM 3.0 standard.	M		
9.4.5.	Support DICOM worklist display and management.	M		
9.5.	**Each client workstation shall provide standard image display functions including:**	M		
9.5.1.	Multiple image display with user selectable image layouts.	M		
9.5.2.	Windowing and leveling/ Zoom/ Black and white inversion.	M		
9.5.3.	Calibration and measurement of lengths and angles.	M		
9.5.4.	CT ROI measurement (Hounsfield Units).	M		
9.5.5.	Annotation.	M		
9.5.6.	Magnification.	M		
9.5.7.	Cine loop display of dynamic study.	M		
9.5.8.	3D reconstruction software with the following features: a. Shaded Surface Display (SSD) / Volume Rendering	M		

Section B: Main CT Simulator Requirements				
Clause	**Specification**	**Type**	**Yes/No**	**Details**
1.	**CT Scanner:**			
1.1	The CT scanner shall be a whole body spiral, multi-slice (minimum 64 slices per rotation) CT scanner;			
	b. Slicing of 3D and slice plane mapping c. 3D object real-time rotation d. Transparency and colouring of 3D display e. Time varying display of 3D image f. Editing functions including contouring, threshold and volume growing, etc. g. Disarticulation and bone density structure removal from displayed images h. Navigation mode/ Flythrough i. Preset protocol for applications			
10.	**Advanced Clinical Applications on Client Workstations**			
10.1.	4D gating application with the following features: (Clauses 20.1.1 to 20.1.4 shall be integrable to the operating console as well where applicable)	M		
10.1.1.	Able to read the respiratory waveform file form an external respiratory gating system.	M		
10.1.2.	Automatic sorting and saving of the CT image data into multiple bins. The application should be able to do binning in 10 phases or 20 phases.	M		
10.1.3.	Creation of average, maximum and minimum intensity image projection of any selected phases.	M		
10.1.4.	The application shall be able to examine for the integrity of the motion profile generated by the respiratory gating device.	M		
10.1.5.	Display of complete 4D volumes in sagittal, coronal, and axial planes for quick respiratory motion evaluation.	M		
10.1.6.	Display of movie-looped view for assessment of tumor motion.	M		
10.1.7.	Side-by-side visualization of time resolved intensity projection, average CT and respiratory cine loop of the same patient. Contouring performed on any image is reflected on all other images.	D		

Section B: Main CT Simulator Requirements				
Clause	**Specification**	**Type**	**Yes/No**	**Details**
1.	**CT Scanner:**			
1.1	The CT scanner shall be a whole body spiral, multi-slice (minimum 64 slices per rotation) CT scanner;			
10.1.8.	Able to plot the amplitudes of tumour movement against respiratory phase in three directions: up-down, forward- backward, left-right as tumour movement curves. Allow easy identification of the phase with minimal tumour movement.	D		
10.1.9.	Provide tools for motion assessment.	M		
10.2.	**Multi-modality review and contouring functions:**	M		
10.2.1.	Synchronous viewing of multiple series of different modalities on one patient for comparison.	M		
10.2.2.	Support image types for comparison: 3D/4D CT, PET, PET-CT, MRI, Cone Beam CT and SPECT.	M		
10.2.3.	Up to 4 series can be compared side-by-side.	M		
10.2.4.	Automatic co-registration among series based on anatomical landmarks.	M		
10.2.5.	Skin and threshold-based segmentation.	M		
10.2.6.	Provide contouring tools (freehand/ brush/ nudge).	M		
10.2.7.	Contour on any orientation including oblique.	M		
10.2.8.	Parallel contouring: contouring performed on any image is reflected on all other related images.	M		
10.3.	**Advanced contouring functions: (Optional)**	O		
10.3.1.	Auto-Contouring for organs-at-risk: brain, heart, lungs, liver, kidneys and femoral heads.	O		
10.3.2.	User configurable organ templates.	O		
10.3.3.	Contour copy and warping between image series.	O		
10.4.	**Deformable registration**	O		
10.4.1.	Deformable registration of image series (multi-modality image support including CT, MR, PET-CT images). Support region-of-	O		

Section B: Main CT Simulator Requirements				
Clause	**Specification**	**Type**	**Yes/No**	**Details**
1.	**CT Scanner:**			
1.1	The CT scanner shall be a whole body spiral, multi-slice (minimum 64 slices per rotation) CT scanner;			
	interest based registration and multiple registrations per image pair.			
10.4.2.	Saving of registered/ aligned/ deformed images as a new image series.	O		
10.4.3.	Provide registration quality checking tool such as spyglass, deformation vector map, deformation magnitude color map, etc.	O		
10.5.	Dose display functions:	O		
10.5.1.	Display dose volumes overlaid on any supported image type and allow side-by-side comparison.	O		
10.5.2.	Display related dose volume histograms.	O		
10.5.3.	Employ deformable registration between current and prior dose volumes and images for dose assessment.	O		
10.6.	**Virtual simulation application:**	M		
10.6.1.	The application shall be able to automatically import scan datasets after scanner acquisition for efficient patient simulation workflow.	M		
10.6.2.	Able to read source to skin distance.	M		
10.6.3.	Absolute localization of treatment isocenter.	M		
10.6.4.	Generation of Digitally Reconstructed Radiographs (DRR) images.	M		
10.6.5.	Visualization and analysis of treatment beam geometry and beam modifier including multi-leaf collimator and blocks.	M		
10.6.6.	The virtual simulation application shall support DICOM-RT objects including RT structure set, RT plan and RT image.	M		
10.6.7.	Reference point/ isocenter management.	M		
10.6.8.	Direct laser steering for supported laser systems.	M		
10.6.9.	DICOM data exchange with supported laser systems.	M		
10.6.10.	Virtual laser view for display of laser lines on 3D patient model based on volume rendering technique.	D		

Section B: Main CT Simulator Requirements				
Clause	**Specification**	**Type**	**Yes/No**	**Details**
1.	**CT Scanner:**			
1.1	The CT scanner shall be a whole body spiral, multi-slice (minimum 64 slices per rotation) CT scanner;			
10.6.11.	The virtual simulation software tools shall be available directly on the operating console.	M		
11.	**Patient Laser Marking System**			
11.1.	Provision and installation of a ceiling-mounted laser system with one movable laser to project the sagittal plane and one fixed laser to project the transverse plane.	M		
11.2.	Provision and installation of two wall-mounted laser systems, each consists of one movable laser to project the coronal plane and one fixed laser to project the transverse plane.	M		
11.3.	Provision of a built-in control system to compare the computed isocenter location with the laser positions.	M		
11.4.	The system shall support auto calibration.	M		
11.5.	Provision of a remote control to adjust the laser in 6 degrees of freedom.	M		
11.6.	Provision of a phantom for QA of the laser system.	M		
11.7.	Position accuracy shall be within ± 0.1 mm or better.	M		
11.8.	Projection precision shall be within ± 0.5 mm up to a distance of 4 m.	M		
11.9.	All lasers offered shall be of Class II laser product with output power not greater than 1 mW.	M		
11.10.	The focusable line width of the lasers shall be within 1 mm.	M		
11.11.	The laser colour shall be agreeable to the end-user.	M		
11.12.	The mounting of lasers shall be precise, strong, stable, and durable. The successful Tenderer shall provide all necessary mounting materials.	M		
11.13.	The system shall be able to accept exported coordinates from the virtual simulation workstation/ control console on offer and the treatment planning systems used in the KCC.	M		

Section B: Main CT Simulator Requirements				
Clause	**Specification**	**Type**	**Yes/No**	**Details**
1.	**CT Scanner:**			
1.1	The CT scanner shall be a whole body spiral, multi-slice (minimum 64 slices per rotation) CT scanner;			
12.	**DICOM 3.0 Standard and Network Connectivity**			
12.1.	The successful Tenderer shall offer a comprehensive software and hardware package for direct network connection of the CT Simulator, image server and client workstations on offer with the PACS/ image workstations/ laser printers of the RT Centre. The network connection shall comply with KCC's prevailing policies and guidelines on data security and access control on networked devices.	M		
12.2.	Network speed: Gigabit (10/100/1000) Ethernet.	M		
12.3.	Image transfer at 25 images per second for 512×512 image or faster.	M		
12.4.	The successful Tenderer shall ensure successful network archiving of CT images (including structural images, dynamic series and post-processed images or colour maps) to the PACS and demonstrate the archived images can be successfully retrieved and displayed in the image workstations of PACS.	M		
12.5.	The successful Tenderer shall liaise with the vendor of PACS of KCC to work on the network connection and perform connectivity test as stated above.	M		
12.6.	**Networking protocols:**	M		
12.6.1.	DICOM 3.0 basic grayscale print service class.	M		
12.6.2.	DICOM 3.0 send, receive and query/ retrieve.	M		
12.6.3.	Point-to-point send, receive and query/ retrieve.	M		
12.7.	DICOM and IHE conformance standards:	M		
12.7.1.	DICOM 3.0 modality work list service class.	M		
12.7.2.	DICOM 3.0 storage service class.	M		
12.7.3.	Service Class User (SCU) for image send.	M		

Section B: Main CT Simulator Requirements				
Clause	**Specification**	**Type**	**Yes/No**	**Details**
1.	**CT Scanner:**			
1.1	The CT scanner shall be a whole body spiral, multi-slice (minimum 64 slices per rotation) CT scanner;			
12.7.4.	Service Class Provider (SCP) for image retrieve.	M		
12.7.5.	DICOM 3.0 query/ retrieve service class.	M		
12.7.6.	DICOM 3.0 storage commitment service class.	M		
12.7.7.	DICOM 3.0 basic grayscale print service class.	M		
13.	**Integration with Radiology Information System (RIS)**			
13.1.	The successful Tenderer shall be responsible for the integration of the CT Simulator on offer with KCC's RIS with the following features:	M		
13.2.	A comprehensive hardware and software package to enable the DICOM modality worklist server class for the control console shall be offered.	M		
13.3.	The modality worklist for the console shall be able to query the HIS and RIS by name, HKID, modality, or scheduled date, and to download the patient demographics directly to the scanner via the PACS Broker.	M		
13.4.	Tenderers shall provide a detailed proposal for the RIS integration with specifications for the system on offer for the end-user's consideration.	M		
13.5.	The required gateway hardware and software shall be provided to connect the CT Simulator to HIS/ RIS.	M		
13.6.	All necessary data ports, cables, trunking, interface and software shall be provided and installed by the successful Tenderer.	M		
13.7.	The successful Tenderer shall ensure that there is sufficient license in our PACS Broker for enabling the functions mentioned above. The successful Tenderer shall be responsible for any additional license cost.	M		
13.8.	Tenderers shall specify any pre-requisite conditions on the RIS program for complete RIS integration.	M		
14.	**Contrast Media Injector**			

Section B: Main CT Simulator Requirements				
Clause	**Specification**	**Type**	**Yes/No**	**Details**
1.	**CT Scanner:**			
1.1	The CT scanner shall be a whole body spiral, multi-slice (minimum 64 slices per rotation) CT scanner;			
14.1.	ONE set of dual head contrast media injector shall be offered. The injector shall be equipped with the following features:	M		
14.2.	The control of the injector shall be integrable with the control console so that synchronized scanning and contrast injection can be achievable.	M		
14.3.	The injector shall have a remote-control console located in the control room.	M		
14.4.	The contrast delivery mechanism shall include safety features designed for maximizing patient and operator safety. An extravasation detection system or equivalent compatible with the injector shall be provided.	M		
14.5.	The injector delivery powerhead shall allow for single and dual head contrast delivery mode.	M		
14.6.	The injector shall be of pedestal mount with a wide base equipped with at least two lockable casters.	M		
14.7.	Flow rate: Flow rate parameters: 0.1 - 10 ml/sec Flow rate running tolerance: 0.2 ml/sec or +/- 20 %	M		
14.8.	Peak pressure: 50 - 325 PSI or 345 - 2240 kPa	M		
14.9.	Phase delay: 0 - 600 sec adjustable in increments of 1 sec	M		
14.10.	Inject delay: 0 - 600 sec adjustable in increments of 1 sec	M		
14.11.	Scan delay: 0 - 600 sec adjustable in increments of 1 sec	M		
14.12.	The injector shall be equipped with a syringe warmer to minimize the loss of heat from the preheated contrast.	M		
14.13.	The injector shall be able to store the parameters of not less than 40 protocols in its memory. Password protection shall also be available.	M		
14.14.	The injector shall be able to inject both contrast and saline at the same time in a	M		

Section B: Main CT Simulator Requirements				
Clause	**Specification**	**Type**	**Yes/No**	**Details**
1.	**CT Scanner:**			
1.1	The CT scanner shall be a whole body spiral, multi-slice (minimum 64 slices per rotation) CT scanner;			
	percentage of 10 % to 90 % of contrast in increments of 5 %.			
14.15.	The console and delivery powerhead shall be equipped with a colour touch screen display for operation.	M		
14.16.	At the console's touch screen display in the CT control room, the operator shall be able to: a. enter protocol parameters b. save protocols c. delete protocols d. recall protocols e. enable/start/stop a drip injection f. enable/start/stop an injection g. review achieved parameters of delivered protocols	M		
14.17.	At the powerhead's touch screen display in the CT scan room, the operator shall be able to: a. enter protocol parameters b. recall protocols c. fill/expel syringes d. enable/start/stop a patency check injection e. enable/start/stop a drip injection f. enable/start/stop an injection	M		
14.18.	Provision of a manual knob at the powerhead which allows the operator to move the plunger.	M		
14.19.	Light indicators shall be available at the powerhead for indicating different status of the system, e.g. power up, alarm etc.	M		
14.20.	A remote hand switch shall be included to allow operator to perform injections at a distance from the powerhead.	M		
14.21.	A series of power up tests shall be performed to monitor the status of the system when the machine is switched on.	M		
14.22.	Functioning parameters of the injector shall be monitored during the course when the system is 'enabled' and delivering an injection.	M		

Section B: Main CT Simulator Requirements				
Clause	**Specification**	**Type**	**Yes/No**	**Details**
1.	**CT Scanner:**			
1.1	The CT scanner shall be a whole body spiral, multi-slice (minimum 64 slices per rotation) CT scanner;			
14.23.	Prior to the delivery of the bulk injection, a test injection of a small volume of saline shall be performed to determine the patency of the intravenous site.	M		
14.24.	Prior to the delivery of the main injection, an injection of a small volume of contrast followed by a small volume of saline shall be delivered to the patient to determine the optimal scan delay needed to capture the contrast agent in the area of interest.	M		
14.25.	Prior to the delivery of the bulk injection, a low flow rate injection of a small volume of saline shall be delivered to keep the fluid pathway open.	M		
14.26.	The end flow rate shall be automatically calculated by the system and displayed on the console.	M		
14.27.	All mounted syringes are isolated from any electrical contact with the injector.	M		
14.28.	The injector shall have an automatic syringe fill-up function.	M		
14.29.	Provision of one single touch function on the powerhead touch screen to flip the display graphics 180˚ for proper viewing orientation.	M		
15.	**Accessory Items**			
15.1.	The exact make, model and/or sizes of the accessory items on offer shall be agreeable to the end-user.	M		
15.2.	Two numbers of full length light-weighted lead aprons of 0.5 mm lead equivalent with the following features:	M		
15.2.1.	Double-sided with full front and rear protection.	M		
15.2.2.	Aprons shall be fastened with a board Velcro strapping at the upper back and have Velcro fasteners on the long waist belt.	M		
15.3.	One number of wall mounted lead apron rack with suspended hanger arms capable of storing not less than four lead aprons.	M		
15.4.	One number of drip stand.	M		

Section B: Main CT Simulator Requirements				
Clause	**Specification**	**Type**	**Yes/No**	**Details**
1.	**CT Scanner:**			
1.1	The CT scanner shall be a whole body spiral, multi-slice (minimum 64 slices per rotation) CT scanner;			
15.5.	One number of patient stretcher.	M		
15.6.	One number of patient wheel chair.	M		
15.7.	One number of medical grade radiolucent flexible patient transfer board (introducing no artefact when imaged) for easy transfer of the patient between the CT table and the stretcher trolley.	M		
15.8.	One medical footstool with handrail. The stool shall be made of strong chrome-plated frame. The step surface covered with non-skid ribbed rubber matting and the legs rest on reinforced rubber tips.	M		
15.9.	One number of injection trolley.	M		
15.10.	One number of contrast medium warmer.	M		
15.11.	One number of blanket warning cabinet.	M		
15.12.	Two numbers of 2-layer trolleys for temporary storage of setup accessories.	M		
15.13.	One mobile cart for storage of tattoo tool to facilitate tattoo procedures.	M		
15.14.	One set of forced air warming blanket to keep patient warm during CT simulation.	M		
15.15.	Provision of 200 numbers of syringe sets for the contrast injector offered.	M		
15.16.	One small size medical grade refrigerator for emergency drug storage in the CT Simulator Suite.	M		
15.17.	Two numbers of wall mounted single unit oxygen flow regulator assembly.	M		
15.18.	Two numbers of wall mounted high suction regulator assembly.	M		
15.19.	One set of portable/ handheld SpO2 oximeter.	M		
15.20.	One number of nurse trolley for resuscitation use which includes the following accessories: a. Disposable laryngoscope with Miller blades (two for each size 0/1/2/3) and Mac blades (five for each size 2/3/4) b. Disposable Ambu bags (Adult × 10, Pediatrics × 5 , Infant × 5)	M		

Section B: Main CT Simulator Requirements				
Clause	**Specification**	**Type**	**Yes/No**	**Details**
1.	**CT Scanner:**			
1.1	The CT scanner shall be a whole body spiral, multi-slice (minimum 64 slices per rotation) CT scanner;			
	c. Kidney dish (25 cm), Magill forceps, Artery forceps, mouth gag, tongue depressor d. SAM splints × 3 e. Universal bandage scissors f. Cardiac massage board g. One number of end tidal CO2 monitor			
15.21.	One set of AED defibrillator.	M		
15.22.	Two sets of battery-operated digital temperature and humidity monitoring devices.	M		
15.23.	Two numbers of dehumidifiers to be located in the scan and control rooms.	M		
15.24.	Provision of 4 numbers of ergonomically designed chairs for operators and other working staff.	M		
15.25.	Provision of a Hi-Fi system for patient's comfort.	M		
15.26.	One number of A4 colour laser printer for printing hardcopies of images. The printer shall be able to print images directly from the CT control console and the post-processing workstations. Provision of five complete sets of compatible toners.	M		
15.27.	Two sets of storage cabinets.	M		
15.28.	One set of 2-in-1 X-ray film viewing boxes, featuring 2 viewing areas each at 43 cm × 36 cm, slim type and with automatic detection of film for power on. Each X-ray film viewing box shall have brightness of not less than 2000 cd/m^2 and non-uniformity of less than 10 %. The choice shall be subject to the agreement with the end-user before delivery.	M		
15.29.	One number of white board.	M		
15.30.	One number of ceramic heater mounted on a mobile stand.	M		
15.31.	One set of TG-66 CT simulation laser QA device including two standard lock bars (CIVCO Medical Solutions).	M		

Section B: Main CT Simulator Requirements				
Clause	**Specification**	**Type**	**Yes/No**	**Details**
1.	**CT Scanner:**			
1.1	The CT scanner shall be a whole body spiral, multi-slice (minimum 64 slices per rotation) CT scanner;			
15.32.	One set of phantom for daily CT simulation check (Model CT/SIM by Integrated Medical Technologies). The set shall be designed to comply with TG-142 requirements for CT simulator performance.	M		
15.33.	One DICOM orientation verification phantom (Model DOVe by Integrated Medical Technologies).	M		
15.34.	One multi-function end-to-end phantom that evaluates the entire radiotherapy process from simulation to treatment (Model DP-850 by Integrated Medical technologies). The phantom shall be designed to fully comply with TG-66 requirements for CT simulators. A sturdy carrying case shall be included.	M		
15.35.	One set of electron density phantom for electron density calibration (Model 062MA by CIRS). A sturdy carrying case shall be included.	M		
15.36.	One set of respiratory motion phantom including hardware and software (Model QUASAR pRESP by Modus QA). The following inserts shall also be included: a. Cedar Lung Tumour Insert (Split) b. 4D CT Imaging Insert	M		
15.37.	A laptop computer of at least 15" shall be provided for running QA programs. The laptop computer shall be preloaded with Windows Office applications and anti-virus software.	M		
16.	**Ancillary Items**			
16.1.	The CT Simulator offered shall be provided with all cables, cabinets, transformers, interfaces, control console(s) and other ancillary items necessary for full and satisfactory operation of the system.	M		
16.2.	Unless explicitly stated otherwise by the Tenderers, all installation works not specified in the Tender specifications but are essential to the successful installation and effective	M		

Section B: Main CT Simulator Requirements				
Clause	**Specification**	**Type**	**Yes/No**	**Details**
1.	**CT Scanner:**			
1.1	The CT scanner shall be a whole body spiral, multi-slice (minimum 64 slices per rotation) CT scanner;			
	functioning of the equipment shall be the responsibility of the successful Tenderer.			
17.	**Patient Monitoring CCTV System**			
17.1.	Provision of a CCTV system with four cameras for monitoring the patient activities in the scan room.	M		
17.1.1.	Two of the cameras shall have facilities for tele-zoom and pan-tilt operation by a remote control in the control room to monitor the patient from 2 different angles.	M		
17.1.2.	The other cameras shall have a view of wide angle coverage of the scan room.	M		
17.1.3.	At least one colour TV monitor of at least 21" shall be installed in the control room. The viewing angle shall be adjustable.	M		
17.1.4.	The TV monitor shall support multi-format and the format layout shall be adjustable by the user.	M		
17.1.5.	Tenderers shall propose the configuration of the system in their Tender returns for the end-user's consideration.	M		
18.	**System Security**			
18.1.	Tenderers shall provide reliable anti-virus, anti-spyware and anti-hacking solutions to the computers of the CT Simulator including all workstations and the thin client server on offer. The solution provided shall not affect the performance of the system. Details of the solution shall be stated.	M		
18.2.	Free upgrade and update for both the hardware and software for the above-mentioned security solutions shall be provided.	M		
18.3.	Provision of secure remote diagnosis and off-site maintenance for the CT Simulator on offer. The successful Tenderer is required to follow KCC network security policies and guidelines.	M		
19.	**System Upgradeability**			

Section B: Main CT Simulator Requirements				
Clause	**Specification**	**Type**	**Yes/No**	**Details**
1.	**CT Scanner:**			
1.1	The CT scanner shall be a whole body spiral, multi-slice (minimum 64 slices per rotation) CT scanner;			
19.1.	The successful Tenderer shall guarantee to provide, at no additional cost, within the warranty period, software upgrade to the all the components of the CT Simulator on offer, including all software in all workstations and all items offered where applicable.	M		
20.	**System Update**			
20.1.	The successful Tenderer shall guarantee to provide, at no additional cost, within the warranty and post warranty contract maintenance periods, software update to all the components of the CT Simulator on offer, including all software in all workstations and all items offered where applicable.	M		
21.	**Software License**			
21.1.	The software licenses for all clinical applications shall be permanent. Application software offered on a trial basis for a limited time will not be accepted.	M		
22.	**Power Supply Requirement**			
22.1.	All the equipment items supplied including the accessories, air conditioning system and other electrical facilities in the CT Simulator Suite shall remain in full operation within the specification throughout the following supply voltage range:	M		
22.2.	Three phases: 415/V AC ± 6 %, 50 Hz ± 2 %, 4-wire earthed neutral.	M		
22.3.	Single phase: 240V AC ± 6 %, 50 Hz ± 2 %.	M		
22.4.	The successful Tenderer shall provide technical solutions to suit the power supply condition without incurring any additional cost and affecting the overall performance and efficiency of the equipment.	M		
22.5.	The Equipment on offer shall comply with the relevant requirements of the latest edition of the Electrical Products (Safety) as per the relevant IEC and ISO standards.	M		
22.6.	The Equipment on offer shall comply with the relevant requirements of the latest	M		

Section B: Main CT Simulator Requirements				
Clause	**Specification**	**Type**	**Yes/No**	**Details**
1.	**CT Scanner:**			
1.1	The CT scanner shall be a whole body spiral, multi-slice (minimum 64 slices per rotation) CT scanner;			
	edition of Code of Practice for Electricity Regulation.			
22.7.	Two sets of as-fitted electrical wiring drawings shall be provided to KCC for record.	M		
22.8.	Tenderers shall provide supporting documents for the voltage dip immunity test of which the test was performed in accordance with IEC 61000-4-11 or equivalent.	M		
23.	**Equipment Safety**			
23.1.	The CT Simulator and its ancillary equipment items on offer shall comply with the latest relevant IEC Standards, including but not limited to IEC 60601 or equivalent. Variation form IEC 60601 shall be indicated.	M		
23.2.	The CT Simulator and its ancillary equipment items on offer shall comply with the electromagnetic compatibility (EMC) requirements of IEC 60601-1-2 or equivalent.	M		
23.3.	The CT Simulator and its ancillary equipment items on offer shall comply with IEC 61852 Medical electrical equipment - Digital imaging and communication in medicine (DICOM) - Radiotherapy objects.	M		
23.4.	The CT Simulator shall comply with IEC 60601-2-44 Medical electrical equipment - Part 2-44: Particular requirements for the basic safety and essential performance of X-ray equipment for computed tomography.	M		
23.5.	The CT Simulator shall comply with IEC 60601-2-29 Medical electrical equipment - Part 2-29: Particular requirements for the basic safety and essential performance of radiotherapy simulators (if applicable).	M		
23.6.	The CT Simulator and its ancillary equipment items on offer shall be suitable for operation in the presence of anesthetic gases.	M		
24.	**Brochures and Technical Data Sheets**			

Section B: Main CT Simulator Requirements				
Clause	**Specification**	**Type**	**Yes/No**	**Details**
1.	**CT Scanner:**			
1.1	The CT scanner shall be a whole body spiral, multi-slice (minimum 64 slices per rotation) CT scanner;			
24.1.	Tenderers are required to submit with the Tender returns 2 sets of brochures and technical data sheets necessary for full installation of the Equipment on offer including OEM items.	M		
25.	**Operation and Maintenance Manuals**			
25.1.	Two original hardcopies and softcopy of the manufacturer's operation manuals and one original hardcopy and softcopy of maintenance and service manuals for each unit of the system on offer shall be submitted with the delivery of the system. This requirement shall also apply to any OEM products included in the offer. The supplied documentation shall be in English and shall contain materials covering:	M		
25.1.1.	Detailed instructions on the proper operation and maintenance procedures for each of the equipment item on offer.	M		
25.1.2.	Principles of equipment design and operation.	M		
25.1.3.	Schematics and block diagrams, circuit diagrams down to component level, and wiring diagrams.	M		
25.1.4.	Installation, setup and calibration procedures.	M		
25.1.5.	Maintenance and fault diagnosis instructions and parts replacement instructions.	M		
25.1.6.	Enlarged views of mechanical assemblies.	M		
25.1.7.	Component layouts on printed circuit boards.	M		
25.1.8.	Flow charts, program listings, diagnostic parts list, mechanical parts list, electrical and electronic component parts list.	M		
25.2.	Softcopies of the manuals mentioned above shall be provided.	M		
25.3.	Users are allowed to make copies of the manuals for training or operational purposes.	M		
26.	**Local Operational Training**			
26.1.	The successful Tenderer shall provide operational training to a minimum of FOUR	M		

Section B: Main CT Simulator Requirements				
Clause	**Specification**	**Type**	**Yes/No**	**Details**
1.	**CT Scanner:**			
1.1	The CT scanner shall be a whole body spiral, multi-slice (minimum 64 slices per rotation) CT scanner;			
	members of KCC staff for not less than one week at no additional charges.			
26.2.	To be conducted by specialist(s) fully conversant with the operation and design of the CT Simulator on offer.	M		
26.3.	Training shall be conducted in English. The specialist(s) shall be conversant with English.	M		
26.4.	Training materials provided shall be in English.	M		
26.5.	The duration of the training and syllabus shall be specified and enclosed in the Tender return.	M		
26.6.	The training shall include classroom instructions on theory and also on-site practical training with the actual equipment.	M		
26.7.	The timetable and commencement date for the course shall be provided to KCC at least 3 months prior to the commencement of the course.	M		
26.8.	The commencement of the course shall be commensurate with the completion of installation and commissioning of the system.	M		
26.9.	The course of training shall include all materials such as notes, charts etc. for the participants. These materials shall be available at the time of training.	M		
26.10.	Additional on-site application training session(s) shall be arranged upon the request of RT Centre during the first year of operation of the equipment without additional cost.	M		
27.	**Local Maintenance Training**			
27.1.	The successful Tenderer shall provide maintenance training to at least TWO members of KCC maintenance staff at no additional cost.	M		
27.2.	The course shall be conducted by qualified personnel(s) from the factory fully conversant with the servicing, maintenance, operation and design of the equipment.	M		

Section B: Main CT Simulator Requirements				
Clause	**Specification**	**Type**	**Yes/No**	**Details**
1.	**CT Scanner:**			
1.1	The CT scanner shall be a whole body spiral, multi-slice (minimum 64 slices per rotation) CT scanner;			
27.3.	The instructor(s) shall be fully conversant with English. All training and training materials provided shall be in English.	M		
27.4.	The commencement of the course shall be commensurate with the completion of installation and commissioning of the system.	M		
27.5.	The course of training shall include all materials such as notes, charts etc. for the participants. These materials shall be available at the time of training.	M		
27.6.	The training shall include techniques in the setting up, calibration, trouble shooting, fault diagnosis, preventive maintenance procedures, use of special tools and test instruments for the CT Simulator on offer. Interpretation and understanding of circuits shall also be included.	M		
28.	**Overseas Operational/ Physicist Training**			
28.1.	The overseas operational/ physicist training shall include all necessary training materials and documents, return air tickets, boarding and lodging, local transportation costs and any registration fees except otherwise stated.	M		
28.2.	The successful Tenderer shall provide overseas training of not less than one week to ONE radiation therapist of the RT Centre.	M		
28.2.1.	The training shall be conducted by personnel fully conversant with the operation and design of the CT Simulator on offer.	M		
28.3.	The successful Tenderer shall provide overseas training of not less than one week to ONE Physicist of KCC.	M		
28.3.1.	The training shall be conducted by personnel fully conversant with the CT simulation, 4D CT, safety, dosimetry and radiation dose management.	M		
28.4.	Training shall be conducted in English. The trainer(s) shall be conversant with English.	M		

Section B: Main CT Simulator Requirements				
Clause	**Specification**	**Type**	**Yes/No**	**Details**
1.	**CT Scanner:**			
1.1	The CT scanner shall be a whole body spiral, multi-slice (minimum 64 slices per rotation) CT scanner;			
28.5.	Training materials provided shall be in English.	M		
28.6.	Full details of the training courses, including the recommended duration and a breakdown of the cost into tuition fees, boarding/lodging, return air fare etc. shall be clearly stated.	M		
28.7.	The commencement of the course shall be commensurate with the completion of installation, acceptance and commissioning of the CT Simulator on offer if practically permitted. KCC is at its sole discretion to choose the dates of the available courses.	M		
28.8.	Information on the commencement date, training centre location, syllabus and timetable etc. shall be provided at least 2 months prior to the commencement of the courses for consideration by KCC.	M		
28.9.	The training course shall include classroom instructions on theory and practical training and/or attachment at locations in US or Europe where the same model of equipment on offer is installed or at the factory.	M		
28.10.	The training course shall include all materials such as notes, charts, network diagrams, system design and commands for operation/ system administration etc. for the participants. These must be available at the commencement of the training course.	M		
29.	**Acceptance and Functional Tests**			
29.1.	The complete set of equipment, including OEM items and peripheral systems, shall be subject to acceptance and functional tests performed by KCC representatives with the following requirements:	M		
29.2.	KCC will not conduct acceptance and functional tests until it has received full certification from the supplier that the supplier has conducted its own tests and found that the equipment meets the specifications in the contract.	M		

Section B: Main CT Simulator Requirements				
Clause	**Specification**	**Type**	**Yes/No**	**Details**
1.	**CT Scanner:**			
1.1	The CT scanner shall be a whole body spiral, multi-slice (minimum 64 slices per rotation) CT scanner;			
29.3.	The acceptance test shall include detailed specification testing to ensure that every performance meets with the figures as quoted and required by the Tender specifications.	M		
29.4.	The successful Tender may be required to use a report to present the performances of all the systems on offer. The format of report shall be agreeable to KCC.	M		
29.5.	In addition to the main system on offer, all other systems such as OEM items, accessories, building and building service provisions etc. shall also be subject to similar tests.	M		
30.	**Equipment Warranty**			
30.1.	The equipment warranty shall be provided for a period of 24 months commencing from the date of acceptance of the equipment on offer including the CT Simulator (X-ray tube, detector assembly and any parts thereof), peripheral equipment, all OEM items and all building service supplied and installed by the successful Tenderer. Replacement of any faulty parts and technical upgrades (software and hardware) shall be included with no additional cost.	M		
30.2.	The successful Tenderer shall provide comprehensive maintenance with at least 4 full sessions of preventive maintenance service on all equipment items including the CT Simulator, peripheral equipment and all OEM items on offer covering labour and all spare parts during the warranty period.	M		
30.3.	The successful Tenderer shall perform regular check and calibration for all the LCD monitors at least 2 times per year to ensure optimal image viewing conditions.	M		
30.4.	Tenderers shall submit in the Tender returns a yearly maintenance schedule indicating the number of preventive maintenance services and safety tests recommended by equipment	M		

Section B: Main CT Simulator Requirements				
Clause	**Specification**	**Type**	**Yes/No**	**Details**
1.	**CT Scanner:**			
1.1	The CT scanner shall be a whole body spiral, multi-slice (minimum 64 slices per rotation) CT scanner;			
	manufacturer for the CT Simulator and peripheral/ OEM equipment including the contrast media injector etc.			
30.5.	Normal working hours shall be defined as: 08:00 to 17:00 Monday to Friday except public holidays.	M		
30.6.	The service call for all equipment items shall be available with no additional cost during normal working hours even the subsequent repair work is carried out beyond the normal working hours.	M		
30.7.	Upon notification by the user of an equipment failure, or part thereof, the successful Tender shall attend to the fault within 2 working hours. This service shall include all necessary repairs and replacement of parts to restore the equipment to its normal operation within 4 hours or such other time agreed.	M		
30.8.	No overtime service charges shall be levied for maintenance/repair/ upgrade services.	M		
30.9.	24-hour emergency service call shall be available and provided upon request.	M		
30.10.	All maintenance records shall be documented and provided to KCC. The report shall record information including the following: a. Date and time notified b. Date and time of arrival on-site c. Description of malfunction and service performed d. Model no./ serial no. and location of the equipment e. Time spent to repair f. Total time out of service g. Parts used/replaced	M		
31.	**Uptime Guarantee**			
31.1.	During the warranty period, the successful Tenderer shall guarantee an equipment uptime of not less than 95 % of the total normal working hours. If the successful Tenderer fails to achieve an uptime of 95 %	M		

Section B: Main CT Simulator Requirements				
Clause	**Specification**	**Type**	**Yes/No**	**Details**
1.	**CT Scanner:**			
1.1	The CT scanner shall be a whole body spiral, multi-slice (minimum 64 slices per rotation) CT scanner;			
	averaged over each consecutive period of 3 months, the Waranty period shall be extended based on the following table: % of Equipment Uptime (X) — Extension of Warranty $90 \leq X < 95$ — 1 month $85 \leq X < 90$ — 2 months $80 \leq X < 85$ — 3 months Below 80 — Further negotiation is required			
31.2.	"Down Time" is the time when the CT Simulator (including the contrast media injector and major peripheral items) is down and not available for use. It shall not include the time for any scheduled maintenance, system upgrade, and the time when the system is down due to the user's misuse and negligence.	M		
31.3.	"Down Time" will be calculated from the time a down system call is received by the successful Tenderer to the time of completion of the repair and issuance of a service report to KCC, counting only the time within the normal working hours as referred in the clause 30.9.	M		
31.4.	"Up time" is calculated as the normal working hours minus "Down time".	M		
32.	**Post Warranty Maintenance**			
32.1.	Tenderers shall quote on a yearly basis a 5-year post warranty maintenance service plan (from 2^{nd} to 10^{th}) for all equipment items including the CT Simulator (X-ray tube, detector assembly and any parts thereof), peripheral equipment and all OEM items. The quote shall be used for the calculation of the total life cycle cost.	M		

Section B: Main CT Simulator Requirements				
Clause	**Specification**	**Type**	**Yes/No**	**Details**
1.	**CT Scanner:**			
1.1	The CT scanner shall be a whole body spiral, multi-slice (minimum 64 slices per rotation) CT scanner;			
32.2.	The maintenance service shall be carried out in accordance with the maintenance procedures as described in the relevant equipment service manuals.	M		
32.3.	At least 4 full sessions of preventive maintenance service shall be provided each year.	M		
32.4.	At least 2 sessions of regular check and calibration for each LCD monitor shall be provided each year to ensure optimal image viewing conditions.	M		
32.5.	At least ONE session of QA shall be provided per year in accordance with the manufacturer's recommendations and/or KCC physicist's protocol.	M		
32.5.1.	The QA report shall include the following measurement: a. X-ray tube leakage b. kVp, mAs and detector calibration results c. High-contrast spatial resolution d. Low contrast detectability e. CT number accuracy and linearity f. CTDIvol for head and body	M		
32.6.	The yearly maintenance service plan shall be a comprehensive maintenance service covering labour and all spare parts without any exceptions, i.e. including all major and minor items, all software and hardware licenses etc.	M		
32.7.	Tenderers shall give a breakdown of the maintenance charges for the main equipment and OEM items.	M		
32.8.	Tenderers shall guarantee to provide free software upgrade throughout the contractual maintenance period. The cost, if not explicitly quoted in the Tender return, will be considered covered in the proposal for maintenance service plan.	M		
32.9.	Prices quoted above shall be in exact amount. Annual adjustments with reference to the percentage change in the Consumer Price	M		

Section B: Main CT Simulator Requirements				
Clause	**Specification**	**Type**	**Yes/No**	**Details**
1.	**CT Scanner:**			
1.1	The CT scanner shall be a whole body spiral, multi-slice (minimum 64 slices per rotation) CT scanner;			
	Index published by the Central Bank of Kenya will not be considered.			
32.10.	The clauses 40.5 to 40.10 pertaining to the maintenance services shall also apply in the post warranty maintenance.	M		
33.	**Spare Parts and Special Tools**			
33.1.	Tenderers shall submit a list of recommended spare parts with ordering information details and itemized prices for maintenance use and a list of consumable items. The listed quantities of consumable items shall be sufficient for one year of normal operation.	M		
33.2.	Tenderers shall quote the average life span of the X-ray tube. The guaranteed exposure counts shall be stated. The method and unit of counting the exposure shall also be stated explicitly.	M		
33.3.	Tenderers shall state in their Tender returns whether the spare X-ray tube, detector assembly and other spare parts are kept locally or not. A list of the major spare parts kept in stock shall be submitted with the Tender returns. Regarding non-stock items, Tenderers shall state the turn-around time for: a. Normal air delivery b. Expedited air delivery	M		
33.4.	If the offered equipment has any protections such as special toolkits, access codes, passwords, software keys, hardware keys etc., the successful Tenderer shall be responsible to provide the above means free of charge or at a quoted price in the Tender return for the whole lifespan of the equipment on offer. The quoted price may be used at estimating the total life cycle cost of the equipment.	M		
33.5.	The successful Tenderer shall commit for maintaining production and supply of required spare parts to enable normal operation of the whole system of equipment	M		

Section B: Main CT Simulator Requirements				
Clause	**Specification**	**Type**	**Yes/No**	**Details**
1.	**CT Scanner:**			
1.1	The CT scanner shall be a whole body spiral, multi-slice (minimum 64 slices per rotation) CT scanner;			
	for not less than 10 years from the date of acceptance.			
33.6.	The successful Tenderer shall provide, at no additional costs, all technical information, special tools and diagnostic software for the preventive and corrective maintenance, routine calibration and quality assurance of the equipment on offer. All licensed software and hardware access keys and passwords necessary for the fault diagnosis and trouble- shooting shall also be provided.	M		

- END OF SECTION D –

LOT 2-2: Digital Linear Accelerator

Item Code No.	Department	Section	Item Description
LOT 2-2	Oncology	Radiotherapy	Digital Linear Accelerator
ITEM	**PERFORMANCE SPECIFICATIONS**	**COMPLY(YES/NO)**	**OFFERING/ REFERENCE**
General The Linear Accelerator model should be fully computer-controlled system with remote servicing capability. The Medical Linear accelerator system includes 1 set of Linear accelerator, independent Treatment Planning System and Oncology Information System. The offered equipment should be IAEA and KNRA Type Approved and should have the following technical features. Linear Accelerator must have the latest technology and should be fully computer controlled with the latest state of art digital control system. The unit shall meet all the radiation safety standards & Quality Assurance of its mechanical, electrical and electronic provisions set by regulatory bodies. These include: IEC 60601-1, IEC 60601-1:2005+AMD1:2012 CVS(22), Part 2-1 of IEC60601-2-1:2009+AMD1:2014 CVS (24), IEC 60976:2007 (25) IEC TR 60977:2008 (26) Part 2-68 of IEC 60301-2-68:2014 (27), IEC 62274:2005(28), IEC TR 62926:2019 (29), IEC TR 63183:2019(30) and IEC 61217:2011 (17) **System shall have all safety interlocks as per IAEA guideline FDA and/or CE certificate must be provided** All the equipment/ accessories quoted and supplied should be of latest model.			
LINAC	A dual energy (low and high photon and electron beams) linear accelerator should be able to perform various specialized treatment techniques such as: Three- Dimensional Conformal Radiotherapy (3D CRT); Intensity Modulated Radiation Therapy (IMRT); Volumetric Modulated Arc Therapy (VMAT); with adaptability for future upgrade to SRS/SRT		
Photon Beams	Energy: Up to three photon beams may be selected between 6MV and 15 MV		
	One Energy can be of high dose rate (FFF)		

Item Code No.	Department	Section	Item Description
LOT 2-2	Oncology	Radiotherapy	Digital Linear Accelerator
ITEM	**PERFORMANCE SPECIFICATIONS**	**COMPLY(YES/NO)**	**OFFERING/ REFERENCE**
	Dose Rate: the dose rate can be selected in fixed steps of 100 MU/min up to a maximum dose rate of 300, 400, or 600 MU/min.		
	Maximum Field Intensity at Dmax: The intensity at the depth of maximum buildup (Dmax) must not exceed 109% of the central axis intensity anywhere in the measurement plane of any field size.		
	Leakage: The X-ray absorbed dose must not exceed 0.1% of the absorbed dose at the isocenter measured anywhere in the patient plane outside of the maximum useful beam. The neutron dose equivalent (Sievert) must not exceed 0.2% of the X-ray absorbed dose (Gray) at the isocenter		
	The patient plane is defined as a circular plane with a radius of 2 m, centered on and perpendicular to the axis of the beam at isocenter. The X-ray measurements may be averaged over an area not to exceed 100 cm2. In all other directions, the X-ray absorbed dose 1 m from the path of the electrons between the electron gun and the target or electron window does not exceed		

Item Code No.	Department	Section	Item Description
LOT 2-2	Oncology	Radiotherapy	Digital Linear Accelerator
ITEM	**PERFORMANCE SPECIFICATIONS**	**COMPLY(YES/NO)**	**OFFERING/ REFERENCE**
	0.1% of the absorbed dose at isocenter.		
	Collimator Transmission: The X-ray transmission of the upper and lower movable collimator must not exceed 0.5%.		
	Spot Size: The electron spot size must be less than 3 mm in diameter at the X-ray target.		
	Penumbra: The distance between the 20% and 80% isodose lines for a 10 x 10 cm2 field, measured at a depth of 10 cm with a 100 cm TSD along the major axes, measures less than or equal to 9 mm.		
	Field Size: The field size must be variable from 0.5 x 0.5 cm2 to 40 x 40 cm2 as measured at 100 cm TSD. The field size is defined as the distance along the radial and transverse axes between the points of 50% density on an Xray film taken at 100 cm TSD with minimum buildup.		
	Upper and Lower Independent Collimators: Asymmetrical collimation is provided for upper and lower sets of collimators. • Independent, asymmetrical Upper Collimator travel range: >20cm		

Item Code No.	Department	Section	Item Description
LOT 2-2	Oncology	Radiotherapy	Digital Linear Accelerator
ITEM	**PERFORMANCE SPECIFICATIONS**	**COMPLY(YES/NO)**	**OFFERING/ REFERENCE**
	• Energy: Up to three photon beams may be selected between		
Electron	Four (4), five (5), or six (6) electron beams that can be selected between 4 and 22 MeV. The specifications apply to a 15 x 15 cm2 electron applicator and 100 cm TSD		
	Dose Rate: up to 1000 Mu/min		
	Field Sizes: A set of electron applicators to be provided, with selection from 6 sizes: 6 x 6 cm2, 6 x 10 cm2, 10 x 10 cm2, 15 x 15 cm2, 20 x 20 cm2, and 25 x 25 cm2.		
	Accelerator System Features		
	RF Power Source: preferred klystron operated in linear amplifier mode and driven by a solid-state oscillator, with power and frequency automatically locked to required operating levels.		
	Gun: Capable to rapidly and precisely vary output dose rate and turn the beam on or off. This capability is especially important in dynamic dose delivery, where high-speed beam gating and elimination of dark current during beamoff time periods is important.		

Item Code No.	Department	Section	Item Description
LOT 2-2	Oncology	Radiotherapy	Digital Linear Accelerator
ITEM	**PERFORMANCE SPECIFICATIONS**	**COMPLY(YES/NO)**	**OFFERING/ REFERENCE**
	Accelerator section: preferred standing wave. Spectrum characteristics, with and without use of an energy switch, Radial and Transverse Steering Systems: ensure basic beam alignment in all modes, as well as gantry orientation. Ion chamber sensors, in conjunction with the steering coils and servo electronics, maintain beam symmetry changes to within 2% under all conditions.		
Dosimetry System	Reproducibility with Energy: Precision of the dosimetry measurement system for each energy to be within ±1%		
	The linearity as:		
	•1% for 20-999 MU • 2% for 10-20 MU • 3% for 5-10 MU		
	Reproducibility of Dose vs. Gantry Angle:		
	The precision of the dosimetry system must be ±1.5% at any gantry angle from 0 to 360 degrees		
	Reproducibility with Dose vs. Dose Rate: The dose rate dependence of the dosimetry system with variations in dose rate from minimum to maximum must be less than ±1%		
	Beam-Off Interlocks: The radiation beam must automatically terminate		

Item Code No.	Department	Section	Item Description
LOT 2-2	Oncology	Radiotherapy	Digital Linear Accelerator
ITEM	**PERFORMANCE SPECIFICATIONS**	**COMPLY(YES/NO)**	**OFFERING/ REFERENCE**
	in the event of any of the following:		
	Monitor Units 1 complete• Monitor Units 2 complete• Treatment time complete• Radial symmetry exceeds 2%• Transverse symmetry exceeds 2%• Excess dose rate• Excess dose per pulse• Excess dose per degree• Loss of ion chamber bias voltage• under dose rate		
LINAC Mechanical Features			
Gantry	Rotation Range: ±180° from the vertical		
	Target to Axis Distance: 100 ±0.2 cm		
	Mechanical and radiation isocenter accuracy		
	≤1 mm radius sphere for gantry,		
	≤2 mm radius sphere for gantry, collimator, and couch axes		
	Position Indicators		
	Scale Conventions • IEC Scale convention per IEC Publication IEC 60601-2-1 • IEC 1217 Scale convention per IEC Publication IEC 61217		
	Digital Readouts		
	Accuracy: ±0.5° •Resolution: 0.1°		
	Mechanical Scales: Accuracy: ±1.0° •Resolution: 1.0°		

Item Code No.	Department	Section	Item Description
LOT 2-2	Oncology	Radiotherapy	Digital Linear Accelerator
ITEM	**PERFORMANCE SPECIFICATIONS**	**COMPLY(YES/NO)**	**OFFERING/ REFERENCE**
	Target to Surface Distance Indicators • Optical Distance Indicator:		
	Accuracy: ±0.1 cm at 100 cm ±0.5 cm at 70 cm and 156 cm		
	Resolution: 0.5 cm • Mechanical Front Pointer:		
	Range: 70-110 cm • Accuracy: ±0.1 cm at 100 cm • Resolution: 0.2 cm		
	Isocenter Height (nominal): 129.5 cm		
	Extended Rotation Range: ± 165°		
	Position Indicators (gantry and console)		
	Digital Readouts: • Accuracy: ± 0.5° • Resolution: 0.1°		
	Mechanical Scales: Accuracy: ± 1.0° • Resolution: 1.0°		
Collimator	Field Size Collimation		
	Range: The field size is continuously variable from 0.5 x 0.5 cm2 to 40 x 40 cm2 as measured at 100 cm TSD. Field sizes larger than 35 x 35 cm2 are limited to a 49.5 cm diagonal (the diameter of the circle defined by the primary collimator at 100 cm TSD). The field size is defined as the distance along the radial and transverse axes between the points of 50% density		

Item Code No.	Department	Section	Item Description
LOT 2-2	Oncology	Radiotherapy	Digital Linear Accelerator
ITEM	**PERFORMANCE SPECIFICATIONS**	**COMPLY(YES/NO)**	**OFFERING/ REFERENCE**
	on an X-ray film taken at 100 cm		
	TSD with minimum buildup. 5.3.2 Position Indicators		
	Light and X-ray Field Coincidence: The field-defining light coincides to within 1.5 mm of the 50% isodensity line on an X-ray film. This is defined at 100 cm TSD with minimum buildup for any field size.		
	Couch and Couch Top		
	Capacity >200kg		
	Motion Controls		
	Two Hand Pendants control all axes of the Couch can be moved simultaneously through the pendants Side Panels		
Treatment Console	The Treatment Console must provide a streamlined front end to the delivery system. The console integrates use of the accelerator, MLC, and imager into one application on a single workstation. For image-guided radiotherapy using kV images, the console is used in combination with the KV Imager workstation. The Treatment Console uses a DICOM RT interface to communicate with the oncology information system and other information system databases.		

Item Code No.	Department	Section	Item Description
LOT 2-2	Oncology	Radiotherapy	Digital Linear Accelerator
ITEM	**PERFORMANCE SPECIFICATIONS**	**COMPLY(YES/NO)**	**OFFERING/ REFERENCE**
Multileaf Collimator	The MLC offers 0.5 cm leaf resolution at isocenter for the central 20 cm of the 40 cm x 40 cm field. The MLC operates in static, dynamic, and conformal arc modes. The static mode provides efficient beam shaping for 3D conformal radiation therapy. The dynamic mode enables IMRT with both step-and-shoot and sliding window delivery. The conformal arc mode enables conformal arc therapy in which the leaves always conform to the outer boundary of the target as the gantry rotates around the patient.		
MV Imager	• The MV imaging system that allows for verification of patient setups, treatment portals, and Portal Dosimetry. • The detector is of modern technology, preferably amorphous silicon has an active imaging area of minimum 43 cm x 43 cm with a pixel resolution of 1280 x 1280. Image acquisition is supported before,		

Item Code No.	Department	Section	Item Description
LOT 2-2	Oncology	Radiotherapy	Digital Linear Accelerator
ITEM	**PERFORMANCE SPECIFICATIONS**	**COMPLY(YES/NO)**	**OFFERING/ REFERENCE**
	during, and after treatment. • Match and Review IGRT software is included for image analysis. • A motorized, robotic arm is used to position and hold the detector. • The movements of the arms will allow to position the detector along the X-Y-Z axes, remotely, from within the treatment room and form the console room. • The MV imager can be placed at isocentre in order to be used to utilities such as QA verification		
MV Image Based IGRT	• The MV-based IGRT should offer 2D/2D Match and Marker Match (orthogonal paired images) using Digitally Reconstructed Radiographs (DRRs) or simulator images as reference and remote arm options for easy and safe operation.		
Motorized Wedges	• An in-built motorized wedge should be provided		

Item Code No.	Department	Section	Item Description
LOT 2-2	Oncology	Radiotherapy	Digital Linear Accelerator
ITEM	**PERFORMANCE SPECIFICATIONS**	**COMPLY(YES/NO)**	**OFFERING/ REFERENCE**
	that can produce an effect of any wedge angle ranging 0 - 60 degrees.		
Radiation Leakage	Radiation leakage limits should be within appropriate agency guidelines as follows: • Photon Leakage: The photon leakage rate at any point one meter from the target outside the cone defined by the primary x-ray collimator should be less than 0.1% of the absorbed dose at the isocenter. • Collimator Transmission: The movable collimators should not permit transmission of radiation exceeding 0.5% of the central axis dose at Dmax measured in air for both photon energies. • Neutron Leakage: The neutron leakage rate should not exceed 0.15% expressed in neutron dose equivalent (REM) when added to the photon leakage for a 10 x 10 cm field at the isocenter at any point one meter from the target		

Item Code No.	Department	Section	Item Description
LOT 2-2	Oncology	Radiotherapy	Digital Linear Accelerator
ITEM	**PERFORMANCE SPECIFICATIONS**	**COMPLY(YES/NO)**	**OFFERING/ REFERENCE**
	when the jaws are closed. • In addition to meeting above specifications for radiation leakage, the linac should also meet all the mandatory safety and radiation leakage as per ICRP No.33.		
Photon Arc Therapy	• Bi-directional arc therapy should be included with Automatic calculation of Dose per Degree based on the Dose Rate selected and the Arc angle set.		
Portal Dosimetry	• Portal Dosimetry solution should be offered using of the MV imager to record the intensity patterns of IMRT and VMAT fields for pretreatment quality assurance of IMRT planning and delivery. • Portal Dosimetry should include integrated image acquisition mode for recording of IMRT and VMAT fields and image viewing and analysis software.		
kV Imaging System	The KV imaging system is to provide high-quality kV images in the		

Item Code No.	Department	Section	Item Description
LOT 2-2	Oncology	Radiotherapy	Digital Linear Accelerator
ITEM	**PERFORMANCE SPECIFICATIONS**	**COMPLY(YES/NO)**	**OFFERING/ REFERENCE**
	treatment room for target localization, patient positioning, and motion management. The following clinical capabilities must be supported: • Online setup correction based on either a kV-kV or kV-MV pair of radiographs • Automated and manual alignment of a pair of radiographs to their reference images • Acquisition of gated radiographs • Online setup correction based on radiopaque markers • Pretreatment verification of gated treatment portals using kV fluoroscopy • Remote couch motion to correct patient setups • Optional: Acquisition of Cone-beam CT (CBCT) scans		
Remote Couch Motion	Control of couch motion at the treatment console for • Corrective motions: small translations (in x, y, and z) and small rotation of the couch to fine-tune patient setups		

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LOT 2-2	Oncology	Radiotherapy	Digital Linear Accelerator
ITEM	**PERFORMANCE SPECIFICATIONS**	**COMPLY(YES/NO)**	**OFFERING/ REFERENCE**
	• Planned motions: large rotations of the couch to sequence between non-coplanar fields and arcs		
Optional Treatment Procedures	• Optional High Dose Total Skin Electron Mode: The accelerator is capable of delivering electron treatments at high dose rates for the purpose of total body skin irradiation with electrons. The dose rate at 1.6 m is 888 MU/min, corresponding to nominally 2,500 MU at isocenter. This mode is available in 6 MeV or 9 MeV. • X-ray contamination at calibration point is <1%. • Symmetry at isocenter is ±2%. • Integrated dose monitor: 1 to 9,000 MU. • Exposure time: 0.1 to 99.9 min. • Optional Total Body Electron Mode: Delivers 9,000 MU at isocenter with all normal machine safety and dosimetry interlocks operational, and		

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ITEM	**PERFORMANCE SPECIFICATIONS**	**COMPLY(YES/NO)**	**OFFERING/ REFERENCE**
	delivers standard energies at standard dose rate ranges. • Special TBE accessory tray is provided. • All beams are calibrated at machine isocenter. • Integrated dose: 1 to 9,000 MU. • Exposure time: 0.1 to 99.9 min. • Optional Total Body Photon X-ray Mode: • Delivers 9,000 MU at isocenter with all normal machine safety and dosimetry interlocks operational, and delivers standard energies at standard dose rate ranges. Special TBI accessory tray is provided. • All beams are calibrated at machine isocenter. • Integrated dose: 1 to 9,000 MU. • Exposure time: 0.1 to 99.9 min.		
Dynamic Treatment Procedures	Standard Photon Arc Mode and optional Electron Arc Mode: The accelerator is capable of delivering the following dose over a preset gantry rotation of up to 360 degrees or any fraction thereof. MU per degree		

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ITEM	**PERFORMANCE SPECIFICATIONS**	**COMPLY(YES/NO)**	**OFFERING/ REFERENCE**
	(MU/DG) is automatically computed based on the preset total dose and the preset arc segment. • Precision: During Arc treatment, the position of the gantry deviates no more than 0.5 degrees from the desired instantaneous gantry angle, and the dose deviates no more than 0.20 MU from the desired instantaneous total dose, as specified by the user-preset total dose and arc segment. If these tolerances are exceeded, the dose delivery is suspended and the gantry position is targeted to the position dictated by the actual dose delivered. When the gantry is again within 0.5 degrees of the desired position, the treatment will resume. The Dose Position Interlock (DPSN) is asserted if the gantry is not positioned within 0.5 cm of the desired position within 3 seconds. The DPSN will terminate the beam immediately if the position deviates 3.0 degrees or more from the desired position, or the		

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ITEM	**PERFORMANCE SPECIFICATIONS**	**COMPLY(YES/NO)**	**OFFERING/ REFERENCE**
	dose delivered exceeds 0.45 MU for dose rates less than 600 MU/min (0.54 MU for dose rate 600 MU/min and 0.72 MU for dose rates greater than 600 MU/min, 11.1.2 Arc Dose Rate: The dose rate during a dynamic arc treatment is automatically modulated between zero and the ceiling dose rate selected in Physics Mode. • Arc Direction: accelerator may be programmed to perform arc therapy in either a clockwise or counterclockwise direction. • Dynamic Wedge Mode: utilizes Y-jaws to create wedge shaped dose distributions. Enhanced Dynamic Wedges of 10, 15, 20,25, 30, 45, and 60 degrees are included, with up to 30 cm (wedge direction) by 40 cm field sizes. • Optional Dynamic MLC Techniques • Intensity-modulated radiation therapy (IMRT) and conformal arc therapy are optional advanced dynamic procedures in which		

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ITEM	**PERFORMANCE SPECIFICATIONS**	**COMPLY(YES/NO)**	**OFFERING/ REFERENCE**
	the leaves of the MLC move during treatment. • Arc Dynamic MLC allows delivery of MLC fields as a function of gantry arc angle, also known as conformal arc therapy. An MLC shape change every 2° is possible. • Dose Dynamic MLC allows delivery of MLC fields as a function of percent dose delivered, also known as IMRT. Both dynamic IMRT (i.e., sliding window) and segmental IMRT (i.e., step-and-shoot) techniques are supported. Combinations of the two IMRT techniques also are supported. In addition, Dose Dynamic MLC enables treatment delivery with electronic compensation, in which MLC leaf motion simulates the dosimetric effect of a physical compensator.		
VMAT	The accelerator should be capable of delivering VMAT plans with one or two energies capable of delivering 0.10 to 20 MU		

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ITEM	**PERFORMANCE SPECIFICATIONS**	**COMPLY(YES/NO)**	**OFFERING/ REFERENCE**
	(60 MU for SRS beam) per degree over a preset gantry rotation of up to 360 degrees or any fraction thereof. Desired zero (0.0) MU per degree dose delivery control over a preset gantry rotation range is accommodated. MU per degree (MU/DG) is computed by TPS based on the dose and the arc segment as represented by the treatment plan. VMAT delivery should also provide the following capabilities: voidance: capability to the beam during the f the gantry, thus to deliver partial or d arcs MAT: Allowing to use the onitored breathing to am delivery and gantry emporarily during the .		
Collision Detection System	• Collision Detection monitors the MLC collimator face with a plane of infrared light that emanates from a device located within the gantry or a touch ring. Any object that intrudes into this area, called the protection zone, triggers an emergency stop of		

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ITEM	**PERFORMANCE SPECIFICATIONS**	**COMPLY(YES/NO)**	**OFFERING/ REFERENCE**
	all accelerator motion.		
Auto Field Sequencing	• Auto Field Sequencing (AFS), for use with the 4D Integrated Treatment Console provides automated delivery of multiple coplanar and noncoplanar fields. With this time saving feature, the accelerator automatically acquires the mode up signal and machine setup information from the Treatment Console, and then allows the operator to remotely move the gantry, jaws, collimator, and Couch axes between coplanar and noncoplanar treatment fields. This feature eliminates the need to go back into the treatment room to alter the machine setup between treatment fields. AFS works in concert with the MLC to deliver both static and dynamic plans efficiently and smoothly.		
Gating system	• The gating system enables passive,		

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ITEM	**PERFORMANCE SPECIFICATIONS**	**COMPLY(YES/NO)**	**OFFERING/ REFERENCE**
	real- time monitoring of patient respiration for the purpose of intrafraction motion management. Two gating systems must be provided. Each system should include an infrared tracking camera, external marker block, workstation. The gating system supports gated treatment delivery and image acquisition on accelerators, gated simulation on compatible simulators, and gated CT acquisition on compatible third-party CT scanners (not all CT scanners are compatible). Depending on the capabilities of the CT scanner, the gating system supports both retrospective and prospective gating of CT scans.		
Information system	The information system will include a Server with rack and UPS and 8 client workstations • Preferably windows based • It will include the following features		

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ITEM	**PERFORMANCE SPECIFICATIONS**	**COMPLY(YES/NO)**	**OFFERING/ REFERENCE**
	• Patient demographic data • Diagnosis and staging entry • Agenda and resource planning • Reporting capability		
Treatment planning system	The treatment planning system will include 4 client workstations, 2 with calculation capabilities for 2D, 3DCRT, IMRT, VMAT, IGRT & SRS/SRT planning, and 2 with contouring and beam setup capabilities. The system should share the same database as the patient information system in order to avoid systematic data transfers of planning data.		
Immobilization package	Immobilization and Essential Accessories to be Included with the Unit The supplier should include the following key accessories at a minimum:-		
Carbon Fiber Immobilization Devices:	Carbon fiber standard baseplates (2), carbon fiber head and shoulder baseplate (2), foam head support (18 pieces), acrylic prone baseplate (1), carbon fiber wingboard (2) carbon fiber breast board (2), carbon fiber belly board (2), foam knee rest (2), foam foot rest (2), water tank (1), vacuum pump		

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ITEM	**PERFORMANCE SPECIFICATIONS**	**COMPLY(YES/NO)**	**OFFERING/ REFERENCE**
	(1) and table index bar (6).		
Accessories and Thermoplastic Masks:	Thermoplastic head mask (50), thermoplastic head and neck mask (40), thermoplastic head and shoulder mask (40), thermoplastic head mask IMRT (20) thermoplastic head and neck mask IMRT (20), thermoplastic head and shoulder mask IMRT (20), thermoplastic breast mask (20), thermoplastic pelvis mask (20), vacuum bags >40 x 60cm (4), vacuum bags >60 x 80cm (4), bolus 0.5 and 1cm (3 each), skin markers (3) and CT markers (3). • Head Base plate • Head support set, position "supine" • Head support, position "prone" • Head thermoplastic masks • Head and Neck thermoplastic masks • Head and Shoulder thermoplastic masks • Carbon fiber wingboard • Immobilization board for treating breast and thorax		

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ITEM	**PERFORMANCE SPECIFICATIONS**	**COMPLY(YES/NO)**	**OFFERING/ REFERENCE**
	with precise hand immobilization • Thermoplastic breast mask • Base plate for Abdomen and Pelvis made of carbon fiber • Thermoplastic mask for Abdomen and Pelvis Knee support device • Foot support device • Whole body immobilization vacuum bags 0/100cm • Whole body immobilization vacuum bags 50/70cm • Vacuum bags for special size order • Bolus 0.5cm • Bolus 1cm • Table index bar • Water bath for thermoplastic masks heating • Vacuum pump		
Dosimetry Package	The dosimetry serve system beam performance should meet internationally acceptable standards. The stable time for beam output should not be >0.5sec and the dose stability error not >2% in 5 days. The system should allow for a safety		

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ITEM	**PERFORMANCE SPECIFICATIONS**	**COMPLY(YES/NO)**	**OFFERING/ REFERENCE**
	interlock activation when longitude and lateral beam symmetry is => 2%. The ionization chamber should have a 4-channel structure. The system should include the following: water phantom, control software, dual channel electrometer, exradin ion chamber, electric lift table, calibration therapy ion chamber, calibration electrometer barometer, thermometer and a laptop.		
LINAC QA	**2. Features** Smartscan 3D Water Phantom System 1997-105 or equivalent, - OmniPro-Accept Advanced Acquisition and analysis software version 7 1997-120 or higher - OmniPro-Accept v. 7 RTPS i/f or higher		
Module for RTPS specific measurement	Triaxial ion chamber/diode detector cable (low noise), 5m on cable reel, Water phantom carriage, manually operated, including leveling frame Water reservoir carriage with uni-directional pump, power supply 230V Detector holder for CC and FC chambers as well		

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ITEM	**PERFORMANCE SPECIFICATIONS**	**COMPLY(YES/NO)**	**OFFERING/ REFERENCE**
	as third party detectors with a diameter of 10 mm to 15 mm Ionization chambers DS02-000 CC13 Ion chamber: 0.13 ccm, shonka plastic, waterproof, TNC triax,30 mm diameter for 4 - 6 MV photon and 8 - 12 MeV electron, 60 mm diameter for 15 -20 MV photon		
	Reference electrometer DOSE 1 Therapy Dose Meter Standard Version Triaxial ion chamber cable (low noise) thick version, 18 m on cable reel, TNC triax connector FC65-P "Farmer" type ion chamber: 0.65 ccm, POM, waterproof, TNC triax		
	Check sources Radioactive Check Device type CDC for cylindrical detectors Adapter for use of "Farmer" type chambers with CDC radioactive check dev Adapter for use of CC type chambers with CDC radioactive check device		
	Plates phantom SP34 or equivqlent Plate phantom consisting of 33 RW3 plates including storage Case RW3 Adapter plate for CC13		

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ITEM	**PERFORMANCE SPECIFICATIONS**	**COMPLY(YES/NO)**	**OFFERING/ REFERENCE**
	RW3 or equivalent Adapter plate for FC65-P/FC65- G "Farmer" type, PTW 30010/30012 and NE 2571/2581 or equivalent.		
	Isocenter check device Base plate Disk phantom for isocenter check (base plate)		
	Daily QA Equipment: Capable of the following: High-resolution centerline measurements, Energy constancy checks, fieldsize flexibility and Light field check, has 125 ion chambers or more for dose output, flatness, symmetry, centre fieldsize and energy		
	Thermometer and barometer C300 Digital Barometer or equivalent C100 Laboratory Thermometer or equivalent		
OTHER SPECIFICATIONS	The target to axis distance should be 100 +0.2 cm. The isocenter shall lie within a sphere of radius 1 mm. The accelerator gantry shall be capable of rotation equal to or greater than 360 degrees with a variation of the mechanical and radiation iso centers during rotation of less than + l.0		

Item Code No.	Department	Section	Item Description
LOT 2-2	Oncology	Radiotherapy	Digital Linear Accelerator
ITEM	**PERFORMANCE SPECIFICATIONS**	**COMPLY(YES/NO)**	**OFFERING/ REFERENCE**
	mm throughout the entire rotation. Digital scales indicating gantry angle position shall be provided both in the treatment room and at the control console. Accuracy of the scales shall be + 0.5 degree. The distance from the end of the lower collimator to the isocenter shall be greater than 45 cm. The bottom of the blocking tray should be greater than 30 cm from the isocenter. The height of the isocenter above the finished floor shall be less than 135 cm. Digital scales indicating collimator angle position shall be provided both in the treatment room and at the control console. Accuracy of the scales shall be + 0.5 degree. A complete set of Preshaped beam blocks shall be provided. In-built ion chambers of high accuracy for dosimetry for both photon and electron beams should be specified.		
Treatment Couch (with indexed carbon fiber table top)	The maximum height of the couch shall be at least 40 cm above the isocenter. The lowest couch position shall be		

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ITEM	**PERFORMANCE SPECIFICATIONS**	**COMPLY(YES/NO)**	**OFFERING/ REFERENCE**
	less than 63 cm above the finished floor. Motions (except couch top rotation) shall be both manual and variable- speed motor driven. The linear accelerator's use of conformal therapy and intensity modulated radiation therapy requires an indexed carbon fiber couch top that is designed for precise and repeatable patient positioning. The couch should be motorized in 4 directions and controlled either from the treatment room or the console area. It should be integrated with the control system of the LINAC in order to allow daily shifts based on acquired MV images. Convenient digital scales in metric units shall be incorporated on the couch or on an in-room monitor which will allow the operator to check the orientation of the couch height and couch angle with respect to the gantry. Couch positions (except couch top rotation) shall also be displayed at the control console.		

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ITEM	**PERFORMANCE SPECIFICATIONS**	**COMPLY(YES/NO)**	**OFFERING/ REFERENCE**
	Accuracy of the scales for vertical, lateral and longitudinal motions shall be within + 1 mm. Two hand pendants shall be provided.		
Treatment Room and Console Position Displays	For accuracy of patient set-up, digital displays of gantry rotation angle, collimator rotation angle, collimator jaw settings (symmetric and asymmetric), and treatment couch vertical position, lateral position, longitudinal position and turntable rotation angle about isocenter shall be provided both in the treatment room and at the operator console. Accuracy of collimator and gantry angle displays shall be + 0.5^0, with a resolution of 0.1^o. Accuracy of collimator jaw position displays shall be + 1 mm with a resolution of 1 mm. Accuracy of the couch vertical, lateral and longitudinal displays shall be + 2 mm with a resolution of 1 mm.		
Oncology Information and Image Management/ Treatment Record and Verify System	The vendor should provide a comprehensive Oncology Information & Image Management and Treatment Record & Verify System. The system shall assist in the integration of radiotherapy patient data		

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ITEM	**PERFORMANCE SPECIFICATIONS**	**COMPLY(YES/NO)**	**OFFERING/ REFERENCE**
	throughout the entire department which includes Linear Accelerators, CT-Simulator, Imaging Units in the hospital, Treatment Planning Systems. It shall also record and verify treatment parameters of patients undergoing treatment on the LINAC(s). The system shall be based on one single comprehensive self-integrated database, thereby eliminating the need for redundant entry of data used in different applications or imports\ exports from other applications. The system should provide the following functions: Record and Review Patient Diagnoses; Plan a course of treatment in advance so that treatments are readily delivered when the patient arrives; Write RT prescriptions that detail treatment techniques, fractions, and dose; Define treatment fields; Link setup fields and notes to treatment fields; Setup notes can include photos that show how to set up the patient; Track dose to specific sites; Define site breakpoints with		

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ITEM	**PERFORMANCE SPECIFICATIONS**	**COMPLY(YES/NO)**	**OFFERING/ REFERENCE**
	instructions that appear when the breakpoint will be exceeded; Store treatment plan information to avoid redundant and time-consuming data entry. MLC user operation should be accomplished entirely through the Oncology Information System (OIS), thereby eliminating the need for a separate control station for the MLC. Planned leaf shapes shall be incorporated directly into a patient's planned treatment field(s) in the electronic Chart. The MLC shape should automatically appear on the OIS treatment screen during the setup and treatment of any patient with a planned MLC shape. The shape shall be displayed simultaneously with all other pertinent treatment parameters. The system should have the capability of storing patient photos facilitating correct treatment. The digital patient photographs should upload to the database. After treatment of the first field, all subsequent fields shall be automatically and sequentially downloaded		

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ITEM	**PERFORMANCE SPECIFICATIONS**	**COMPLY(YES/NO)**	**OFFERING/ REFERENCE**
	to start autosetup of the next field without requiring operator interaction at either the OIS console or In- Room Monitor. Port Films should be capable of being planned ahead for appropriate treatment sessions, completed with prompting from the system, and automatically recorded in the electronic chart. Port Film dose shall be capable of being accumulated, if desired. The system shall permit override of individual treatment parameters (couch longitudinal for example) and require a password and appropriate user rights to successfully complete the override. The record and verification station shall accept and store demographic data, notes or comments and diagnostic information for each radiotherapy patient. When the patient proceeds with tumor localization, treatment planning and simulation, the treatment parameters will also be entered into the patient's file automatically or manually.		

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ITEM	**PERFORMANCE SPECIFICATIONS**	**COMPLY(YES/NO)**	**OFFERING/ REFERENCE**
	A daily patient schedule and time management schedule must be capable of being displayed on the computer monitor at the record and verify workstation. This schedule shall include, at a minimum, the scheduled treatment time for each patient, the patient's identification number and the patient's name. The schedule shall be used to select a patient for treatment on the accelerator. The system should be capable of maintaining a record of field-specific and treatment- specific daily and cumulative doses for the target site and additional sites of interest. It shall be possible to specify a prescribed dose for each treatment site for every patient. The system shall prevent treatment if this dose will be exceeded upon completion of the treatment. A manual override shall be provided. Overriding prescribed dose limits by unauthorized personnel shall not be permitted. After the daily irradiation of a patient, the therapy		

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ITEM	**PERFORMANCE SPECIFICATIONS**	**COMPLY(YES/NO)**	**OFFERING/ REFERENCE**
	history will be updated and the given target doses, or doses calculated to other sites, shall be accumulated. The Operating System should provide a convenient and efficient means for the user to generate and to print hard copy reports of information contained in the database. The scheduler of the OIS should be capable of maintaining schedules for multiple departments and scheduling any resource desired by the site. It should have a graphical user interface for ease of customizing schedule views, changing appointment times and minimizing keystrokes. The OIS should provide the capability to integrate simulation, CT, MRI, PET, SPECT and electronic portal imaging system images into the OIS database to provide a readily available reference during the patient's course of treatment. Reviewing images immediately after acquisition from a remote location shall be permitted. The OIS shall		

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ITEM	**PERFORMANCE SPECIFICATIONS**	**COMPLY(YES/NO)**	**OFFERING/ REFERENCE**
	provide the additional feature of managing drug administration to patients. The Hardware should consist of the following: Two separate, but fully integrated servers, one each for data management and image management with back up with at least 120 GB capacity or more to handle busy department workload; 6 additional Image Workstations for Review and Approval; a latest 5 mega pixel digital camera (lithium ion battery with at least 16 GB memory card) for acquiring patient photos; a networked color image DICOM laser printer; capability for high speed internet connectivity for Online Service support. A camera having capable of taking both still as well as motion picture having latest configurations should be supplied. The unit should be able to integrate with the existing Record and Verify System.		
Linear Accelerator Commissioning			
Scope of Services – Acceptance testing	• BIDDER will perform the acceptance of the Oncology		

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ITEM	**PERFORMANCE SPECIFICATIONS**	**COMPLY(YES/NO)**	**OFFERING/ REFERENCE**
	Information System and High Energy Linear Accelerator using manufacturer protocol and will establish the important baseline values for the future use. • Bidder will submit the complete acceptance test report to the Project Implementation Team.		
Commissioning	Bidder will commission the linear accelerator based on the American association of medical physics Task group TG-106 report. Commissioning timelines are as specified below subject to discussion and agreement with the client • 2 weeks photon beam scanning inclusive of point data collection, • 2 weeks for electrons, and • 1 week for verification. • 2 weeks analysis and report writing. The bidder will perform quality assurance tests for the linear accelerator based on the American association of medical physics Task group TG142 recommendations.		

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ITEM	**PERFORMANCE SPECIFICATIONS**	**COMPLY(YES/NO)**	**OFFERING/ REFERENCE**
	Bidder will device a QA strategy for performing on Daily, Monthly & Annual basis. Bidder's team and the client will establish institution-specific baseline and absolute reference values for all QA measurements. The team will meet regularly and monitor the measurement results against the established values to • ensure the machine performance • determine any significant dose deviations from the treatment planning calculations. In addition, the team will device a QA strategy for performing on Daily, Monthly & Annual basis.		
	1) Daily (Photons & Electrons): • Energy constancy- TPR 20/10 Phantom measurement using IAEA TRS 398 protocol • Flatness and Symmetry measurement (applicable only if appropriate QA device is provided by the hospital) o Output constancy		

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LOT 2-2	Oncology	Radiotherapy	Digital Linear Accelerator
ITEM	**PERFORMANCE SPECIFICATIONS**	**COMPLY(YES/NO)**	**OFFERING/ REFERENCE**
	○ Laser/ODI check IGRT-OBI imaging isocenter verification		
	2) Monthly (Photons & Electrons) • Absolute dose measurements • LINAC Mechanical QA • LINAC Radiation performance check • DMLC QA using film / EPID • Garden fence • Picket fence • DMLC Test patterns • DMLC output • Dynalog file Analysis • OBI Mechanical QA • OBI Imaging QA • CBCT Calibration (If required) • Arc Dosimetry • Picket fence test for static gantry angle • Picket fence test for VMAT delivery • Picket test with intentional errors for VMAT delivery • Dose rate & Gantry speed for VMAT delivery • MLC Speed test for VMAT delivery Bidder's Radiation safety officer and his team members will conduct the radiation survey of the radiation oncology facility as per IAEA		

Item Code No.	Department	Section	Item Description
LOT 2-2	Oncology	Radiotherapy	Digital Linear Accelerator
ITEM	**PERFORMANCE SPECIFICATIONS**	**COMPLY(YES/NO)**	**OFFERING/ REFERENCE**
	radiation safety code for radiotherapy.		
Commissioning of linear accelerator in treatment planning system to perform 2D, 3DCRT, IMRT and VMAT treatments	Bidder will perform treatment Planning System Commissioning and Quality Assurance - using IAEA Technical Report Series 430 for "Commissioning and Quality Assurance of Computerized planning system for Radiation treatment of Cancer". In addition to the above following newer technique algorithms will also be commissioned • Dose Volume Optimizer commissioning • Progressive Resolution Optimizer Commissioning Enhanced dynamic wedge commissioning • Portal Dose Image Prediction algorithm commissioning for portal dosimetry • Plan Geometry Optimizer for IMRT optimization 3D CRT- Commissioning and validation of - Physical wedges - Enhanced dynamic wedges - Field in Field techniques- Irregular field - Electronic compensator (if applicable) - Customized block (if applicable).		

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ITEM	**PERFORMANCE SPECIFICATIONS**	**COMPLY(YES/NO)**	**OFFERING/ REFERENCE**
	• IMRT- Commissioning and validation of o DMLC o DVO o Clinical site-specific validation • IGRT - Commissioning and validation of o OBI- kV imaging o OBI – CBCT o MV imaging o kV-MV match • Special Procedures (If applicable) o Stereotactic Radio Surgery - Planning & Implementation o Stereotactic Radio Therapy- Planning & Implementation o Stereotactic Body Radiotherapy- Planning & Implementation o Hemi Body Irradiation Planning & Implementation o Cranio-spinal Irradiation - Planning & Implementation • RapidArc - Commissioning and validation of o Clifton ling test o Arc dosimetry		

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LOT 2-2	Oncology	Radiotherapy	Digital Linear Accelerator
ITEM	**PERFORMANCE SPECIFICATIONS**	**COMPLY(YES/NO)**	**OFFERING/ REFERENCE**
	○ Clinical site-specific validation • Respiratory gating - Commissioning and validation (If applicable) ○ Creation of 4D image set ○ Creation and Validation of Maximum intensity projection and minimum intensity projection CT images for Lung and Liver tumors ○ Deep breath-hold technique for breast cancer patients. ○ Selection of respiratory phase for the treatment of lung cancers • Bidder will perform the necessary QA to validate the data transfer from the server to linear accelerator, treatment planning system, contouring workstation and all the peripheral system.		
5Scope of Service	• Bidder will commission, validate and to perform CT simulation • Bidder will perform complete CT image quality QA using		

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ITEM	**PERFORMANCE SPECIFICATIONS**	**COMPLY(YES/NO)**	**OFFERING/ REFERENCE**
	CAT phan phantom (Supplied along with ONCOLOGY INFORMATION SYSTEM and linear accelerator). • In addition, bidder team will setup QA protocol to check the data transfer from CT simulator to server. • Bidder will perform commissioning and QA of moving laser (if available)		

LOT 2-3 – Brachytherapy Unit

Item Code No.	Department	Section	Item Description
LOT 2-3	Oncology	Brachytherapy Room	Brachytherapy Unit
ITEM	**PERFORMANCE SPECIFICATIONS**	**COMPLY(YES/NO)**	**OFFERING/REFERENCE**
General description			
Technical Specifications	• Radioactive Source – Brachytherapy Unit • Iridium-192, metallic • Cylindrical configuration • Iridium-192 pellet- HDR: 0.6 mm diameter, 3.5 mm active length; PDR: 0.6 mm diameter, 0.5 mm active length • Capsule- HDR: 0.9 mm diameter, 4.52 mm length; PDR: 0.9 mm diameter, 2.97 mm length • Nominal activity- HDR: 370 GBq (10 Ci)*; PDR: 37 GBq (1 Ci) • Air Kerma Rate (HDR): 0.063 Gy/h (±5%) for 555 GBq at 1 m		
Source cable	• Iridium-192 source encapsulated in stainless steel • Capsule welded to a flexible stainless steel cable • Distance from distal cable tip to the beginning of the active pellet- HDR: 0.67 mm; PDR: 2.07 mm (To		

Item Code No.	Department	Section	Item Description
LOT 2-3	Oncology	Brachytherapy Room	Brachytherapy Unit
ITEM	**PERFORMANCE SPECIFICATIONS**	**COMPLY(YES/NO)**	**OFFERING/REFERENCE**
	ensure consistent "cable tip to source center" distance for HDR and PDR sources) • Cable diameter: 0.9 mm • Maximum extension length: 130 cm • The most distal 200 mm section of the cable is an ultraflexible cable. • Source manufactured according to ISO1677, ISO2919, ISO/TR4826, ISO9978 resulting in ISO source classification: C63333		
Transportable options	• Transportation Options system has been qualified as a Type A shipping container. • Afterloader capacity that can be converted to a transportable system for use in multiple locations.		
Afterloader	Meets the recommitments of the following standards: • Electrical safety of medical devices standard IEC 60601-1		

Item Code No.	Department	Section	Item Description
LOT 2-3	Oncology	Brachytherapy Room	Brachytherapy Unit
ITEM	**PERFORMANCE SPECIFICATIONS**	**COMPLY(YES/NO)**	**OFFERING/REFERENCE**
	• Collateral standards of IEC 60601-1 specific to afterloaders IEC 60601-2-17 • IAEA and US DOT-7A.		
Cable and drive parameters	• Nominal cable speed zero slip: approximately 60 cm/s • Source positioning accuracy: ±1 mm relative to the indexer		
Source placement	• Treatment channels • Dwells per channel • Step size: default 5 mm, programmable from 1-10 mm, in 1 mm increments • Minimum radius of curvature at the distal end of the catheter: 1.3 cm in a ring probe of diameter 2.6 cm and in a 5 Fr bronchial catheter • Method of source movement: commences at most distal dwell positions and steps back		
Afterloader shielding	• Safe material: Tungsten • Maximum storage capacity of safe: 555 GBq (15 Ci)		

Item Code No.	Department	Section	Item Description
LOT 2-3	Oncology	Brachytherapy Room	Brachytherapy Unit
ITEM	**PERFORMANCE SPECIFICATIONS**	**COMPLY(YES/NO)**	**OFFERING/REFERENCE**
	• Maximum Air Kerma Rate 1 m from afterloader: does not exceed 3 µGy/h for maximal load • Radiation shielding: Conforms to International • Electrotechnical Commission requirements (IEC 60601-2-17) ICRP codes and applicable NRC standards in the USA		
Room shielding	• Controlled by local codes and conditions of operation • Approximately 4 cm of lead or 35 cm of concrete is generally required		
Electrical Power Requirements	• System power rating: 240V / 50 Hz models available; 100 VA • In the event of a power failure, the afterloader is powered through the internal batteries to allow the source to retract to the safe.		
Environmental requirements	• Operating temperature range: +15 to +35°C		

Item Code No.	Department	Section	Item Description
LOT 2-3	Oncology	Brachytherapy Room	Brachytherapy Unit
ITEM	**PERFORMANCE SPECIFICATIONS**	**COMPLY(YES/NO)**	**OFFERING/REFERENCE**
	• Humidity range: 30% to 75% (non-condensing) • 36.1.3 Air pressure: 70 kPa - 110 kPa • 36.1.4 Weight & dimensions 130 kg 105 cm H x 51 cm W x 57.5 cm D		
Equipment classification	• Type of protection against electric shock: CLASS 1 • Degree of protection against electric shock: TYPE B • Degree of protection against harmful ingress of water: IP 40 • Equipment not suitable for use in the presence of a flammable anaesthetic mixture with air or with oxygen or nitrous oxide • Class of operation: CONTINUOUS		
Safety equipment (emergency container)	• Emergency source container is designed to hold most applicators directly • 38.1.2Minimum shielding: 26 mm lead • 38.1.3 Minimum diameter (inner plastic container):		

Item Code No.	Department	Section	Item Description
LOT 2-3	Oncology	Brachytherapy Room	Brachytherapy Unit
ITEM	**PERFORMANCE SPECIFICATIONS**	**COMPLY(YES/NO)**	**OFFERING/REFERENCE**
	approximately 60 mm • 38.1.4 Container height (internal): 270 mm		
Brachytherapy Commissioning			
	• Bidder will help in selection of essential radiation dosimetry and equipment and Quality Assurance equipment required for commissioning and continuing the Quality Brachytherapy as per international standards.		
Scope of Services	• Bidder, along with local radiotherapy team will perform the acceptance of the Brachytherapy unit using manufacturer protocol. • The team will also perform detailed Electrical, Mechanical and Radiation checks during commissioning. • All the applicators will be checked mechanically, and Autoradiograph will be performed for all applicators to verify the source positional		

Item Code No.	Department	Section	Item Description
LOT 2-3	Oncology	Brachytherapy Room	Brachytherapy Unit
ITEM	**PERFORMANCE SPECIFICATIONS**	**COMPLY(YES/NO)**	**OFFERING/REFERENCE**
	accuracy within the applicator. • Bidder team will submit the complete acceptance test report to the Project Implementation Team.		
Radiation Safety Survey during source loading	• Bidder's Radiation Safety Officer (RSO) and team will perform detailed radiation leakage tests on the Brachytherapy treatment unit head and perform radiation survey around the installation as per IAEA Safety code for radiotherapy, to ensure the safety of the patient, public, radiation workers and the hospital before starting treatment. • During first source loading, the bidder will perform detailed radiation leakage tests on the Brachytherapy treatment unit head and perform radiation survey around the installation to ensure the safety of the patient, public		

Item Code No.	Department	Section	Item Description
LOT 2-3	Oncology	Brachytherapy Room	Brachytherapy Unit
ITEM	**PERFORMANCE SPECIFICATIONS**	**COMPLY(YES/NO)**	**OFFERING/REFERENCE**
	and radiation workers. • Bidder's RSO will formulate procedures for safe handling of radioactive isotopes from the moment it is received at the hospital. • The new source container upon receipt at the hospital will be surveyed and inventory will be made for safety and regulatory concerns.		
Regular Quality Assurance Procedures	**Daily Quality Assurance** • Source Activity/Decay • functioning of Door Interlock • Treatment interruption and recovery • Radiation Survey meters functionality check o Gamma area monitors functionality check.		
	Source loading Quality Assurance • Electrical, Mechanical and Radiation Checks will be performed after each source		

Item Code No.	Department	Section	Item Description
LOT 2-3	Oncology	Brachytherapy Room	Brachytherapy Unit
ITEM	**PERFORMANCE SPECIFICATIONS**	**COMPLY(YES/NO)**	**OFFERING/REFERENCE**
	loading. o Radiation leakage survey of treatment unit and installation, • Source positional accuracy using auto radiographs • Calibration of radioactive source against reference. • Temporal accuracy - Timer linearity and end error, against reference. • Swipe test of applicators • Then new source data will be entered in to the Treatment planning system and treatment times will be calculated and verified with a reference test patient o Mechanical Integrity of applicators, • Source positional accuracy– autoradiograph o Emergency interlocks and recovery of treatment after interruption.		
	Treatment Planning System (TPS) QA. • Digitizer- Accuracy of		

Item Code No.	Department	Section	Item Description
LOT 2-3	Oncology	Brachytherapy Room	Brachytherapy Unit
ITEM	**PERFORMANCE SPECIFICATIONS**	**COMPLY(YES/NO)**	**OFFERING/REFERENCE**
	digitization of point Co-ordinates. • Calculation Algorithm o Source specification required for TPS o Initial activity quoted by the supplier • Agreement of source decay corrections • Agreement between TPS and published/ • manual calculation for single source, at relevant points		
Clinical Implementation (RT)	**Patient Immobilization** Bidder will establish site specific immobilization protocol to perform • Head& Neck • Thorax • Abdomen • Pelvis • Extremities • Special procedures SRS, SRT, SBRT, Hemi body, craniospinal, mantle field technique, Total Body irradiation • Patient preparation • selection of immobilization devices		

Item Code No.	Department	Section	Item Description
LOT 2-3	Oncology	Brachytherapy Room	Brachytherapy Unit
ITEM	**PERFORMANCE SPECIFICATIONS**	**COMPLY(YES/NO)**	**OFFERING/REFERENCE**
	• Setup notes and documentation • Protocol for CT image acquisition for Radiotherapy planning • Protocol for MRI & PETCT image acquisition for Radiotherapy planning • Hands on Training of RT procedures • Setting up protocol for special procedures.		
	Planning Simulation • Bidder will assist the local team to perform the required CT simulation for all the new cancer patients so that they can be taken up for the further contouring treatment planning and delivery.		
	Treatment Planning • Bidder will perform treatment planning Selection of treatment technique Selection of modality, o Selection of field directions for complex field arrangements		

Item Code No.	Department	Section	Item Description
LOT 2-3	Oncology	Brachytherapy Room	Brachytherapy Unit
ITEM	**PERFORMANCE SPECIFICATIONS**	**COMPLY(YES/NO)**	**OFFERING/REFERENCE**
	○ Computation of dose distribution and verification of accuracy ○ Dose volume histogram ○ Clinical Implementation of Brachytherapy procedures.		
	Fabrication of Treatment Aids • Bidder team will assist the local team to create custom made block electron blocks.		
	Simulation of Treatment • Radiographic documentation of treatment ports. • Bidder will assist and teach the local team to check and approve every image of the treatment site at treatment machine prior to treatment of individual patient		
	Treatment • Transfer of treatment data to the treatment machine		

Item Code No.	Department	Section	Item Description
LOT 2-3	Oncology	Brachytherapy Room	Brachytherapy Unit
ITEM	**PERFORMANCE SPECIFICATIONS**	**COMPLY(YES/NO)**	**OFFERING/REFERENCE**
	• Initial verification of treatment set-up. • Verification of accuracy of repeated treatments. • Continual assessment of equipment performance • Periodic check protocol		
Training	1) The vendor should provide comprehensive training delivered by application specialists for the linear accelerators done on site during installation and to the full of the Department of Radiotherapy. The training period should be at least for four weeks or more. 2) Training in a well-advanced centre for two Radiation Oncologists, two Medical Physicists and two Radiotherapy Technicians for two weeks should be provided for the staff. 3) Maintenance/service training should be provided for two Biomedical		

Item Code No.	Department	Section	Item Description
LOT 2-3	Oncology	Brachytherapy Room	Brachytherapy Unit
ITEM	**PERFORMANCE SPECIFICATIONS**	**COMPLY(YES/NO)**	**OFFERING/REFERENCE**
	Service Engineers at the manufacturer's factory for not less than two weeks.		
Equipment Support and Services	The bidder should provide a warranty and support plan cover for the first 2 years and make an offer for CMC for five years post warranty.		
Immobilization package	Immobilization and Essential Accessories to be Included with the Unit The supplier should include the following key accessories at a minimum:-		
Check sources	Radioactive Check Device type CDC for cylindrical detectors Adapter for use of "Farmer" type chambers with CDC radioactive check dev Adapter for use of CC type chambers with CDC radioactive check device		

SUMMARY

Item	Description
1.	**Radiotherapy Equipment**
	A dual energy linear accelerator -Energy Linear Accelerator Complete with all software's and Accessories per Specifications
	Brachy Therapy complete with all accessories per specifications
	Dosimetry and accessories
	Immobilization accessories

LOT 2-4: Anaesthetic Machine with Ventilator

Item Code No.	Department	Section	Item Description		
LOT 2-4	Oncology	Radiotherapy Room	**Anaesthetic machine with ventilator**		
1.	General Description				
Inhalation anaesthetic machine with electronic ventilator complete with all accessories for low and high flow anaesthesia, adult, paediatric and infant application. It should include a patient monitor unit.					
2.	Composition				
2.1.	Main unit	1 Unit			
	Electronic Ventilator	1 Unit			
	Patient Monitor	1 Unit			
	Accessories complete start-up kit	1 Set			
3.	Performance Specifications				
3.1.	Main Unit				
3.1.1.	Anesthetic trolley with minimum 2 drawers and a table top, with yokes for Oxygen (O_2) and Nitrous Oxide (N_2O) portable cylinder and support for circle systems including hoses and absorbers and support for central pipeline gas system. Model on current production				
3.1.2.	Anesthetic trolley	With minimum of 2 drawers			
3.1.3.	Wheels	With castors, two with brakes			
3.1.4.	Gas delivery system	3 gas delivery system (O_2, N_2O and air) with both inlets for central gas pipeline system, and separate portable cylinders.			
3.1.5.	Yokes	To support portable Oxygen (O_2) and Nitrous Oxide (N_2O) cylinders, 11 liters each			
3.1.6.	Portable Oxygen (O_2) Cylinder connection	Bull nose type			
3.1.7.	Portable Nitrous Oxide (N_2O) cylinder connection	Pin Index type			
3.1.8.	Pressure regulators and gauges for O_2 and N_2O	Intergraded in the trolley			
3.1.9.	Central gas pipeline system	Standard BS connections and colour codes for O_2, N_2O, and Air,			
3.1.10.	Flow meter	Separate flow meter for O_2, Air, and N_2O			
3.1.11.	Breathing Circle System	Capable of performing Open, Semi-Open, Semi-Closed and Closed system			
3.1.12.	All patient connecting hoses	Corrugated, Transparent, autoclavable (134°C), φ 22 mm, with ISO connectors			

Item Code No.	Department	Section	Item Description
LOT 2-4	Oncology	Radiotherapy Room	**Anaesthetic machine with ventilator**
3.1.13.	CO_2 absorber	Integrated, complete with Soda lime and switch for Magill's circuit.	
3.1.14.	Accessories: To be provided as startup kits.		
	Adult Breathing circuit for ventilator	2 Unit	
	Paediatric Breathing circuit for ventilator	2 Unit	
	Face Mask, Adult, Sizes 1, 2, 3 transparent type	2 Sets	
	Face Mask, Paeds, Sizes 1, 2, 3 transparent type	2 Sets	
	Breathing Bag Adult (2 L)	2 Sets	
	Breathing Bag Paeds (1L)	2 Sets	
	Breathing Bag Baby (0.5L)	2 Sets	
	Magill's circuit complete with adult mask	2 Sets	
	Aynes Paed circuit	2 Sets	
	CO_2 absorber gas out let		
3.2.	Vaporizer	Minimum Halothane and Isoflurane	
3.2.1.	Compensation	Temperature, pressure and flow compensated	
3.2.2.	Range	About 0.2% to 4%	
3.2.3.	Accuracy	± 0.15%	
3.2.4.	Keyed filler according to ISO standards		
3.2.5.	Adjustment	Large hand wheel with Zero Lock	
3.2.6.	Ambient Temperature	15^{o}C to 35^{o}C at Normal pressure	
3.2.7.	Maintenance	Service free for a minimum period of 5 years of usage	
3.3.	Safety controls		
3.3.1.	O_2 supply failure	audible alarm with reset	
3.3.2.	Hypoxyguard	Minimum O_2 25%: Shut off supply	
		N_2O Shut off	
3.3.3.	O_2 Flush Gas Supply	Above 30 L/ Min 2-6 bars	

Item Code No.	Department	Section	Item Description
LOT 2-4	Oncology	Radiotherapy Room	**Anaesthetic machine with ventilator**
3.4.	Ventilator		
3.4.1.	Type	Microprocessor controlled and electrical/gas driven	
3.4.2.	Application	Suitable for adult, paediatric and infant application without changing parts between patient types	
3.4.3.		Ventilation with ambient air possible	
3.4.4.	Modes	Minimal manual, spontaneous, IPPV, PCV,SIMV +PS	
3.4.5.	Ventilator Parameter		
	Tidal Volume: IPPV	20 ml- 1600ml	
	P max (PEEP + 10)	Up to 70hPa	
	PEEP	about 1 to 20mbar	
	Frequency:	about 3 to 60/min	
	Insp flow	Max 150l/min	
	Pinsp (PEEP + 5)	Up to 70kPa	
	I: E ratio	5:1 to 1:5	
	In case of failure	Switch to room air automatically	
3.5.	Display	colour display minimum 6”	
3.5.1.	Display parameters	Minute Volume	
		Tidal Volume	
		Rate	
		Pressure Peak Response, PEEP,FiO2	
		Graphic Trends	
3.6.	Patient monitor	To be mounted on the anesthetic machine	
3.6.1.	Parameters	Pulse rate	
		SpO_2	
		Temperature: 2 probes	
		Blood pressure (NIPB and IPB)	
		ECG 3 leads	

Item Code No.	Department	Section	Item Description
LOT 2-4	Oncology	Radiotherapy Room	**Anaesthetic machine with ventilator**
3.6.2.	Display	Colour Display minimum 10”	
		5 Parameter display	
3.6.3	Accessories: To be provided as startup kits.		
	SpO_2 , Adult Sensor, Reusable	2 Pieces	
	SpO_2 , Paediatric Sensor, Reusable	2 Pieces	
	SpO_2 , Infant Sensor, Reusable	2 Pieces	
	Temperature	2 Probes	
	BP cuff, Large adult, reusable	2 Piece	
	BP cuff, adult, reusable	2 Piece	
	BP cuff, Small adult, reusable	2 Piece	
	BP cuff, Paed, reusable	2 Piece	
	BP cuff, Thigh, reusable	2 Piece	
	ECG 3 Leads Soda lime	2 Piece 3 containers of 5liter each	
4.	Physical characteristics		
4.1.	Main unit	mobile on casters	
	Outer dimensions	Compact design	
5.	Operating environment		
5.1.	Power Requirements	240V, A/c 50 Hz, Single phase, 3 Pin Plug, 3m long cord with PE	
	Ambient temperature	10^{o} C to 40^{o} C	
	Relative humidity	20% to 90%	
6.	Backup Power supply		
6.1.	Internal battery	Internal battery	
7.	Quality standards		
7.1.	Manufacturing standards	ISO 13485, ISO 9001	
	Product conformity standards	EU-93/42/EEC, IEC 60601-1, EN 740 CE and FDA approved	
8.	Delivery point		

Item Code No.	Department	Section	Item Description		
LOT 2-4	Oncology	Radiotherapy Room	**Anaesthetic machine with ventilator**		
8.1.	See Schedule of equipment of equipment delivery				
9.	Pre installation requirements				
	Refer to schedule 6 and special condition in section 4l				
10.	Installation and testing				
	Complete installation and set-up of the machine at the hospital as per manufacturer's instructions				
11.	Training				
11.1.	User Training	On site user training on operation and daily up keep			
11.2.	Maintenance training	Onsite maintenance training on preventive maintenance			
12.	Technical documentations				
12.1.	User manuals	2 printed Sets and electronic copy			
12.2.	Service Manual	1 Set			
13.	Commissioning				
13.1.	Testing and commissioning of the machine to the satisfaction of the user.				

LOT 2-5 - Brachytherapy Table

Item Code No.	Department	Section	Item Description
LOT 2-5	Oncology	Brachytherapy Room	Brachytherapy Table
1. General Description			
Operating table suitable for use in theatre for major operations. It should be capable of performing lateral tilt, up-down movement, trendelenburg and reverse trendelenburg position, back section refraction and kidney bridge. The movement should be electrohydraulic with manual option control system			
2. Composition			
2.1.	Main unit		
3. Physical Specifications			
3.1.	Main Unit		
3.1.1.	Table top	Approx. Length 2000 X width 600 mm	
3.1.2.		X-ray Permeable	
3.2.	Head rest	Detachable	
3.3.	Leg rests	Detachable/separable	
3.4.	Material of main unit	Made of scratch resistant, hard wearing and easy to clean material	
3.5.	Height of table top	Adjustable, mechanical operated, 600mm to 1100mm	
3.6.	Table top movements		
3.6.1.	Trendelenburg	Forward: 25^{o}, Reverse: 25^{o}	
3.6.2.	Lateral – tilt	~20^{o} both to the left and right	
3.6.3.	Back- section refraction	90^{o}	
3.6.4.	Table top turn	180^{o}	
3.6.5.	Main unit movements	Mobile with antistatic castors with braking mechanism	
3.7.	Maximum load weight	250 Kg	
4.	Accessories	To be provided as startup kits.	
4.1.	Mattress	High density type easy to clean, 3” thickness with 4 sections, breathable, waterproof that does not stick to the table	
4.2.	Arm board with mattress	1 piece	
4.3.	Shoulder support with pads	2 pieces	

Item Code No.	Department	Section	Item Description
LOT 2-5	Oncology	Brachytherapy Room	Brachytherapy Table
4.4.	Foot board	1 set	
4.5.	Knee crutches	2 pieces	
4.6.	Screen frame	1 piece	
4.7.	Body support with pads	2 pieces	
5.	I. V. pole, adjustable height Orthopedic attachment	1piece 1 piece	
5.1.	Manufacturing standards	ISO 13485, ISO 9001	
5.2.	Product conformity standards	EU-93/42/EEC, CE and FDA approved	
6.	Delivery point		
6.1.	See hospital schedule	For Delivery, inspection and commissioning	

LOT 2-6: General Purpose Suction Unit

Item Code No.	Department	Section	Item Description
LOT 2-6	Oncology	Radiotherapy	General Purpose Suction Unit
1. General Description			
n machine suitable for use in theatre, for both adult and pediatric use. Should be constructed from coated non-corrosive, extreme heat resistance material and electrically insulated and mobile on antistatic castors φ 60 mm, 2 No. lockable, with high level push handle.			
2. Composition			
2.1.	Main unit		
3. Performance Specifications			
3.1.	Main Unit		
3.1.1.	High flow rate	40 litres per minute.	
3.1.2.	Suction vacuum	Maximum 700mmHg	
3.1.3.	Suction pump	oil free	
3.1.4.	Jars	2 X 2 liter polycarbonate autoclavable and unbreakable complete with overflow devices and valves.	
3.1.5.	Vacuum gauge	Graduated in mmHg and kPa.	
3.1.6.	Vacuum control	Adjustable at the front panel	
3.1.7.	Switch	Main on front panel and foot switch (water proof type)	
3.1.8.	Cable towage	On back with reversible cleats	
3.1.9.	Anti-bacterial filters	Available preferable autoclavable	
3.1.10.	Suction tubing connection	Antistatic neoprene or silicone	
3.1.11.	Safety	Overflow pump protection	
3.1.12.	Handle	High level push handle type	
3.1.13.	Movements	Mobile on four antistatic castors 2 No. lockable.	
4.	Physical characteristics		
4.1.	Main unit	Mobile on castors with push handle	
5.	Operating environment		
5.1.	Power Requirements	240V, A/c 50 Hz, Single phase, 3 Pin Plug BS standard, 3m long cord with PE	
5.2.	Ambient temperature	10° C to 40° C	

Item Code No.	Department	Section	Item Description
LOT 2-6	Oncology	Radiotherapy	General Purpose Suction Unit
5.3.	Relative humidity	20% to 90%	
6.	Accessories	The following accessories will be provided as startup kits.	
6.1.	Sterilizable, silicone tubing	5 Set	
6.2.	Bacterial filters	1 Box	
6.3.	Foot switch	1 No.	
6.4.	Cannula with handle for general purpose	4 Sets	
7.	Quality standards		
7.1.	Manufacturing standards	EN 10079-1, IEC 60601-1, ISO 9001, ISO 13485	
	Conformity to standards	CE and FDA marked	
8.	Local back up service		
8.1.	Available	Should be available locally	
8.2.	Capacity to service equipment	Agent shall have adequate facilities, spare parts, and qualified and skilled technical staff	
9.	Delivery point		
9.1.	See Schedule	For inspection and testing	
9.2.	Nil		
10.	Pre installation requirements		
	Nil		
11.	Installation and testing		
	Complete installation and setup of the machine as per manufacturer's instructions		
12.	Training		
12.1.	User Training	On site user training on operation and daily up keep	
12.2.	Maintenance training	Onsite maintenance training on preventive maintenance	
13.	Technical documentations		
13.1.	User manuals	2 Sets	
13.2.	Service Manual	1 Set	

Item Code No.	Department	Section	Item Description		
LOT 2-6	Oncology	Radiotherapy	General Purpose Suction Unit		
13.3.	Drawings	Nil			
14.	Commissioning				
14.1.	Testing and commissioning of the machine to the satisfaction of the user.				
15.	Warranty				
15.1.	Equipment	Minimum of one year after commissioning on all parts.			
15.2.	Equipment System	Nil			

LOT 2-7: Operation Light (LED)

Item Code No.	Department	Section	Item Description
LOT 2-7	Oncology	Brachytherapy	Operation Light (LED)
1. General Description			
Surgical light (Operating lamp) ceiling mounting type. The surgical light should consist of two lamp head, main and auxiliary (dual type). It should be constructed from light weight material preferable aluminum, and easily to disinfect. It should have emergency backup power supply to last for at least 2 hours. The Main Light should be fitted with a digital camera for ICT integration.			
2. Composition			
2.1.	Main unit and auxiliary lamp head		
3. Performance Specifications			
3.1.	Main and auxiliary lamp head		
3.1.1.	Diameter	main and auxiliary unit	
3.1.2.	Rotation	360^{o} along the central axis	
3.1.3.	Maximum light intensity	Above 150,000 lux at 1 meter each	
3.1.4.	Focus	Adjustable	
3.1.5.	Field	Constant to a depth of at least 500mm	
3.1.6.	Field	shadow less	
3.1.7.	Light colour Temperature	3600 to 4800 K Colour rendering index >95% Deeming range 30-100%	
3.1.8.	Lighting Control	Electronic system with touch button light intensity	
3.1.9.		Control mounted at a convenient place preferable on the head lamp.	
3.1.10.	Lighting Bulb	Low voltage LEDs service life >40,000 hours	
		Light field diameter of 300mm at 1 m	
3.1.11.	Mounting ceiling Height	Minimum 2.5m above floor	
3.2.	Accessories		
3.2.1.	All mounting accessories	Ceiling anchor plates,	
3.2.2.		Bolts, nuts and other necessary	
4.	Operating environment		
4.1.	Power Requirements	240V, A/c 50 Hz, Single phase, with PE	

Item Code No.	Department	Section	Item Description		
LOT 2-7	Oncology	Brachytherapy	Operation Light (LED)		
4.2.	Ambient temperature	10^{o} C to 40^{o} C			
4.3.	Relative humidity	20% to 90%			
5.	Emergency Backup power	To least for at least 2 hour			
5.1.		With sealed batteries			
		Automatic change over and charger unit			
6.	Quality standards				
6.1.	Manufacturing standards	ISO 13485, ISO 9001			
6.2.	Product conformity standards	EU-93/42/EEC, IEC 60601-1 FDA and CE approved			
7.	Local back up service				
7.1.	Available	Should be available locally			
7.2.	Capacity to service equipment	Agent shall have adequate facilities, spare parts, and qualified and skilled technical staff			
8.	Pre installation requirements				
	Prepare roof for installation				
9.	Installation and testing				
	Complete installation and set-up of the machine at per manufacturer's instructions				
10.	Training				
10.1.	User Training	On site user training on operation and daily up keep			
10.2.	Maintenance training	Onsite maintenance training on preventive maintenance			
11.	Technical documentations				
11.1.	User manuals	2 Sets			
11.2.	Service Manual	1 Set			
11.3.	Drawings				
12.	Commissioning				
12.1.	Testing and commissioning of the machine to the satisfaction of the user.				

LOT 2-8: Patient Trolley

Item Code No.	Department	Section	Item Description		
LOT 2-8	Oncology	Radiotherapy	Patient Trolley		
1. General Description					
Resuscitation patient trolley with IV pole , Oxygen Cylinders and with adjustable sides, constructed from chrome plated mild steel and mobile on castors					
2. Composition					
2.1.	Main unit				
3. Physical Specifications					
3.1.	Main Unit				
3.1.1.	Material of main unit	Tubular mild steel, chrome plated			
3.1.2.	Movements	Back rest, trendelenburg/reverse tendelenburg, up and down			
3.1.3.	Operation	By hydraulic mechanical system			
3.1.4.	Side guard rails	Foldable or drop down type			
3.1.5.	Mattress	High density, water proof and fire resistance			
3.1.6.	Mobile	On four antistatic castors diameter 150mm with brakes and central locking system			
3.1.7.	IV pole	Provided			
3.1.8.	Oxygen cylinder	Provided, Medium size 11kg (1.36m^2) mild steal			
3.1.9.	Resuscitation bags	Provided, adult and paed			
3.1.10.	Dimensions (Overall)	Approx. 2050 mm(L) X 780 mm (W) X 620 -900mm (H)			
3.1.11.	Weight to handle	approx. 200 kg			
4.	Quality Standards				
4.1.	Manufacturing standards	ISO 9001, ISO 13485			
4.2.	Conformity to standards	CE Standard			
5.	Delivery point				
5.1.	MLKH	Delivery point			
6.	Warranty				

Item Code No.	Department	Section	Item Description
LOT 2-8	Oncology	Radiotherapy	Patient Trolley
6.1.	Equipment	Minimum of one year after delivery	

LOT 2-9: Emergency/Resuscitation Trolley

Item Code No.	Department	Section	Item Description
LOT 2-9	Oncology	Patient Area	Resuscitation/Emergency Trolley

1. General Description

Resuscitation trolley for use in ICU. Epoxy coated mild steel, with drawers, protection perimeter and defibrillator holder. The Unit should be mobile on four castors, 2 lockable

2. Composition

2.1.	Main unit,		

3. Performance Specifications

3.1.
Main Unit

- 3.1.1. Should be durable with Ergonomic handle and should have easy grip
- 3.1.2. Height should be 40-45”
- 3.1.3. Should have 6-8 drawers of sizes 3x3”,2x6”,1x9”
- 3.1.4. Should have interchangeable 3”,6”,9” drawers which run smoothly on good quality channels
- 3.1.5. Should have provision of side storage which allows storage of variety accessories like can, storage bins, glove storage, sharp container set
- 3.1.6. An over bridge can with baskets, shelves and bins to keep important things
- 3.1.7. Should have AMS top surface & advance polymer material which is easy to clean. It should not dent, chip flake or corrode
- 3.1.8. Should be easily rolling and has toe brakes
- 3.1.9. Should have I.V. pole with clamps ach 3” drawer should have provision for 25-30 compartments
- 3.1.10. Should have twin swivel castors & central lock
- 3.1.11. Should be CE and ISO 9001/2000 and FDA approved
- 3.1.12. Should have CPR board & O2 cylinder holder

LOT 2-10: Patient Monitor

Item Code No.	Department	Section	Item Description
LOT 2-10	Oncology	Patient Area	Patient Monitor

1. General Description

able Bedside monitor suitable for use in ICU. Should be capable of continuous measuring/ monitoring of the following parameters in adults, neonatal and pediatric.

- SpO_2
- Temperature
- Blood pressure
- ECG
- Respiration
- CO_2
- Pulse Rate

2. Composition

2.1.	Main unit				

3. Performance Specifications

3.1.

3.2. Main Unit

Portable Bed side monitors	
Type	Roll stand Mounted type, complete with internal rechargeable battery
Application	Can be used as a both bedside monitor and a trans monitor
Parameter & waveforms	SpO2, Pulse rate, ECG, NIBP, IBP, Respiration, C and temperature
SpO2, with reusable sensor	0 - 100% ± 3%
Pulse Rate	30-300 bpm ± 1%
Temperature	0-50^{0}C ± 0.1%
NIBP	Mean 10- 300mmHg ± 5 mmHg
IBP X2	Mean 00 – 300mm Hg ± 1 mmHg
ECG	5 lead, standard configuration
CO2	0 to 99 mmHg ± 4 mmHg
Display	Minimum 12.0 inches color touch screen/scroll ty
	6 to 8 waveforms with large font
Networking	Wireless and wired connection to the central work station
Storage	Capable of storing patient data and transferring to central workstation for viewing or printing.
Audio and visual alarm Printer	For all parameter. Inbuilt Thermal Printer
Alarm setting limits	Adjustable by user
Low battery indicator	Audio and visual alarm
Power Requirement	Rechargeable internal battery, that can last at leas hours when fully charged

Item Code No.	Department	Section	Item Description
LOT 2-10	Oncology	Patient Area	Patient Monitor
Wireless networking	Latest technology.		
4.	Accessories	The following accessories will be provided as startup kits.	
4.1.	ECG connection lead and reusable electrodes	2 Set	
4.2.	SpO_2 connection cable and sensor (finger probe), reusable	2 Sets	
4.3.	Adult cuff	3 Sets	
4.4.	Peadiatric cuff	2 Sets	
	Temperature connection cable and probe (reusable)	2 Sets	
4.5.	Recording paper	20 Boxes	
5.	Quality standards		
5.1.	Manufacturing standards	IEC 60601-1, ISO 9001, ISO 13485	
5.2.	Conformity to standards	Directive 2004 / 108 / EC, CE and FDA marked	
6.	Local back up service		
6.1.	Available	Should be available locally	
6.2.	Capacity to service equipment	Agent shall have adequate facilities, spare parts, consumables and qualified and skilled technical staff	
7.	Delivery point		
7.1.	See Schedule	For inspection and testing	
7.2.	Nil		
8.	Pre installation requirements		
	Nil		
9.	Installation and testing		
	Complete installation and setup of the machine as per manufacturer's instructions		
10.	Training		
10.1.	User Training	On site user training on operation and daily up keep	

Item Code No.	Department	Section	Item Description		
LOT 2-10	Oncology	Patient Area	Patient Monitor		
10.2.	Maintenance training	Onsite maintenance training on preventive maintenance			
11.	Technical documentations				
11.1.	User manuals	2 Sets			
11.2.	Service Manual	1 Set			
11.3.	Drawings	Nil			
12.	Commissioning				
12.1.	Testing and commissioning of the machine to the satisfaction of the user.				
13.	Warranty				
13.1.	Equipment	Minimum of one year after commissioning on all parts.			
13.2.	Equipment System	Nil			

LOT 2-11: Infusion Pump

Item Code No.	Department	Section	Item Description		
LOT 2-11	Oncology	Patient Area	Infusion Pump		
1. General Description					
Infusion pump					
2. Composition					
2.1.	Main unit				
3. Performance Specifications					

3.1. Main Unit

3.1.1. Should be operated on drip rate Peristaltic finger pump method.

3.1.2. Should be compatible with most of the IV set (macro/micro drip sets).

3.1.3. Should have the following flow rates.

3.1.4. IV Set ml/hr. drops/min

- 15 drops/ml 3~450ml/hr. 1~100drops/min
- 20 drops/ml 3~450ml/hr. 1~100drops/min
- 60 drops/ml 1~100ml/hr. 1~100drops/min

3.1.5. Should have a flow rate accuracy of ±10% and drip rate accuracy of ±2%.

3.1.6. Should have a volume infused display from 0 to 999.9ml.

3.1.7. Should have a purge and KVO facility.

3.1.8. Should have an audible and visual alarm for occlusion pressure, air alarm, door open, empty, low battery.

3.1.9. Should have a LCD display with backlight and graphical display of infusion.

3.1.10. Should have a minimum 2hr battery back up at highest delivery rate.

3.1.11. Should work with input 240Vac 50 Hz supply.

3.1.12. Should be CE and FDA marked

3.1.13. Copy of the certificate / test report shall be produced along with the technical

LOT 2-12: Oxygen Flow meters

Item Code No.	Department	Section	Item Description
LOT 2-12	**Oncology**	**Patient Area**	Oxygen Flow meters

4. General Description

Oxygen Flow meter with Humidifier:

5. Composition

5.1.	Main unit				

6. Description of the medical supply unit design type

6.1. Should be duly USFDA or CE marked by the European notified body
6.2. The Flow meter should be fitted with BS standard Medical Oxygen Probe.
6.3. Back Pressure Compensated flow meter will be of accurate gas flow measurement with control within a range of 0 to 15 Lpm.
6.4. It should meet strict precision and durability standard.
6.5. The flow meter body should be made of brass chrome plated materials.
6.6. The flow tube and shroud components should be made of clear, impact resistant polycarbonate.
6.7. Flow Tube should have large and expanded 0 – 5 lpm range for improved readability at low flows.
6.8. Inlet filter of stainless-steel wire mesh to prevent entry of foreign particles.
6.9. The humidifier bottle should be made of unbreakable & Reusable of polycarbonate material and autoclavable at 134 degree centigrade.

LOT 3: IMAGING EQUIPMENT

Lot 3-1: 1.5 TESLA Magnetic Resonance Imaging Systems

Item Code No.	Department	Section	Item Description
LOT 3-1	Imaging Equipment	MRI ROOM	1.5 Tesla Magnetic Resonance Imaging Machine

1. General Description

1.1 Clinical purpose: "MRI is primarily used to identify diseases of the central nervous system, brain, and spine and to detect musculoskeletal disorders. It is also used to view cartilage, tendons, and ligaments. MRI can also be used to image the eyes and the sinuses. MRI can be used to help diagnose infectious diseases; to detect metastatic liver disease; to display heart-wall structure; to stage prostate, bladder, and uterine cancer. MRI can also be used as a functional imaging tool.

1.2 Used by clinical department/ward Radiology Department

2. Composition

2.1.	Main unit				

3. Description of the medical supply unit design type

3.1. Technical characteristics (specific to this type of device)

3.1.1. MAGNET

a. Whole Body 1.5Tesla Magnetic Resonance Imaging System optimized for higher performance in Whole Body and Vascular examinations with superconducting magnet, high performance gradients and digital Radio Frequency System.

b. 1.5T active shielded super conductive magnet should be short and non- claustrophobic.

c. It should have at least 70 cm patient bore with flared opening.

d. Magnet length should be less than 200cm.

e. Homogeneity of magnet should be less than 33-40 ppm over 45cm DSV

f. The magnet should be well ventilated and illuminated with built in 2-way intercom for communication with patient.

g. It should have a built in cryo-cooler such that helium consumption does not exceed 0.01 lit/ hour.

h. Emergency Rundown Control at both operator console room and Gantry Room is a must.

i. Fringe Field 0.5 Gauss line radius is essential.

j. Front Panel of gantry should display table and patient position.

3.1.2. SHIM SYSTEM

a. High performance, highly stable shim system with global and localized automated shimming for high homogeneity magnetic field for imaging and spectroscopy.

b. Auto shim should be available to shim the magnet with patient in position.

Item Code No.	Department	Section	Item Description
LOT 3-1	Imaging Equipment	MRI ROOM	1.5 Tesla Magnetic Resonance Imaging Machine

3.1.3. GRADIENT SYSTEM

a. Actively shielded Gradient system

b. The gradient should be actively shielded with each axis having independently a slew rate of at least 200 T/m/s and a peak amplitude of 33mT/m.

c. The system should have efficient and adequate Eddy current compensation

d. Effective cooling system for gradient coil and power supply

e. Duty Cycle- 100% the gradient power amplifier.

f. Usable over 45 cm of FOV in all directions.

3.1.4. RF SYSTEM

a. A fully digital RF system capable of transmitting power of at least 15kw.

b. It should also have at least 32 independent RF receiver channels with each having bandwidth of 1 MHz or more along with necessary hardware to support quadrature ICP array/Matrix coils. The highest receiver channels available with the vendor should be quoted.

c. It should support Parallel acquisition techniques with a factor of up to 4 in 2D.

d. Should allow remote selection of coils and / or coil elements.

3.1.5. PATIENT TABLE

a. The table should be fully motorized, computer-controlled table movements in vertical and horizontal directions.

b. A CCTV system with colour LCD display to observe the patient should be provided: Moving table angiography should be possible.

c. There should be a handheld alarm for patients

d. Light Localizer for patient positioning.

e. Physiological signals display like ECG, Pulse and SPO2

f. Patient load bearing capacity, minimum 200 Kg.

3.1.6. MEASUREMENT SYSTEM

a. Largest Field of View should be at least 45 cm in all axis.

b. The measurement matrix should be from 128x128 to 1024x1024.

c. Minimum 2D slice thickness mm should be equal to or less than 0.5

d. Minimum 3D slice thickness mm should be equal to or less than 0.1

3.1.7. COIL SYSTEM

a. The main body coil integrated to the magnet must be Quadrature / CP. In addition to this following coil should be provided:

b. Multichannel Head coils with at least 12 channels for high resolution brain imaging.

Item Code No.	Department	Section	Item Description
LOT 3-1	Imaging Equipment	MRI ROOM	1.5 Tesla Magnetic Resonance Imaging Machine

c. Neuro-vascular Coil with 16 or more channels or Head / Neck Coil combined, capable of high-resolution neuro-vascular imaging

d. 18 Channel Spine Array/Matrix Coils for thoracic and lumbar spine imaging.

e. Body Array/Matrix coil with at least 40 cm z axis coverage for imaging of abdomen, angiograms and heart with 32 channels.

f. Suitable Cardiac Coil

g. Dedicated 8 channel extremity coil.

h. Bilateral Breast Coil with at least 4 channels with fully functional spectroscopy.

i. Dedicated Shoulder Coil with at least 8 channels

j. Dedicated Knee Coil with at least 8 channels

k. General purpose flexible coil with small and large size

l. Coil Storage Cart from manufacturer.

m. The system should continuously monitor the RF coils used during scanning to detect failure modes. RF coils should not require either set up time or coil tuning; Multi coil connection for up to 2 or more coils simultaneous scanning without patient repositioning.

3.1.8. APPLICATION SEQUENCES

a. The system should have basic sequences package with Spin Echo, Inversion Recovery, Turbo Spin Echo with high turbo factor of 256 or more, Gradient Echo with ETL of 255 or more, FLAIR.

b. Single slice, multiple single slice, multiple slice, multiple stacks, radial stacks and 3D acquisitions for all applications.

c. Single and Multi-shot EPI imaging techniques with ETL factor of 255 or more

d. Fat suppression for high quality images both STIR and SPIR.

e. The system should acquire motion artifact free images in T2 studies of brain in restless patients

f. Dynamic study for pre and post contrast scans and time intensity studies

g. MR angio Imaging: Should have 20/30 TOF, 20/30 PC, MTS and TONE, ceMRA, Facilities for Accelerated time resolved vascular imaging with applications like Treats/Tracks/Tricks sequences.

h. Fat and water excitation package. Diffusion Weighted Imaging, with at least b value of 5000 or more.

i. Bolus chasing with automatic and manual triggering from fluro mode to 3D acquisition mode with moving table facility.

j. Non contrast enhanced peripheral angiography for arterial flow with Native/Trance/lnhance sequences

Item Code No.	Department	Section	Item Description
LOT 3-1	Imaging Equipment	MRI ROOM	1.5 Tesla Magnetic Resonance Imaging Machine

k. Whole body screening imaging studies for metastasis

l. High resolution Abdominal and Liver imaging in breathold and free breathing modes with respirator triggered volume acquisitions

m. The system should have basic and advanced MRCP packages including free breathing and 3D techniques.

n. The system should have facility for flow quantification of CSF, vessel flow and hepatobiliary system.

o. The system should have the Hydrogen, Single Voxel spectroscopy, Multivoxel, Multislice & Multiangle 2D, 3D Spectroscopy and Chemical shift imaging in 2D/3D. The complete processing/post-processing software including color metabolite maps should be available on main console. Complete prostate spectroscopy hardware and applications should be provided.

p. Advanced Cardiac Applications:

VCG gating, Morphology/wall motion; Cine perfusion imaging; Myocardial viability imaging; Arrhythmia rejection techniques, Advanced Cardiac Ventricular Measurement Analysis; Cine Cardiac Tagging Techniques; Coronary artery techniques; real time interactive imaging, 20/30 fast field echo/balanced/steady state techniques and evaluation package on workstation

q. Advanced Breast imaging Package.

r. Perfusion imaging of brain (including PASL and CASL)

s. Susceptibility weighted imaging with phase information.

t. Multi Direction DWl and DTI with minimum of 32 directions (Complete package including quantification and tractography software). Prospective motion correction enabled software preferred.

u. High resolution imaging for inner ear

3.1.9. SAFETY FEATURES

a. The magnet system should include an Emergency Ramp Down unit (ERDU) for fast reduction of the magnetic field with Ramp Down time below 3 minutes

b. The magnet should have quench bands that contain the fringe fields to a specified value in the event of a magnet quench

c. Real time SAR calculation should be performed by software to ensure that RF power levels comply with regulatory guidelines and are displayed on each image

d. The system shall have manual override of the motor drive for quick removal of the patients from the magnet bore

3.1.10. Temperature sensor (built in) for magnet refrigeration efficiency must be provided**User's interface:**

Item Code No.	Department	Section	Item Description
LOT 3-1	Imaging Equipment	MRI ROOM	1.5 Tesla Magnetic Resonance Imaging Machine

a. The main Host computer should have a 23-inches or more high-resolution LCD TFT color monitor with at least 1024 x 1024 matrix display

b. The system should have image storage capacity of 1TB for at least 2,00,000 images in 256x256 matrix.

c. The reconstruction speed should be at least 1300 or more for full FOV 256 matrix.

d. The main console should have facility for music system for patient in the magnet room. The system should have DVD / CD / flash drive archiving facility. The system should be provided with auto DVD writer.

e. Two-way intercom system for patient communication.

f. MRI System should be DICOM ready in all parameters with no additional requirement of licence for connectivity to any PACS/HIS and Radiotherapy treatment planning system.

3.1.11. **Software and/or Workstation:**

a. A workstation with same user interface as of main console is required with the availability of all necessary software including:

i. Basic post-processing software including MIP, MPR, surface reconstruction and volume rendering technique.

ii. Advanced post-processing offered applications perfusion quantification, advanced diffusion and DTI, processing of 20/30 CSI data, with color metabolite mapping, quantification of CSF flow data, vascular analysis package.

b. It should have at least 23 inch LCD/LED color monitor, with hard disk of at least 1TB for at least 250,000 image storage in 256 matrix, and 8 GB RAM capacity or more, with self playing DVD/CD archiving facility.

c. Separate viewing station should be provided.

d. The workstation should enable printing in laser film camera and color printers

4. PHYSICAL CHARACTERISTICS

4.1. Dimensions (metric) NA

4.2. Weight (lbs, kg) NA

4.3. Configuration NA

4.4. Noise (in dBA) Maximum 120 dBA

4.5. Heat dissipation: Should maintain nominal Temp and the heat should be disbursed through a cooling mechanism with less than 1˚ c change during scan

4.6. Mobility, portability Stationary Installation

5. **ENERGY SOURCE** (electricity, UPS,)

Item Code No.	Department	Section	Item Description
LOT 3-1	Imaging Equipment	MRI ROOM	1.5 Tesla Magnetic Resonance Imaging Machine

5.1. Power Requirements NA

5.2. UPS Support YES

5.3. Tolerance (to variations, shutdowns) NA

5.4. Protection NA

5.5. Power consumption maximum 40 KW

6. ACCESSORIES, SPARE PARTS, CONSUMABLES

6.1. Accessories (mandatory, standard, optional); Spare parts (main ones); Consumables/ reagents (open, closed system)

k. Dual Head MRI Compatible Pressure Injector with 100 sets of syringes.

l. Water Chiller for Cold Head I Gradients.

m. 2 Non-ferromagnetic patient transfer trolley of international make should be provided.

n. Fire Fighting System, Detectors and 6 Fire Extinguishers.

o. Hand held metal detectors and two metal detector doors to be installed at the entrance point as will be intimated.

p. Closed circuit CCD camera

q. Phantoms for image quality audits

r. MRI compatible Anaesthesia machine

s. Suction and O2 pipeline and manifold to be provided inside the RF enclosure.

t. Suitable RF Enclosure

u. UPS for entire system for backup of 30 minutes.

v. MRI Compatible patient monitor

7. ENVIRONMENTAL AND DEPARTMENTAL CONSIDERATONS

7.1. Atmosphere / Ambiance (air conditioning, humidity, dust ...)

Operating condition: Capable of operating continuously in ambient temperature of 5 to 50 deg C and relative humidity of 15 to 80% .

7.2. User's care, Cleaning, Disinfection & Sterility issues.

Disinfection: Parts of the Device that are designed to come into contact with the patient or the operator should either be capable of easy disinfection or be protected by a single use/disposable cover.

8. STANDARDS AND SAFETY

Item Code No.	Department	Section	Item Description
LOT 3-1	Imaging Equipment	MRI ROOM	1.5 Tesla Magnetic Resonance Imaging Machine

8.1. Certificates (pre-market, sanitary,); Performance and safety standards (specific to the device type); Local and/or international

w. Should be USFDA and European CE

x. Manufacturer and Supplier should have ISO 13485 certification for quality standards.

y. Electrical safety conforms to the standards for electrical safety IEC 60601-1-General requirements.

z. Shall meet internationally recognized standard for Electromagnetic Compatibility (EMI/EMC) for electro medical equipment: 61326-1.

LOT 3-2: Patient Monitor (MRI Compatible)

Item Code No.	Department	Section	Item Description
LOT 3-2	Imaging	MRI Room	Patient Monitor (MRI Compartible)

1. General Description

able Bedside monitor suitable for use in ICU. Should be capable of continuous measuring/ monitoring of the following parameters in adults, neonatal and pediatric.

- SpO_2
- Temperature
- Blood pressure
- ECG
- Respiration
- CO_2
- Pulse Rate

2. Composition

2.1.	Main unit				

3. Performance Specifications

3.1. Main Unit

Portable Bed side monitors	
Type	Roll stand Mounted type, complete with internal rechargeable battery
Application	Can be used as a both bedside monitor and a transport monitor
Parameter & waveforms	SpO2, Pulse rate, ECG, NIBP, IBP, Respiration, CO2 and temperature
SpO_2, with reusable sensor	0 - 100% ± 3%
Pulse Rate	30-300 bpm ± 1%
Temperature	$0\text{-}50^0C$ ± 0.1%
NIBP	Mean 10- 300mmHg ± 5 mmHg
IBP X2	Mean 00 – 300mm Hg ± 1 mmHg
ECG	5 lead, standard configuration
CO_2	0 to 99 mmHg ± 4 mmHg
Display	Minimum 12.0 inches color touch screen/scroll type
	6 to 8 waveforms with large font
Networking	Wireless and wired connection to the central work station
Storage	Capable of storing patient data and transferring to the central workstation for viewing or printing.
Audio and visual alarm Printer	For all parameter. Inbuilt Thermal Printer
Alarm setting limits	Adjustable by user
Low battery indicator	Audio and visual alarm
Power Requirement	Rechargeable internal battery, that can last at least 3 hours when fully charged

Item Code No.	Department	Section	Item Description
LOT 3-2	Imaging	MRI Room	Patient Monitor (MRI Compartible)
Wireless networking	Latest technology.		
4.	Accessories	The following accessories will be provided as startup kits.	
4.1.	ECG connection lead and reusable electrodes	2 Set	
4.2.	SpO_2 connection cable and sensor (finger probe), reusable	2 Sets	
4.3.	Adult cuff	3 Sets	
4.4.	Peadiatric cuff	2 Sets	
	Temperature connection cable and probe (reusable)	2 Sets	
4.5.	Recording paper	20 Boxes	
5.	Quality standards		
5.1.	Manufacturing standards	IEC 60601-1, ISO 9001, ISO 13485	
5.2.	Conformity to standards	Directive 2004 / 108 / EC, CE and FDA marked	
6.	Local back up service		
6.1.	Available	Should be available locally	
6.2.	Capacity to service equipment	Agent shall have adequate facilities, spare parts, consumables and qualified and skilled technical staff	
7.	Delivery point		
7.1.	See Schedule	For inspection and testing	
7.2.	Nil		
8.	Pre installation requirements		
	Nil		
9.	Installation and testing		

Item Code No.	Department	Section	Item Description		
LOT 3-2	Imaging	MRI Room	Patient Monitor (MRI Compartible)		
	Complete installation and setup of the machine as per manufacturer's instructions				
10.	Training				
10.1.	User Training	On site user training on operation and daily up keep			
10.2.	Maintenance training	Onsite maintenance training on preventive maintenance			
11.	Technical documentations				
11.1.	User manuals	2 Sets			
11.2.	Service Manual	1 Set			
11.3.	Drawings	Nil			
12.	Commissioning				
12.1.	Testing and commissioning of the machine to the satisfaction of the user.				
13.	Warranty				
13.1.	Equipment	Minimum of one year after commissioning on all parts.			
13.2.	Equipment System	Nil			

LOT 3-3: Digital General System

Item Code No.	Department	Section	Item Description
LOT 3-3	Imaging	General X-Ray Rooms	Digital General System with fluoroscopy x-ray (Dynamic DR)

1. General Description

High Frequency X-Ray Unit for general radiography with digital flat panel technology. The system should be capable of both erect and supine radiological examinations. The unit should be completely integrated with the following specifications. All software updates should be provided in warranty & CMC period.

2. Composition

2.1.	Two No. Flat Panel Detectors (Built-in), one for Bucky Table and one for Vertical stand
2.2.	Generator
2.3.	X-Ray Tube and Collimator
2.4.	Ceiling suspended 3D Column Stand

3. Description of the medical supply unit design type

3.1. Flat Panel Detector:

a. Flat Panel Detector size of at least 40 x 40 cm or more
b. Detector Panel should be made of amorphous Silicon with CsI or equivalent
c. Image matrix size at least 2000 x 2000 or more
d. Minimum pixel should be 200 micron or less
e. Grey scale of 12 bit.
f. A/D of 14 bit or better.
g. Tube assembly movement to be automatically synchronized with the detector movement.
h. Preview time after exposure 7 sec or less
i. Image processing time should not be more than 9 sec.
j. DQE at 0lp/mm should be at least 65% or more.

3.2. Generator

a. X-ray generator should be of microprocessor controlled high frequency (mention the frequency) type with latest technology having constant output with low ripple frequency.
b. Output 80 KW or more.
c. KVP range 40 kV - 150 kV with 1 kV steps.
d. Output 1000mA or more at 80 KV or better.
e. KV/MA output specifications.

1000 mA at 80 kv.
800 mA at 100 kv.

f. Minimum exposure time should be 1 ms or less.

Item Code No.	Department	Section	Item Description
LOT 3-3	Imaging	General X-Ray Rooms	Digital General System with fluoroscopy x-ray (Dynamic DR)

g. It should have automatic exposure control (AEC) device
h. It should have digital display of KVP and mAs.
i. Anatomical programming radiography should be possible
j. It should have over loading protection

3.3. X-Ray Tube

a. The X-Ray Tube should be rotating anode high speed (8000 rpm or more) compatible with the generator and must have dual focus.
b. Focal spots of the following sizes:

Large Focus: 1.2mm or less
Small Focus: 0.6mm or less

c. X-ray tube loading should be at least 30KW for small focus and at least 80KW for large focus.
d. X-ray Tube with Anode heat storage capacity of 300kHU or more
e. Tube protection against overload
f. Target angle should be at least 12 deg
g. A high-speed rotor accelerator (starter).
h. Please specify tube rotation at vertical axis and horizontal axis.

3.4. Ceiling suspension

a. Ceiling suspended 3D Column stand with facility of automatic positioning and Synchronization
b. Movement in all direction should be easily possible
c. It should have auto-tracking and auto-positions functions
d. Monitoring of all the position data on colour touch screen for system control (kV, mAs, SID, tube angle, column angle)
e. SID (Source to Image Distance) in vertical positions150 cm or more, in horizontal position 180 cm or more.

3.5. X-Ray Table

a. Free floating Carbon fibre or equivalent tabletop table with low attenuation.
b. Anti-collision control system.
c. Table should support patient weight of 200 kg. or more.
d. Auto-tracking capability without mechanical link.

3.6. Vertical Bucky stand (wall Stand)

a. Motorized, counter balanced adjustable height vertical Bucky for the digital flat panel detector
b. Detector movement should be synchronized (auto-tracking) with movement of X-Ray Tube
c. Bucky should have a grid ratio 10:1 or more.

Item Code No.	Department	Section	Item Description
LOT 3-3	Imaging	General X-Ray Rooms	Digital General System with fluoroscopy x-ray (Dynamic DR)

3.7. Filter & Collimator

a. Inherent filtration of at least 1.00mm Al.
b. Square collimation: manual 85 motorized, should be controllable by organ programming.
c. Full field light localizer;
d. Rotation of +/- 45 deg or more;
e. Display of collimation, filter 86 SID;

3.8. Operating (Acquisition) Station

a. Should have a high resolution TFT / LCD Monitor of minimum 19 inch size or more fully flat with minimum 1024 x 1024 or more display matrix and anti-reflective front screen
b. Please specify Image matrix size.
c. Operating console should have a facility for patient identity entry, viewing and processing images, documentation etc.
d. Preview image should be ready in minimum time.
e. System should have auto protocol select
f. System should have latest processor with at least 8GB or more RAM and 2TB or more storage capacity

3.9. Image viewing, post processing, reporting and documentation station

i. It should have latest operating system.
ii. 19" or more LCD/LED high quality reputed international make medical grade monitor of minimum 2MP resolution must be provided.
iii. Image display should be of high resolution.
iv. High luminance display for diagnostic image viewing.
v. Post-acquisition image processing, viewing, reprocessing, hard copy documentation and onwards transmission should be possible.
vi. Image processing functions like rotate, mirroring, zoom, move, windowing filter should be possible.
vii. Should be connected to Dry chemistry camera for documentation. Multi format printing should be possible with user selectable options.
viii. It should have CD /DVD writing facility;

3.10. Image storage and Transmission

a. Hard disk storage capacity should be of 10,000 or more
b. The system should support storage of images on compact discs/DVD

Item Code No.	Department	Section	Item Description
LOT 3-3	Imaging	General X-Ray Rooms	Digital General System with fluoroscopy x-ray (Dynamic DR)

c. The system should be DICOM 3.0 (or higher version) ready (like send, receive, print, record on CD/ DVD, acknowledge etc.) for connectivity to any network computed/PG-etc in DICOM format.
d. Easy integration and networking should be possible with any other existing future networking including other modalities HIS, RIS & PACS at no extra cost.

3.11. DAP: Automatic collimator must be mounted on X-ray tube and collimator must have an integrated dose area product (DAP) meter. Output of DAP meter should be visible in console.

3.12. Accessories

a. Dry Chemistry Camera. Should have 500 DPI and should print at least 3 sizes of films:
8x10, 14x17, 10x12 or 11x14 inches. At least 200 films of each size to be supplied as start up.
b. Online UPS along with batteries of appropriate rating to give 30min. back up to operate the complete system including X-Ray machine and Imager.
c. Lead aprons with hangers- 4 Nos.
d. Stand for lead aprons-1

3.13. Approvals

a. The equipment should have US FDA or European CE with four digit notified body number certificate and certificate to be submitted.
b. The system should be IAEA and KNRA type approved
c. Regular QA according to KNRA norms will be responsibility of bidder during warranty and CMC period.

3.14. Power supply:

a. Suitable Power input to be 220-240VAC, 50Hz OR 3 PHASE of appropriate rating Standards and safety and training
b. Electrical safety conforms to standards for electrical safety
c. Safety aspects of Radiation dosage leakage should be spelt out
d. Certificate for calibration should be provided.

3.15. Documentation

a. The supplier must provide User manual/Technical Manuals in English both in soft and hard copies
b. Attach original manufacturer's product catalogue and specification sheet.

LOT 3-4: LEAD APRONS with hangers

Item Code No.	Department	Section	Item Description
LOT 3-4	Imaging	General X-Ray Rooms	LEAD APRONS with hangers

1. General Description

Radiation Protective Lead Apron with Thyroid Shield Size: Large

2. Composition

2.1.	Main unit				

3. Description of the medical supply unit design type

3.1. The Company should be approved by KNRA.
3.2. Complete frontal protection
3.3. Padded shoulders for reduced shoulder stress and equitable distribution of weight.
3.4. Wide stretchable insert with Velcro fastening for a snug fit.
3.5. Also available with snap lock instead of Velcro.
3.6. Easy to wear and remove.
3.7. Lead equivalence: - 0.25mm Pb, 0.35mm Pb, 0.50 mm Pb adhesive Backing.
3.8. Manufacture/ Supplier should give 03 Year guarantee.
3.9. The Lead Apron should be 30-40% lighter than conventional PB Apron. The same will be verified at the time of Technical Evaluation.

LOT 3-5: Premium Ultrasound System (With Cardiac Echo)

Item Code No.	Department	Section	Item Description
LOT 3-5	Imaging	Ultrasound Rooms	Premium Ultrasound System (With Cardiac Echo)

1. General Description

Premium General ultrasound unit comprising of scanning unit, display, probes, console printer, jelly dispenser holder and U.P.S. all mounted on a dedicated trolley on four(4) layer antistatic castors, two(2) of which should have breaks.

2. Composition

2.1.	Main unit				

3. Description of the medical supply unit design type

3.1. Should be USFDA or European CE approved product.

3.2. Manufacturer or Supplier should have ISO 13485 certification for quality standards.

3.3. Electrical safety conforms to the standards for electrical safety IEC 60601- General requirements (or equivalent BS Standard)

3.4. Shall meet internationally recognized for Electromagnetic Compatibility (EMI/EMC)

Technical Specification:

3.5. Multipurpose High Density full digital colour Doppler system

3.6. Offered system should have whole body scanning Applications & software for a wide range of applications that includes:

- abdominal,
- OB/Gyn,
- cardiology,
- urology,
- small parts,
- vascular,
- orthopedic,
- anesthesia and MSK applications

3.7. System should have following Scanning Modes:

- B, Dual B, Quad B,
- THI, PIH, Trapezoid Imaging,
- Real-time Panoramic Imaging(B mode), M, Color M,
- Anatomic M, Color Doppler, Power Doppler Imaging,
- Directional PDI, TDI, PW with HPRF, CW,
- Dual-Live, Duplex: B and Doppler/M,
- Triplex: B, Color Flow, and PW/CW Doppler.

3.8. Should have Full digital ultrasound beam forming technology

Item Code No.	Department	Section	Item Description
LOT 3-5	Imaging	Ultrasound Rooms	Premium Ultrasound System (With Cardiac Echo)

3.9. Should have Auto Image optimization function, Physical key should be available on the keyboard for easy access. It should also offer 8 slider controls for TGC

3.10. System should have minimum 19" high resolution display with swivel and tilt facility.

3.11. System should have minimum 3 probe Connectivity ports as standard which can support all transducers.

3.12. Probes offered should be Broad band frequency probes offering at least user 3 selectable frequency range.

3.13. System should offer Scanning depth of more than 30 cms.

3.14. Should have at least 256 gray scale for better imaging

3.15. System should have 1TB or more hard disk for digital image storage

3.16. System should have at least 3 ports of Hi Speed USB for data transfer and inbuilt CD/DVD writer

3.17. System Should have multiple focusing method minimum 6 focus

3.18. System should have Cine loop of minimum 500 Frames or more.

3.19. System should have Tissue Harmonic Imaging Facility with all the probes

3.20. System should be provided with DICOM connectivity as standard.

3.21. System should have Calculations of full OB/GYN calculation package, Vascular calculations, Urology calculations, Cardiac Calculations, Doppler calculations, Auto Trace

3.22. Should be able to measure velocity without taking Doppler tracings.

3.23. System should be upgradable to Volume 3D Imaging in Future.

3.24. System should be supplied with following probes.

- Broad Band Convex probe (Frequency Range 2 – 6 MHz)
- Broad Band Linear Probe for Vascular applications. (Frequency Range 5 – 12 MHz)
- Broad Band Transvaginal Probe (frequency range 4-9 MHz)
- Broad Band Cardiac Probe

3.25. Color Printer: -

- System should be offered with color Printer offering color prints of 6 X 8 Inch Size.
- Color Printer should be able to connect directly to the Video Output of Ultrasound machine.
- User selectable print options should be available to select from 1,2,4,6,9 Image formats on 1 sheet.
- Bidder should also enclose the warranty certificate from original manufacturer of color printer.
- System should be supplied with following suitable Color Printer & Workstation PC

Item Code No.	Department	Section	Item Description
LOT 3-5	Imaging	Ultrasound Rooms	Premium Ultrasound System (With Cardiac Echo)

- Bidders should offer optional prices for future purchases for 1 Box of 6x8" Media separately under Format-C. Please specify the print quantity in each box.

3.26. Power Supply:

- Power unit: Input voltage- 220V-240V AC, 50Hz Single-phase.
- Should be provided with online UPS for power back up of minimum 30 minutes.

3.27. Technical documentations

- User manuals 2 Sets
- Service Manual 1 Set
- Soft copy of each

3.28. Commissioning

- Testing and commissioning of the machine to the satisfaction of the user.

3.29. Warranty

- Minimum of two years after commissioning on all parts.

3.30. Capacity to provide maintenance and repair service

- Vendor/manufacturer shall have adequate facilities, spare parts, qualified and skilled technical staff to support for at least 10 years from commissioning.

3.31. Comprehensive preventive and repair service

- Provision for a comprehensive preventive and repair maintenance service contract including parts and material for a period of 10 years from commissioning date

LOT 3-6: High-End Ultrasound Systems (4D)

Item Code No.	Department	Section	Item Description
LOT 3-6	Imaging	Ultrasound Rooms	High-end ultrasound systems (4D)

1. General Description

2. Composition

2.1.	Main unit				

3. Description of the medical supply unit design type

3.1. Product & Manufacturer Quality Standards:

a. Should be USFDA or European CE approved product.
b. Manufacturer or Supplier should have ISO 13485 certification for quality standards.
c. Electrical safety conforms to the standards for electrical safety IEC 60601- General requirements or equivalent Standard)
d. Shall meet internationally recognized standards for Electromagnetic Compatibility (EMI/EMC)

3.2. Technical Specification:

It should be robust state of art fully digital high end latest color Doppler ultrasound system under current production capable of performing imaging applications in abdominal obst/gynae, musculoskeletal, cardiovascular, small parts, Urology, Cardiology, Real time 4D, Tissue elastography, contrast etc.

a. System should have broad band beam former capable of processing signals from 2-13 MHZ
b. System should incorporate facility for high resolution 2D, M-mode, PW, CW, Color Flow imaging, Color power Angio imaging, Directional Color Power angio imaging modes, live real time 3D/4D.
c. System should have full spectrum imaging, Speckle Reduction Filter, Spatial Compound imaging, Pulse Inversion Harmonic Imaging, Trapezoidal Imaging & Contrast Enhanced Imaging (Low – MI)
d. System should have oblique view, Multi Slice View, OVIX (Oblique View Extended Imaging), Multi OVIX, Volume Contrast Enhancement (VCE), Volume CT.
e. System should have real time triplex mode facility in 2D, color and Doppler modes.
f. System should have dynamic range of 190 db or higher, Higher will be preferred.
g. System should have high PRF.
h. System should have scan depth of 2 to 30 cm or more. Please specify through data sheet.
i. System should have 256 shades of gray display
j. System should have facility for real time and frozen, pan or point zoom.
k. System should have cine lop review minimum 10,000 frames

Item Code No.	Department	Section	Item Description
LOT 3-6	Imaging	Ultrasound Rooms	High-end ultrasound systems (4D)

l. System should have minimum 10,00,000 or more receiving channels. Please specify through data sheet.
m. System should have panoramic extended field of view.
n. System should have independent steering of B mode and color on linear probe.
o. System should have advanced real time 4D capabilities
p. System should have Acoustic Radiation Force Impulsion (AFRI), Transient elastography and shear wave imaging.
q. It should have extensive software and automatic and user programmable calculation package for gray scale, color Doppler, 3D and 4D applications.
r. It should have minimum 20" high resolution medical grade TFT/LCD screen monitor with articulated arm
s. System should have Touch Screen control 9" wide or more.
t. It should be provided with following transducers.
    1) Convex abdominal 2-6 MHZ approximately
    2) Endocavity (TVS + TRUS) 4-9 MHZ approx. with 180 degree or more radius
    3) Linear high frequency 5-13 MHZ approx.
    4) Convex 4D probe 2-6 MHZ approx.
    5) Convex volume probe small parts, vascular, musculoskeletal 4D capability 6-12 MHz approx.
    6) Cardiac echo probe 2.5-4.5MHz.
    7) It should be capable of supporting at least three or more transducers ports with switching form console.
u. System should have built in image Management software, for offline application when patient has gone after examination, such as image manipulation, Multi Planner reformatting, surface & volume rendering etc. It should have hard disk memory of 1TB or more with built in CD/DVD read write.
v. System should be capable to do Elastography with convex, TVS and linear probes.
w. System should be capable to do Contrast Enhanced Ultrasonography
x. System should be capable to do Volume NT.
y. System should be capable to HDVI (high density volume imaging)
z. System should be capable to do 3D MXI (Volume Slice View, Mirror View)
aa. System should be provided with free comprehensive software up gradation guarantee (compatible with existing platform) for 10 years after installation.
bb. **Accessories to be supplied along with**
    1) Online UPS of appropriate KVA with 2 hr backup
    2) Color Laser Printer for direct image and report print out
    3) For parallel processing of Imaging Data, System should be provide with a separate latest configuration with 1 Tera Byte Hard Disk based work station with USB and serial port with at least 19" TFT/LCD monitor with very high quality image Management Software with same capabilities as main machine such as

Item Code No.	Department	Section	Item Description
LOT 3-6	Imaging	Ultrasound Rooms	High-end ultrasound systems (4D)

retrieving data along Zoom, Pan, Volume Rendering Multi-planar Reformatting, MIP, retrieving information from CD/DVD with reporting and software exporting JPG & AVI file format to ink other stations in the hospital

4) Black and white video thermal printer of good quality and 30 rolls of high glossy thermal paper.
5) Ergonomic US chair for sonologist.

cc. **Power Supply:**

- Power unit: Input voltage- 220V-240V AC, 50Hz Single-phase.

LOT 3-7: Portable Ultrasound

Item Code No.	Department	Section	Item Description
LOT 3-7	Imaging	Ultrasound Rooms	Portable Ultrasound

1. General Description

PORTABLE MUSCULOSKELETAL ULTRASOUND MACHINE

2. Composition

2.1.	Main unit				

3. Description of the medical supply unit design type

3.1. Imaging modes and processing: Broadband, multi frequency imaging.
3.2. The unit should be state of the art latest high frequency linear probe and convex probe (additional linear probe or ability to add probes at a later date) and will provide high resolution musculoskeletal & Vascular images.
3.3. Basic functionality, such as gain adjustment and depth measurement, Tissue harmonic imaging should be available on at least one probe.
3.4. Ability to operate over both high & low frequencies.
3.5. Computer Package for measurement and calculation provision for the distance area volume and circumference complete vascular & other organs.
3.6. Image storage and extraction capability, ability to upload images to PACS. It should have at least USB Ports (at least 2 high speed USB 2.0 Ports) for external portable CD/DVDRW/false driver or equivalent for transfer of images to PC. Export formats supported should be: MPEG-4. JPEG, BMP and HTML.
3.7. Screen with size and high spatial resolution to allow viewing from at least 2-3 ft.(60-90 cm) away.
3.8. Mobility adequate to allow bedside examination.
3.9. Backlit QWERTY keyboard, System should have features including display annotation, patient ID display and alphanumeric keyboard with provision for reverse, invert facility.
3.10. Should operate on 220v 50z AC.
3.11. The unit should have the following two electronic probes :
A) Linear array probe 6-14 MHz (+1 MHz)
B) Convex probe 2-5 MHz (_+1 MHz)
3.12. Ability to run on batteries (rechargeable Lithium-ion, battery backup 2hrs.
3.13. Ability to record video, the system should have the capacity of storing on hard disk/flash card.
3.14. Indigenous Mobile cart-light weight (basic equipment without transducers should be less than 10kg).
3.15. Adjustable stand, the system should have the capacity of storing at least 2 probes and Gel holder.
3.16. Guarantee/Warranty: Minimum for 2
3.17. CMC rates for 5 year after expiry of warranty period including labor cost and cost of spare parts for whole equipment including all probe other accessories should be quoted separately.

Technical documentations

- User manuals 2 Sets

Item Code No.	Department	Section	Item Description
LOT 3-7	Imaging	Ultrasound Rooms	Portable Ultrasound

- Service Manual 1 Set
- Soft copy of each

Commissioning

- Testing and commissioning of the machine to the satisfaction of the user.

Warranty

- Minimum of two years after commissioning on all parts.

Capacity to provide maintenance and repair service

- Vendor/manufacturer shall have adequate facilities, spare parts, qualified and skilled technical staff to support for at least 10 years from commissioning.

Comprehensive preventive and repair service

Provision for a comprehensive preventive and repair maintenance service contract including parts and material for a period of 10 years from commissioning date

LOT 3-8: Ultrasound Examination Couches

Item Code No.	Department	Section	Item Description
LOT 3-8	Imaging	Ultrasound Rooms	Ultrasound Examination Couches

1. General Description

Ultrasound Examination Couch Stainless Steel with Mattress

2. Composition

2.1.	Main unit				

3. Description of the medical supply unit design type

3.21 Constructed from round polished SS Pipes
3.22 Fully adjustable headrest. Top of Polished SS Sheet.
3.23 Top is upholstered and covered with washable plastic material
3.24 Legs fitted with thick high-quality nylon gromets.
3.25 5 cm 50PU density foam cushioned top covered with leathered Rexene of 2mm thickness
3.26 Top dimensions – L = 72inch X W= 24inch H= 32 inches
3.27 All the Stainless Steel should be seamless conforming to 304 grade/ 16 gauge and polished finished
3.28 Box with three drawers and three cabinets.
3.29 Should have sliding footstep.
The head section should be raised with mechanical pneumatic

LOT 3-9: Biopsy System for Prostates

Item Code No.	Department	Section	Item Description
LOT 3-9	Imaging	Ultrasound Rooms	Biopsy System for Prostates

4. General Description

Biopsy System for Prostates

5. Composition

5.1.	Main unit				

6. Description of the medical supply unit design type

Automatic biopsy gun and needles

a) Gun requirements
   i. Should be reusable system
   ii. Single use
   iii. Should feature one –handed cocking and a choice of two penetration depth
   iv. Penetration depth selection of 15mm and 22mm
   v. Should non-roll handle design
   vi. A brochure and a sample must be provided
   vii. Ownership
   viii. Supplier must provide manufacturer's authorization

b) Needles requirements
   i. Single packed
   ii. Sterile and single use
   iii. Ownership
   iv. Date of manufacture and expiry
   v. Needle sizes
   vi. Samples must be provided compatible with the automatic gun requested

i) **Breast Core Biopsy Needles**

(I a) 14G x 10cm

(I b) 16G x10cm ii)

ii) **Tru -cut prostate Needles**

(ii a) 18Gx20cm

(ii b) 16G x 20cm

LOT 3-10: Mammography Unit

Item Code No.	Department	Section	Item Description
LOT 3-10	Imaging	Mammography	Mammography Unit, Digital

1. General Description

1.1. Should be an advanced high-end digital mammography machine which allows fast, low-dose, high-quality 3D imaging of the breast.

1.2. System should be upgradable with latest technology available in future. There should be proof of upgradability required.

A. GANTRY ASSEMBLY:

- The system should consist of a tube head and detector assembly that has isocentric rotation for every positioning. The angle of C-arm movement shall be displayed.
- The isocentric movements should be motorized. The patient Compression device should have automatic multispeed variable compression system which senses the breast density and adjust the compression force.
- Magnification devices of ratio 1.5 and 1.8 x should be offered.
- At least a pair of two foot switches should be provided for compression.
- Digital display of motorized and manual compression force and compression thickness should be available on either side of gantry.
- Grid ratio should be mentioned. Mention about grid/breast support assembly system.
- The compression should be extremely smooth and there should be automatic decompression at the end of each exposure.
- There should be a safety mechanism for compression with respect to power failure.
- Two compression paddles for small and large breasts with Regular sliding movement.
- Round spot and square spot compression paddle or equivalent.

B. X-RAY GENERATOR:

The X-ray generator should be high frequency with the following parameters:

- KV range: at least 20-35 kV in steps of 1 kV.
- mAs range: 2-500 mAS or more.
- Exposure time: 10ms – 4 sec. or better.
- Maximum mA: 200 mA or higher.
- Exposure parameters should be displayed.
- Should display the dose delivered after each exposure.
- Automatic exposure control device should be provided.

C. X-RAY TUBE UNIT:

- Dual focus rotating anode tube with Focal spot size: 0.1 mm and 0.3 mm.
- Anode heat storage capacity should be at least 150 KHU or higher.
- Please mention the material of anode and advantages. Mono material preferred.
- Should have at least two filters. Please mention the material used in the filter and its thickness.
- Tube heat storage capacity of 2 MHU or more.

Item Code No.	Department	Section	Item Description
LOT 3-10	Imaging	Mammography	Mammography Unit, Digital

D. FLAT PANEL DETECTOR:

- Type of detector: should be amorphous selenium.
- Direct Capture Technology or needle capture technology(please specify)
- Detector size: 24cm x 29cm or more with two image format.

Please mention the expected life time of the detector.

Image matrix in pixels: large size 3000X3500 or more Small Size: 2000X2500 or more. No Ghosting or lag effect should be present; image depth should be at least more than 12 bits.

E. DIGITAL ACQUISITION SYSTEM:

- Storage capacity should be 10000 images or more.
- Should provide Dual 5 Megapixel Grayscale medical grade LCD image monitor minimum 19' with high luminance.
- State of the art associated software technology should be available with the data acquisition system. Kindly mention the features advantages and upgradability.
- It should be possible to receive the demographic patient data directly from Hospital Information System. The demographic patient data should also be able to be entered manually. Retrieval of images from CD, DVD or PACS should be possible.
- It should be DICOM 3.0 ready and should have the facilities for connectivity.
- Film prints and CD, DVD copying should be possible.
- Dry Laser camera with at least 3 online film trays compatible for film sizes of 10X12' and 14x17' inches, 500 dpi or more for printing the digital images should be supplied. System should allow user to take print out in user defined format.
- Latest technology: Highly effective computer aided detection (CAD) digital mammography solution for early detection of cancer. There should be advanced technology for identification of micro calcification and suspicious lesions.

F. REVIEW WORK STATION:

- High performance Dual Processor CPU with clock speed 3 GHz of higher. (Branded company product).
- Memory of 4 GB High Speed RAM or better.
- Local image storage of min 1TB or higher.
- Video board resolution of 1024 grey levels (10 bit).
- Monitor Resolution 5000 x 5000 pixel.
- Dual high contrast resolution 5MP LCD medical grade monitors minumun 19' should be provided (Branded company product).
- Multi-modality viewer capability for display of ultra sound, x-ray, digital mammography, RI, PET, CT, etc.

The following imaging processing should be possible on the work station:

a. Measurements, distance angle, volume, density.
b. Zoom, roam, magnification, Quadrant zooming or selected zooming.

Item Code No.	Department	Section	Item Description
LOT 3-10	Imaging	Mammography	Mammography Unit, Digital

c. Brightness and contrast adjustment.
d. Image inversion.
e. Contrast enhancement processing.
f. Flip rotate inward, 360 rotation
g. Annotations, measurements.
h. Image evaluation like contrast enhancement histogram display, length measurements before and after comparison etc.

User selectable screen layout from the available combination. There should be a CD, DVD ROM drive available.

G. DIAGNOSTIC REVIEW SOFTWARE TO BE AVAILABLE:

- Advanced mammography specific hanging protocols.
- Customizable user environment including hanging protocols.
- Advanced Session Scheduling function.
- Easy image export to communication graphic format for use in presentations.
- Intelligent Roaming.

H. OTHERS:

a. Should be supplied with transparent lead radiation shield, face shield, remote service modem, quality control tool kit, user and technical manuals etc.
b. Dedicated online UPS (Branded company product) for the entire machine and accessories supplied including the work station shall be provided for a minimum backup of at least 30 minutes. UPS rating to be 1.25 X rating of the unit (minimum 30 KVA).
c. Should be supplied with ACR phantom, phantom for calibration of AEC, phantom for calibration of image detector, flat panel detector, quality control kit.
d. The digital mammography unit with all features as per specification shall be FDA and CE.
e. Operating environment must be conducive for optimum operation of the machine

I. TRAINING:

- Training for mammography interpretation should be arranged for two radiolographers and two radiologists until they are familiarized with the machine operation.

LOT 3-11: Resuscitation/ Emergency trolley

Item Code No.	Department	Section	Item Description
LOT 3-11	Imaging	**SPECT CT**	Resuscitation/Emergency trolley

1. General Description

Resuscitation trolley for use in ICU. Epoxy coated mild steel, with drawers, protection perimeter and defibrillator holder. The Unit should be mobile on four castors , 2 lockable

2. Composition

2.1. Main unit,

3. Performance Specifications

3.1. Main Unit

3.1.1. Should be durable with Ergonomic handle and should have easy grip

3.1.2. Height should be 40-45”

3.1.3. Should have 6-8 drawers of sizes 3x3”,2x6”,1x9”

3.1.4. Should have interchangeable 3”,6”,9” drawers which run smoothly on good quality channels

3.1.5. Should have provision of side storage which allows storage of variety accessories like can, storage bins, glove storage, sharp container set

3.1.6. An over bridge can with baskets, shelves and bins to keep important things

3.1.7. Should have AMS top surface & advance polymer material which is easy to clean. It should not dent, chip flake or corrode

3.1.8. Should be easily rolling and has toe brakes

3.1.9. Should have I.V. pole with clamps ach 3” drawer should have provision for 25-30 compartments

3.1.10. Should have twin swivel castors & central lock

3.1.11. Should be CE and ISO 9001/2000 and FDA approved

3.1.12. Should have CPR board & O2 cylinder holder

LOT 3-12: Wheelchairs

Item Code No.	Department	Section	Item Description
LOT 3-12	Imaging	SPECT CT	Wheelchairs

1. General Description

The wheelchair unit is required to transport physically impaired patients from one place to another whilst in a seated position.

2. Composition

2.1.	Main unit				

3.

3.1. The wheelchair shall be suitable for adult patients and shall be capable of withstanding minimum patient weights of 100 kg.
3.2. The wheelchair shall be as light as possible (not more than 15kg) and its frame shall only be manufactured from aluminum which is resistant to scratches and heavy detergents cleaning materials.
3.3. The wheelchair shall incorporate two handle bars for an attendant to be able to push the wheelchair from one place to another.
3.4. The wheelchair shall be both patient and attendant propelled.
3.5. The width of the seat shall measure not less than 460mm±30mm
3.6. The depth of the seat shall measure not less than 400mm ±50mm
3.7. The unit shall incorporate swinging detachable footrests.
3.8. The armrests shall also be flipping back and/or detachable.
3.9. The front and rear tyres shall be solid.
3.10. The rear tyres shall have a diameter of 610mm±200mm and shall also be solid.
3.11. The front tyres must be castor type and shall vary anywhere between 150mm and 200 mm in diameter.
3.12. The wheelchair shall be supplied in K.D. Form.
3.13. The wheelchair shall be supplied fully assembled.
3.14. The wheel chair's upholstery shall be in welded nylon material
3.15. All materials from which this wheelchair is to be manufactured from shall be easy to clean and shall be resistant to various disinfectant solutions utilized in a hospital environment.
3.16. The Wheel chair shall also incorporate a safety belt to ensure that the patient can be kept securely in place especially when in motion.
3.17. Brakes extend from the frame to the wheels with some form of mechanical locking (LEVER) system, which permit the wheels to be locked in place preventing unwanted motion. Brake lever must not protrude above seat level to the extent that it interferes with the transferring process when armrest is flipped back.
3.18. The original manufacture's specification brochure must always be included.

Item Code No.	Department	Section	Item Description
LOT 3-12	Imaging	SPECT CT	Wheelchairs

3.19. All equipment supplied shall be supplied brand new, implying that any demo unit or already used equipment will not be considered acceptable for the purpose of this tender.

Documentation:

- Two copies of Service Manuals
- Two copies of Operators' Manuals
- Declaration of Conformity' from the parent Company
- FDA/ CE Declaration Certificate
- All Tenderers are requested to submit the manufacturer and model of the equipment offered. Failing this, the submission/quotation will be ignored and refused irrevocably.

LOT 3-13: Patient Stretchers (With siderails)

Item Code No.	Department	Section	Item Description
LOT 3-13	Imaging	SPECT CT	Patient stretchers (with siderails)

1. General Description

Standard Patient stretcher with siderails individually packaged and cleared marked in English with the name and characteristics of the article and number of units per carton and with Manufacturer's Name

Submission of sample:
Submit a brochure for evaluation

2. Composition

2.1.	Main unit				

3.

- Shock absorbing, non-marking wrap around bumper system protects stretcher, and facility walls
- 3in High density foam mattress
- 24in Patient surface width
- Collapsible side rails
- 2 IV receptacles
- 1 Stainless steel IV pole
- Central locking brakes
- Steering pedal activator
- Integrated oxygen bottle holder
- Storage compartment
- Retractable 5th wheel steering system
- Dual pneumatic assisted backrest (0-80 degrees)
- Dual sided foot pedal for height adjustment
- Hands free trendelenburg
- Patient restraints
- O_2 holder (requires shelf); holds E-size tank
- Heavy-gauge, tubular frame, powder coated white
- Continuous heavy rubber bumper
- Overall length: 2-2.5M
- Overall width(side rails up): 80-85cm
- Overall width (side rails down): 60-70cm
- High: 85-90cm
- Low: 50-65cm
- Backrest: 0-80 degrees
- Trend/ Reverse trend: $\pm$18 degrees
- Weight capacity: 300-350kg
- Caster size: Approx. 200mm

Quality standards:
Manufacturing standards: - IEC 60601-1, ISO 9001, ISO 13485

- Conformity to standards: - FDA/ CE Standard

LOT 3-14: Portable Electric Suction Units

Item Code No.	Department	Section	Item Description
LOT 3-14	Imaging	SPECT CT	Portable Electric Suction Units
1. General Description			
n machine suitable for use in theatre, for both adult and pediatric use. Should be constructed from coated non-corrosive, extreme heat resistance material and electrically insulated and mobile on antistatic castors φ 60 mm, 2 No. lockable, with high level push handle.			
2. Composition			
2.1.	Main unit		
3. Performance Specifications			
3.1.	Main Unit		
3.1.1.	High flow rate	40 litres per minute.	
3.1.2.	Suction vacuum	Maximum 700mmHg	
3.1.3.	Suction pump	oil free	
3.1.4.	Jars	2 X 2 liter polycarbonate autoclavable and unbreakable complete with overflow devices and valves.	
3.1.5.	Vacuum gauge	Graduated in mmHg and kPa.	
3.1.6.	Vacuum control	Adjustable at the front panel	
3.1.7.	Switch	Main on front panel and foot switch (water proof type)	
3.1.8.	Cable towage	On back with reversible cleats	
3.1.9.	Anti-bacterial filters	Available preferable autoclavable	
3.1.10.	Suction tubing connection	Antistatic neoprene or silicone	
3.1.11.	Safety	Overflow pump protection	
3.1.12.	Handle	High level push handle type	
3.1.13.	Movements	Mobile on four antistatic castors 2 No. lockable.	
4.	Physical characteristics		
4.1.	Main unit	Mobile on castors with push handle	
5.	Operating environment		
5.1.	Power Requirements	240V, A/c 50 Hz, Single phase, 3 Pin Plug BS standard, 3m long cord with PE	

Item Code No.	Department	Section	Item Description
LOT 3-14	Imaging	SPECT CT	Portable Electric Suction Units
5.2.	Ambient temperature	10º C to 40º C	
5.3.	Relative humidity	20% to 90%	
6.	Accessories	The following accessories will be provided as startup kits.	
6.1.	Sterilizable, silicone tubing	5 Set	
6.2.	Bacterial filters	1 Box	
6.3.	Foot switch	1 No.	
6.4.	Cannula with handle for general purpose	4 Sets	
7.	Quality standards		
7.1.	Manufacturing standards	EN 10079-1, IEC 60601-1, ISO 9001, ISO 13485	
7.2.	Conformity to standards	CE and FDA marked	
8.	Local back up service		
8.1.	Available	Should be available locally	
8.2.	Capacity to service equipment	Agent shall have adequate facilities, spare parts, and qualified and skilled technical staff	
9.	Delivery point		
9.1.	See Schedule	For inspection and testing	
9.2.	Nil		
10.	Pre installation requirements		
	Nil		
11.	Installation and testing		
	Complete installation and setup of the machine as per manufacturer's instructions		
12.	Training		
12.1.	User Training	On site user training on operation and daily up keep	
12.2.	Maintenance training	Onsite maintenance training on preventive maintenance	
13.	Technical documentations		
13.1.	User manuals	2 Sets	

Item Code No.	Department	Section	Item Description		
LOT 3-14	Imaging	SPECT CT	Portable Electric Suction Units		
13.2.	Service Manual	1 Set			
13.3.	Drawings	Nil			
14.	Commissioning				
14.1.	Testing and commissioning of the machine to the satisfaction of the user.				
15.	Warranty				
15.1.	Equipment	Minimum of one year after commissioning on all parts.			
15.2.	Equipment System	Nil			

LOT 3-15: Mobile X-ray

Item Code No.	Department	Section	Item Description
Lot 3-15	**Imaging**	**Critical Care Unit**	**Mobile X –Ray Unit**

1. General Description

1.1. Compact, easily transportable with articulated/telescopic arm suitable for bedside X-ray with maximum positioning flexibility in any patient position. The angles in various planes to be specified by the manufacturer

2. The unit should be a digital system with flat panel detector
3. Power Line Connection:
   a. Should operate on single phase power supply with plug in facility to any standard wall outlet
   b. Automatic adaptation to line voltage 200 to 240 Volts, 15 Amp plug

4. The Generator
   a. Must be microprocessor controlled high frequency, output 30 KW or above.
   b. It should have a digital display of mAs and kV and an electronic timer
   c. KV range: 40kV to 130kV or more
   d. Max. current: 300 mA or more
   e. Please specify mA and seconds separately and not mAs alone
   f. Shortest exposure time: should be 1ms or less
   g. The dose delivered per exposure must be displayed\

5. X-Ray Tube
   a. Output should match the output of the generator
   b. It must have a rotating anode with 3000 rpm or more
   c. Focal spot size should be 0.6mm/1.2mm or better
   d. Mention the heat storage capacity of the anode

6. Flat panel detector
   a. Should be Wireless
   b. The flat panel detector should be of the size 17 x 14 inch or more
   c. The detector pixel matrix sizes should be 2000X2000 or more
   d. The machine should have a detector storage compartment
   e. The image viewing time after exposure should not be more than 15 sec

7. Battery
   a. The machine should be able to run on mains as well as on battery supply
   b. Please specify number of exposures which can be done on battery
   c. The battery should also provide power for the motor to more the machine
   d. The battery should be able to be charged from a normal 15A, 230V single phase socket in less than 6 hours

8. Workstation
   a. The machine should have an integrated workstation with a touch screen

Item Code No.	Department	Section	Item Description
Lot 3-15	**Imaging**	**Critical Care Unit**	**Mobile X –Ray Unit**

b. The workstation should enable to viewing of the images, and provide post processing features, using touch screen monitor
c. The post processing features should include, zoom, contrast and brightness adjustment, storage of images with a memory of at least 2000 images or better
d. The touch screen size should be at least 15 inches, LCD type

9. Connectivity
   a. The machine should be fully network ready
   b. It should be possible to transfer images and patient data from and to hospital network using LAN connectivity and wireless LAN

10. The tube stand must be fully counterbalanced with rotation in all directions

11. The unit must have an effective braking system for parking, transport and emergency braking.

12. All cables should be concealed in the arm system

13. The exposure release switch should be detachable with a cord of at least 5 meters. Exposures with remote control should be provided.

14. Two light weight 'zero lead' aprons should be provided

15. A grid of 8:1 ratio of appropriate size should be provided

16. It should have quality certification CE and FDA

17. ISO certification for services of medical devices must be submitted.

18.	Delivery point		
18.1.	See Hospital Schedule.	For delivery, inspection and testing, installation and commissioning	
19.	Pre installation requirements		
	Nil	.	
20.	Installation and testing		
	Complete installation and setup of the Mobile X-Ray Machine as per manufacturer's instructions		
21.	Training		
21.1.	User Training	On site user training on operation and daily up keep for 3 weeks	
21.2.	Maintenance training	Onsite maintenance training on preventive maintenance	
22.	Technical documentations		

Item Code No.	Department	Section	Item Description		
Lot 3-15	**Imaging**	**Critical Care Unit**	**Mobile X –Ray Unit**		
22.1.	User manuals	2 Sets			
22.2.	Service Manual	1 Set			
22.3.	Drawings	Nil			
23.	Commissioning				
23.1.	Testing and commissioning of the machine including calibration and radiation testing to the satisfaction of the user.				
24.	Warranty				
24.1.	Equipment	Minimum of one year after commissioning on all parts.			
24.2.	Equipment System	Nil			
25.	Maintenance contract				
25.1.	Capacity to provide maintenance and repair service	Vendor/manufacturer shall have adequate facilities, spare parts, qualified and skilled technical staff to offer comprehensive maintenance contract for 10 years			
25.2.	Comprehensive preventive and repair service	Provision for a comprehensive preventive and repair maintenance service contract including parts and material for a period of 10 years from commissioning date (see attached annex for details)			

LOT 4: ONCOLOGY (CHEMOTHERAPY)

LOT 4-1: Examination light

Item Code No.	Department	Section	Item Description
LOT 4-1	Oncology (Chemotherapy)	Chemotherapy	Examination light

4. General Description

The LED technology should be of highly engineered optical system which delivers the precisely controlled natural white light that is so important for an accurate examination.

5. Composition

5.1.	Main unit				

6. Description of the medical supply unit design type

Should have mobile Floor Stand
SLSE50-CM or Wall/Ceiling Mount

STANDARD DESIGN FEATURES

6.1. High-intensity of 39,000 lux (3623 fc) at 24” (61 cm)

6.2. 4000 K color temperature

6.3. CRI (Color Rendering Index) of 92

6.4. Natural white light

6.5. LED light module with at least 40,000-hour life

6.6. Universal input voltage

6.7. Drift-free K-arm with 42” (107 cm) arm range

6.8. IEC 60601-1/ 60601-2-41 certified

6.9. Should have European CE or USA certificate

6.10. Should be supplied with European or USA country of origin certificate.

LOT 4-2: Oxygen Flow Meters

Item Code No.	Department	Section	Item Description
LOT 4-2	**Oncology**	**Chemotherapy**	Oxygen Flow Meters

7. General Description

Oxygen Flow meter with Humidifier:

8. Composition

8.1.	Main unit				

9. Description of the medical supply unit design type

9.1. Should be duly USFDA or CE marked by the European notified body

9.2. The Flow meter should be fitted with BS standard Medical Oxygen Probe.

9.3. Back Pressure Compensated flow meter will be of accurate gas flow measurement with control within a range of 0 to 15 Lpm.

9.4. It should meet strict precision and durability standard.

9.5. The flow meter body should be made of brass chrome plated materials.

9.6. The flow tube and shroud components should be made of clear, impact resistant polycarbonate.

9.7. Flow Tube should have large and expanded 0 – 5 lpm range for improved readability at low flows.

9.8. Inlet filter of stainless-steel wire mesh to prevent entry of foreign particles.

9.9. The humidifier bottle should be made of unbreakable & Reusable of polycarbonate material and autoclavable at 134 degree centigrade.

LOT 4-3: Wall Suction Units

Item Code No.	Department	Section	Item Description
LOT 4-3	Oncology (Chemotherapy)	Chemotherapy	Wall suction Units

7. General Description					
Ward Wall Vacuum Units:					
8. Composition					
8.1.	Main unit				
9. Description of the medical supply unit design type					
9.1. Should be duly USFDA or CE marked by the European notified body					
9.2. Vacuum Unit should be wall mounted and should consists of Suction Controller/ Regulator & Collection bottle of 1000ml. with mounting arrangement.					
9.3. The Vacuum unit should be fitted with BS standard Vacuum probe.					
9.4. The vacuum regulator should be step-less adjustable and have large vacuum gauge providing indication of the suction supplied by the regulator.					
9.5. Safety trap should be provided inside the jar to safeguard the regulator from overflowing.					
9.6. The unit should be consisting of reusable 1000ml. shatter resistant bottle, each made up of poly carbonate material and fully autoclavable at 1340C.					

LOT 4-4: Portable Electrical Suction Units

Item Code No.	Department	Section	Item Description
LOT 4-4	Oncology	Chemotherapy	Portable Electrical Suction Units
1. General Description			
n machine suitable for use in theatre, for both adult and pediatric use. Should be constructed from coated non-corrosive, extreme heat resistance material and electrically insulated and mobile on antistatic castors φ 60 mm, 2 No. lockable, with high level push handle.			
2. Composition			
2.1.	Main unit		
3. Performance Specifications			
3.1.	Main Unit		
3.1.1.	High flow rate	40 litres per minute.	
3.1.2.	Suction vacuum	Maximum 700mmHg	
3.1.3.	Suction pump	oil free	
3.1.4.	Jars	2 X 2 liter polycarbonate autoclavable and unbreakable complete with overflow devices and valves.	
3.1.5.	Vacuum gauge	Graduated in mmHg and kPa.	
3.1.6.	Vacuum control	Adjustable at the front panel	
3.1.7.	Switch	Main on front panel and foot switch (water proof type)	
3.1.8.	Cable towage	On back with reversible cleats	
3.1.9.	Anti-bacterial filters	Available preferable autoclavable	
3.1.10.	Suction tubing connection	Antistatic neoprene or silicone	
3.1.11.	Safety	Overflow pump protection	
3.1.12.	Handle	High level push handle type	
3.1.13.	Movements	Mobile on four antistatic castors 2 No. lockable.	
4.	Physical characteristics		
4.1.	Main unit	Mobile on castors with push handle	
5.	Operating environment		
5.1.	Power Requirements	240V, A/c 50 Hz, Single phase, 3 Pin Plug BS standard, 3m long cord with PE	

Item Code No.	Department	Section	Item Description
LOT 4-4	Oncology	Chemotherapy	Portable Electrical Suction Units
5.2.	Ambient temperature	10° C to 40° C	
5.3.	Relative humidity	20% to 90%	
6.	Accessories	The following accessories will be provided as startup kits.	
6.1.	Sterilizable, silicone tubing	5 Set	
6.2.	Bacterial filters	1 Box	
6.3.	Foot switch	1 No.	
6.4.	Cannula with handle for general purpose	4 Sets	
7.	Quality standards		
7.1.	Manufacturing standards	EN 10079-1, IEC 60601-1, ISO 9001, ISO 13485	
7.2.	Conformity to standards	CE and FDA marked	
8.	Local back up service		
8.1.	Available	Should be available locally	
8.2.	Capacity to service equipment	Agent shall have adequate facilities, spare parts, and qualified and skilled technical staff	
9.	Delivery point		
9.1.	See Schedule	For inspection and testing	
9.2.	Nil		
10.	Pre installation requirements		
	Nil		
11.	Installation and testing		
	Complete installation and setup of the machine as per manufacturer's instructions		
12.	Training		
12.1.	User Training	On site user training on operation and daily up keep	
12.2.	Maintenance training	Onsite maintenance training on preventive maintenance	
13.	Technical documentations		

Item Code No.	Department	Section	Item Description		
LOT 4-4	Oncology	Chemotherapy	Portable Electrical Suction Units		
13.1.	User manuals	2 Sets			
13.2.	Service Manual	1 Set			
13.3.	Drawings	Nil			
14.	Commissioning				
14.1.	Testing and commissioning of the machine to the satisfaction of the user.				
15.	Warranty				
15.1.	Equipment	Minimum of one year after commissioning on all parts.			
15.2.	Equipment System	Nil			

LOT 4-5: Patient Lifting Hoist

Item Code No.	Department	Section	Item Description
LOT 4-5	Oncology (Chemotherapy)	Chemotherapy	Patient Lifting Hoist

1. General Description
   Mobile patient lift up to 300kg maximum carrying capacity

This specification establishes the requirements, supply, delivery, end user training, demonstration; commissioning and installation of Electrically Operated Patient Lift incorporating the latest technology and must be suitable for all surgical and medical procedures required for lifting and lowering of patients of which the design of must be user friendly.

2. Composition

2.1.	Main unit				

3. Detailed specifications:

The lift must be light weight and easily maneuverable by one person.

The slings, spreader bar and accessories must be of such a design that the patient has a feeling of safety and security, whilst attached to the lift. The patient's correct body posture must be maintained during the lift in order to avoid injury.

The lift must be designed to perform the following minimum basic functions safely and with the least effort by the operator:

- Lifting a patient from the floor.
- Lifting/lowering a patient on to a bed.
- Lifting/lowering a patient onto an easy chair.
- Lifting/lowering a patient into a wheelchair.
- Lifting/lowering a patient onto a toilet.

3.1. The safe lifting capacity must not be less than 150Kg.
3.2. The frame of the lift must be manufactured from:
- Steel (chromium plated) or
- Steel (epoxy powder coated).

3.3. Base must be adjustable in width to enable access around different size chairs and obstacles. Operations by either manual or electro assist.
3.4. The lift must be fitted with 100 to 160mm swivel castors with a mechanical brake lock on the rear castors.
3.5. The mass of the lift must not exceed 60Kg.
3.6. The lift must be able to pass through a normal door with a patient attached to it.
3.7. The lifting and lowering mechanism must operate off a D.C. supply (battery) driving a hydraulic motor and pump. Please describe in detail the type of drive offered as well as the mechanical I electrical configuration.
3.8. The lift must be operated from a control handset connected to the lift. The control handset must incorporate the lifting and lowering control switches. An emergency lowering switch must be fitted to the chassis of the lift.
3.9. An emergency stop switch must be provided to immediately stop any powered movement.
3.10. To ensure that the lift is always ready for use a fully charged battery must be available. The final bid price must include the supply of an additional battery and if

where required, also an additional charger. If an additional charger is not required please state this in your comments.

3.11. The following, visual battery condition and other indication must be provided:
- 3.11.1. Mains on charger.
- 3.11.2. Battery charging.
- 3.11.3. Battery faulty.
- 3.11.4. Voltage in battery too low for recharging.
- 3.11.5. Charging faulty.
- 3.11.6. Battery condition I battery low indication when the battery is fitted to the lift.

3.12. Please state battery recharging time/approximately hours from 50% capacity to 100% capacity.

3.13. Please state battery life. The battery must not have less than 500 charge cycles from 50% capacity.

3.14. Please state the type of battery its voltage and ampere hour capacity.

3.15. UPGRADABILITY
- 3.15.1. All future upgrades (hardware and software), where applicable, involving patient safety must be supplied at no additional cost.
- 3.15.2. All future upgrades removing software viruses from existing software, where applicable, must be supplied at no additional cost.
- 3.15.3. Any software upgrade, where applicable, before or after installation of the equipment must be brought to the attention of the Management.

3.16. MANUALS
- 3.16.1. The bidder must include in their offer at no extra cost to the final bid price:
  a. Complete user Operation/Maintenance Manual x 2 (two) Book/File; CD; DVD copies in English Language
  b. Complete ORIGINAL Service/Repair Manual x 2 (two) Book/File; CD; DVD copies in English Language which MUST include the following information:
     (i) Fault Finding Guide
     (ii) Circuit Diagrams/Schematics
     (iii) Circuit Descriptions
     (iv) PCB Layouts
     (v) Calibration Guide
     (vi) Part numbers and exploded diagram of mechanical parts/panels.
- 3.16.2. The offer submitted must be supported by descriptive literature, colour pamphlets, colour brochures and technical data sheets applicable to the offer.
- 3.16.3. FAILURE TO SUBMIT THE ABOVE WILL RESULT IN THE BID BEING DISQUALIFIED.

3.17. GUARANTEE I WARRANTY
- 3.17.1. The bidder must provide a minimum of 24-month warranty period for the unit offered.

3.18. MAINTENANCE AND SERVICE AGREEMENT
- 3.18.1. The bidder must provide a fully- costed PREVENTATIVE MAINTENANCE AND SERVICE AGREEMENT for a period of 5 years

Item Code No.	Department	Section	Item Description
LOT 4-5	Oncology (Chemotherapy)	Chemotherapy	Patient Lifting Hoist
	to commence upon termination of the warranty period with an option to enter into a renewable agreement.		

LOT 4-6: Patient Trolley with side rails

Item Code No.	Department	Section	Item Description
LOT 4-6	Oncology (Chemotherapy)	Chemotherapy	Patient Trolley with side rails

1. General Description					
Resuscitation patient trolley with IV pole , Oxygen Cylinders and with adjustable sides, constructed from chrome plated mild steel and mobile on castors					
2. Composition					
2.1.	Main unit				
3. Physical Specifications					
3.1.	Main Unit				
3.1.1.	Material of main unit	Tubular mild steel, chrome plated			
3.1.2.	Movements	Back rest, trendelenburg/reverse tendelenburg, up and down			
3.1.3.	Operation	By hydraulic mechanical system			
3.1.4.	Side guard rails	Foldable or drop down type			
3.1.5.	Mattress	High density, water proof and fire resistance			
3.1.6.	Mobile	On four antistatic castors diameter 150mm with brakes and central locking system			
3.1.7.	IV pole	Provided			
3.1.8.	Oxygen cylinder	Provided, Medium size 11kg (1.36m^2) mild steal			
3.1.9.	Resuscitation bags	Provided, adult and paed			
3.1.10.	Dimensions (Overall)	Approx. 2050 mm(L) X 780 mm (W) X 620 -900mm (H)			
3.1.11.	Weight to handle	approx. 200 kg			
4.	Quality Standards				
4.1.	Manufacturing standards	ISO 9001, ISO 13485			
4.2.	Conformity to standards	CE Standard			
5.	Delivery point				
5.1.	KCC	Delivery point			

Item Code No.	Department	Section	Item Description
LOT 4-6	Oncology (Chemotherapy)	Chemotherapy	Patient Trolley with side rails
6.	Warranty		
6.1.	Equipment	Minimum of 2 year after delivery	

LOT 4-7: Patient Weighing Scale

Item Code No.	Department	Section	Item Description
LOT 4-7	Oncology (Chemotherapy)	Chemotherapy	Patient Weighing Scale
4. General Description			
5. Composition			
5.1. Main unit			
6. Description of the medical supply unit design type			
6.1. Mobile Weighing Scale with height meter 6.2. Capacity approx. 0-160kg 6.3. With circular scale/readout 6.4. With mechanical height rod able to measure between 70cm-2000cm 6.5. With BMI display 6.6. Easy to clean platform with reset to zero function 6.7. With flat tread area platform approximately 360mm (W) X 630mm (D) 6.8. Height approx. 1000mm 6.9. With mechanical column scale 6.10. Displays weight with BMI function 6.11. Graduation approximately 500g. 6.12. Warranty 2 years 6.13. With Calibration Certificate 6.14. FDA/ CE Marked 6.15. With heavy duty transport castors 6.16. Operator and service manuals to be provided			

LOT 4-8: Aneroid Sphygmomanometer

Item Code No.	Department	Section	Item Description
LOT 4-8	Oncology (Chemotherapy)	Chemotherapy	Aneroid Sphygmomanometer

4. General Description

Sphygmomanometer - Aneroid Type

5. Composition

5.1.	Main unit				

6. Description of the medical supply unit design type

6.1. Should be aneroid type,

6.2. Should have ISI mark.

6.3. Should have a measuring range from 0 to 300 mmHg,

6.4. Should be provided with adult arm cuffs of size medium & large and paediatric cuff.

6.5. The dial mano meter markings and graduations should be permanent and clearly visible and filled with pigments, with diameter of minimum diameter of 160 mm.

6.6. Body & Bezel – Aluminum die casted (Powder coated), screw type bezel

6.7. Sensing-corrugated phosphorous bronze twin capsule bellows.

6.8. Movement mechanism – Brass

6.9. Connection: brass, nickel plated for 3-4 mm rubber hose.

6.10. Dial – Aluminum

6.11. Pointer – White coated, thin & sharp made of phosphorous Bronze

6.12. Window lenses – Clear plastic.

6.13. All plastic parts, if any used should not crack, flake, peel or disintegrate in normal use.

6.14. The inflating rubber bag should be capable of withstanding an internal pressure of 450 mmHg without leaking.

6.15. The inflating bulb should be soft and should not have any joints or ridges.

6.16. The fastening arrangements of the cuff should be of hook and loop type (Velcro)

6.17. The threading and fastening arrangement of the cuff should show no sign of slip or failure when subjected to the maximum test conditions.

6.18. The rubber tubes used should have an internal diameter of 3 ± 0.5mm and the external diameter should not be less than 8mm.

6.19. The tubes should be fitted with male and female leur connectors.

6.20. Should provide a carry bag to keep the whole system safe and sound. All parts should be replaceable in case of breakage.

LOT 4-9: Stethoscope

Item Code No.	Department	Section	Item Description
LOT 4-9	Oncology	Chemotherapy	Cardiac stethoscope, adult

1. General Description

   1.1. Dual Stethoscope (Adult) :
   - Dual sided chest-piece.
   - Diaphragm for best auscultation.
   - Provided with Non-Chill retaining ring and bell ring.
   - Chrome plated internal spring binaural

2. Composition

2.1	Main unit				

3.

3.1. Patient friendly Non-Chill Rim
3.2. Solid stainless steel / anodized aluminum chest piece
3.3. Frame should be stainless steel
3.4. Excellent Acoustic Diaphragm and comfortably fit with soft sealing ear tips
3.5. Anatomically correct headset & comfortably angled
3.6. Single lumen tubing in a variety of popular colours
3.7. Y PVC tubing
3.8. European CE certification or USFDA certification
3.9. Quality Certificate of manufacturer like OHSAS-18001 or ISO 9001- 14001/9001-2008/ 9001-13485 should be attached to ensure quality

LOT 4-10: Thermometer

Item Code No.	Department	Section	Item Description
LOT 4-10	Oncology (Chemotherapy)	Chemotherapy	Thermometer
1. General Description			
Digital Thermometer			
2. Composition			
2.1.	Main unit		
3. Description of the medical supply unit design type			
3.1. The system should have minimum 4-digit display with 0.1 increment 3.2. Should have degree Celsius and Fahrenheit display 3.3. Measurement Accuracy: ± 0.1^0C (32.0 to 42.0^0C), ± 0.2^0 F (89.6 to 107.6^0 F) 3.4. Measurement Range: 32.0 to 42.0^0C (89.6 to 107.6^0F) 3.5. The sensing unit should be thermistor or equivalent 3.6. Should work with a battery and lasts for a minimum measurement of 1000 readings (10 min operation each)			

LOT 4-11: Emergency/ Resuscitation Trolley

Item Code No.	Department	Section	Item Description
LOT 4-11	**Oncology**	**Chemotherapy**	**Resuscitation/Emergency trolley**

1. General Description

Resuscitation trolley for use in ICU. Epoxy coated mild steel, with drawers, protection perimeter and defibrillator holder. The Unit should be mobile on four castors , 2 lockable

2. Composition

2.1.	Main unit,		

3. Performance Specifications

3.1. Main Unit

3.1.1. Should be durable with Ergonomic handle and should have easy grip

3.1.2. Height should be 40-45”

3.1.3. Should have 6-8 drawers of sizes 3x3”,2x6”,1x9”

3.1.4. Should have interchangeable 3”,6”,9” drawers which run smoothly on good quality channels

3.1.5. Should have provision of side storage which allows storage of variety accessories like can, storage bins, glove storage, sharp container set

3.1.6. An over bridge can with baskets, shelves and bins to keep important things

3.1.7. Should have AMS top surface & advance polymer material which is easy to clean. It should not dent, chip flake or corrode

3.1.8. Should be easily rolling and has toe brakes

3.1.9. Should have I.V. pole with clamps ach 3” drawer should have provision for 25-30 compartments

3.1.10. Should have twin swivel castors & central lock

3.1.11. Should be CE and ISO 9001/2000 and FDA approved

3.1.12. Should have CPR board & O2 cylinder holder

LOT 4-12: Biosafety Cabinet + Accessories

Item Code No.	Department	Section	Item Description
LOT 4-12	Oncology (Chemotherapy)	Chemotherapy	Biosafety Cabinet + Accessories

1. General Description

Laminar Flow Unit for Chemotherapy

2. Composition

2.1.	Main unit				

3. Performance Specifications

3.1. The Biosafety cabinet must be Microprocessor Controller based with LCD Display with the relevant Menu controlled features.
3.2. Overall dimension: About 37”W x 34” D x 49”H
3.3. Work area dimensions: About 34” W x 22” D x 34” H.
3.4. Outer cabinet and work surface should be stainless steel with 4 pharmaceutical grade finish.
3.5. High capacity motor/blower system with speed control to extend HEPA filter life.
3.6. Top mounted pre-filters should easily be changeable.
3.7. 16 gauge stainless steel work deck should be 36” from the floor and reinforced to support 300= pounds.
3.8. HEPA filters with full width and height (36”), ensuring unidirectional airflow and should be easily changeable from the sides.
3.9. Top Mounted fluorescent/LED lighting should be isolated from the clean environment.
3.10. IV hanging bar with 12 hooks in work area.
3.11. Separated light Power ON/OFF indicator switches for blower and lighting
3.12. Power supply: 240Vac 50Hz
3.13. Warranty: at least 2 years
3.14. CMC: 5 years post Warranty period
3.15. Bid to include a separate CMC offer after the warranty for Life Cycle Cost (LCC) consideration at the time of evaluation including spare parts and labour.

LOT 4-13: Infusion Pumps

Item Code No.	Department	Section	Item Description
LOT 4-13	Oncology	Chemotherapy	Infusion Pump

1. General Description

Infusion pump

2. Composition

2.1.	Main unit				

3. Performance Specifications

3.1. Main Unit

3.1.1. Should be operated on drip rate Peristaltic finger pump method.

3.1.2. Should be compatible with most of the IV set (macro/micro drip sets).

3.1.3. Should have the following flow rates.

3.1.4. IV Set ml/hr. drops/min

- 15 drops/ml 3~450ml/hr. 1~100drops/min
- 20 drops/ml 3~450ml/hr. 1~100drops/min
- 60 drops/ml 1~100ml/hr. 1~100drops/min

3.1.5. Should have a flow rate accuracy of ±10% and drip rate accuracy of ±2%.

3.1.6. Should have a volume infused display from 0 to 999.9ml.

3.1.7. Should have a purge and KVO facility.

3.1.8. Should have an audible and visual alarm for occlusion pressure, air alarm, door open, empty, low battery.

3.1.9. Should have a LCD display with backlight and graphical display of infusion.

3.1.10. Should have a minimum 2hr battery back up at highest delivery rate.

3.1.11. Should work with input 240Vac 50 Hz supply.

3.1.12. Should be CE and FDA marked

3.1.13. Copy of the certificate / test report shall be produced along with the technical

LOT 4-14: Syringe Pumps

Item Code No.	Department	Section	Item Description
LOT 4-14	Oncology	Chemotherapy	Syringe Pump

1. General Description

Syringe pump

2. Composition

2.1.	Main unit				

3. Performance Specifications

3.1. Main Unit

3.1.1. Should be easy to use and nurse friendly.

3.1.2. Should have automatic syringe size and model detection

3.1.3. System should be front loading

3.1.4. Should have large format LCD/TFT display.

3.1.5. Should have a minimum flow rate range from 0.1 – 1200 ml/hr. for 50ml syringe, 0.1 – 100 ml/hr. for 20ml syringe and 0.1 – 60 ml/hr. for 10ml syringe.

3.1.6. Syringe range from 20-50/60 ml.

3.1.7. Should have a flow rate accuracy of ±2%

3.1.8. Should have a bolus rate up to 1000ml/hr. for 50 ml syringe.

3.1.9. Should have automatic and manual bolus.

3.1.10. Should have at least 3 levels of programmable occlusion pressure.

3.1.11. Should have automatic bolus reduction system to avoid accidental bolus delivery after occlusion incident.

3.1.12. Should have a rechargeable battery with back up time of minimum 3 hours.

3.1.13. System should have a docking station

3.1.14. Pump must trigger following alarms with visual indication:-

i. Occlusion Pressure Alarm
ii. KVO or 3 min pre- alarm
iii. Syringe empty and volume infused alarm
iv. Internal malfunction and Battery Charge Low Alarm
v. Syringe disengaged and incorrectly placed alarm
vi. Alarm loudness control.
vii. No mains
viii. Line disconnected (rapid pressure drop).

3.1.15. Should work with input 200 to 240Vac 50 Hz supply.

3.1.16. Should be CE and FDA marked.

Item Code No.	Department	Section	Item Description
LOT 4-14	Oncology	Chemotherapy	Syringe Pump
3.1.17. Copy of the certificate / test report shall be produced along with the technical bid			

LOT 4-15: Patient Beds

Item Code No.	Department	Section	Item Description
LOT 4-15	Oncology	Chemotherapy	Chemotherapy Treatment Bed
1. General Description			
Chemotherapy bed complete with adjustable backrest, knee rest, trendelenberg/ reverse trendelenberg, and water proof mattress, Electrical type			
2. Composition			
2.1.	Main unit		
3. Physical Specifications			
3.1.	Main Unit		
3.1.1.	Type	Electrical Chemotherapy bed	
3.1.2.	Material of main unit	Mild steel epoxy coated, antistatic	
3.1.3.	Movement	Backrest, Knee rest, trendelenberg, reverse trendelenberg, fowler and vascular position, cardiac chair position, and shock position, all electric operated	
3.1.4.	Height	Adjustable, electric operated	
3.1.5.	Back rest	Retracting, X-Ray translucent and cassette carrier	
3.1.6.	Leg section	Retracting	
3.1.7.	Head rest/ knee rest	Removable	
3.1.8.	Side rails	Drop down type	
3.1.9.	Mattress	Provided, high density covered with leather or Vitapruf material	
3.1.10.	IV pole	Provided, stainless steel and adjustable	
3.1.11.	Castors	Four antistatic castors with central locking position and bidirectional locks	
3.1.12.	Control	Microprocessor based, with patient hand held control, and Nurse control panel	
3.1.13.		Programmable positions buttons for ease of adjusting patient positions	
3.1.14.	Power	240 V, 50Hz single phase with back up sealed battery	
3.1.15.	Overall Dimensions (mm)	About 2100 L X 980 W X 380- 800H	
3.1.16.	Weight to handle	200 kg	
4.	Quality Standards		

Item Code No.	Department	Section	Item Description		
LOT 4-15	Oncology	Chemotherapy	Chemotherapy Treatment Bed		
4.1.	Manufacturing standards	ISO 9001, 60601, ISO 13485			
4.2.	Conformity to standards	CE and FDA marked and , IP X4 electrical protection standard			
5.	Delivery point				
5.1.	See Schedule	Delivery point			
6.	Warranty				
6.1.	Equipment	Minimum of one year after delivery			
6.2.	Equipment System	Nil			

LOT 4-16: Reclining Chairs

Item Code No.	Department	Section	Item Description
LOT 4-16	Oncology	Chemotherapy	Chemotherapy Treatment Chair
1. General Description			
Chemotherapy chair complete with adjustable backrest, knee rest, trendelenberg/ reverse trendelenberg, and upholsted water proof mattress, Electrical type			
2. Composition			
2.1.	Main unit		
2.1.1. Should be ergonomically designed and comfortable to the patient.			
2.1.2. Should allow the patient to test in full sitting and lying position.			
2.1.3. Should have electronically controlled adjustment for back section, leg section and height.			
2.1.4. Should have a patient hand set with controls for all positions.			
2.1.5. Arm set should fold to allow side entry of the patient.			
2.1.6. Seat cushion should be removable, made of proper density foam and should have smooth surface for easy hygiene and cleaning.			
2.1.7. Frame should be made up of corrosion free galvanized steel with powder coating and should have four swiveling castor wheels of which the front two should be lockable.			
2.1.8. Should be able to withstand a maximum load of 200kg.			
2.1.9. Should have facility for online weight measurement (optional).			
2.1.10. Should have detachable drip stand and a tray table.			
2.1.11. Power input 220-240 VAC, 50HZ fitted with BS plug.			
2.1.12. Manufacturer/Supplier should have ISO certification.			
2.1.13. All electrical actuators and mechanisms should be housed inside the structure making the product safer.			
2.1.14. User/technical/maintenance manuals to be supplied in English.			
2.1.15. Certificate of calibration and inspection.			
3.	Quality Standards		
3.1.	Manufacturing standards	ISO 9001, ISO 13485	
3.2.	Conformity to standards	CE marked and FDA approved, IP X4 electrical protection standard	
4.	Delivery point		
4.1.	See Schedule	Delivery point	
5.	Warranty		
5.1.	Equipment	Minimum of one year after delivery	
5.2.	Equipment System	Nil	

LOT 5: INPATIENT SERVICES

LOT 5-1: Oxygen Flow Meters

Item Code No.	Department	Section	Item Description
LOT 5-1	Inpatient	Wards	Oxygen Flow meters

10. General Description

Oxygen Flow meter with Humidifier:

11. Composition

11.	Main unit				

12. Description of the medical supply unit design type

12.1. Should be duly USFDA or CE marked by the European notified body

12.2. The Flowmeter should be fitted with BS standard Medical Oxygen Probe.

12.3. Back Pressure Compensated flow meter will be of accurate gas flow measurement with control within a range of 0 to 15 Lpm.

12.4. It should meet strict precision and durability standard.

12.5. The flow meter body should be made of brass chrome plated materials.

12.6. The flow tube and shroud components should be made of clear, impact resistant polycarbonate.

12.7. Flow Tube should have large and expanded 0 – 5 lpm range for improved readability at low flows.

12.8. Inlet filter of stainless-steel wire mesh to prevent entry of foreign particles.

12.9. The humidifier bottle should be made of unbreakable & Reusable of polycarbonate material and autoclavable at 134 degree centigrade.

LOT 5-2: Wall Suction Units

Item Code No.	Department	Section	Item Description
LOT 5-2	Inpatient	Wards	Wall Suction Unit
10. General Description			
Ward Wall Vacuum Units:			
11. Composition			
11.1. Main unit			
12. Description of the medical supply unit design type			
12.1. Should be duly USFDA or CE marked by the European notified body 12.2. Vacuum Unit should be wall mounted and should consists of Suction Controller/ Regulator & Collection bottle of 1000ml. with mounting arrangement. 12.3. The Vacuum unit should be fitted with BS standard Vacuum probe. 12.4. The vacuum regulator should be step-less adjustable and have large vacuum gauge providing indication of the suction supplied by the regulator. 12.5. Safety trap should be provided inside the jar to safeguard the regulator from overflowing. 12.6. The unit should be consisting of reusable 1000ml. shatter resistant bottle, each made up of poly carbonate material and fully autoclavable at 1340C.			

LOT 5-3: Ward bed complete with drip stand, Bedside locker and over-bed table

Item Code No.	Department	Section	Item Description
LOT 5-3	Inpatient Services	General Ward	Electrical Bed with mattresses, bed side locker and Over bed Table

1. General Description

Four sections HDU bed complete with adjustable backrest, knee rest, trendelenberg/ reverse trendelenberg, and water proof mattress

2. Composition

2.1.	Main unit				

2.2. Physical Specifications

2.2.1. Operational Requirements

2.2.2. The system should be electrically and manually operated and adjustable for heights, trendelenburg etc. It should also be having radiotransluscent top for carrying out X-Ray at the bedside

3. Technical Specifications
   - 3.1. Should have four section mattress base
   - 3.2. Should be able to handle weight of up to 200Kg
   - 3.3. Should have X-Ray translucent back section made up of high pressure laminate.
   - 3.4. Should have X-Ray cassette holder underneath the back section & should allow insertion of X-Ray cassette from either side of the bed.
   - 3.5. Base frame & support frame should be made up of steel for long life & prevention from rusting.
   - 3.6. Should have stepless electrical adjustment for the following :-
     - Height : 450-840 mm
     - Back section : 0- 50 degrees
     - Leg Section : 0-30 degrees
4. Should have stepless pneumatic adjustment for Trendelenburg (20-25° approx.), reverse-trendelenburg (10-15° approx.)
   - 4.1. Should have a manual quick release mechanism for back section adjustment during emergency situation
   - 4.2. Should be equipped with four articulated half-length tuck away side rails
   - 4.3. Should be equipped with large castors (diameter 150 mm) with central braking and steering facility.
   - 4.4. Mattress of the Bed should be made up of high density foam with Anti-Microbial agent incorporated into all components that assists in Prohibiting growth of bacteria & fungi and easy to clean.
   - 4.5. Mattress should be fully Radiolucent for ease in performing portable X-Rays.
   - 4.6. Should have bumpers at all four corners and place for fixing accessories
   - 4.7. Dimensions of bed :
     - Length : 2100 -2290 mm
     - Width : 850 -1020mm
     - Mattress Size : appropriate as per bed size
5. System Configuration Accessories, spares and consumables
   - 5.1. Bed Mainframe -01
   - 5.2. Bed Ends, detachable : 01 pair
   - 5.3. Articulated half-length tuck away side rails: 04 Nos.
   - 5.4. IV Rods: 01 No.

Item Code No.	Department	Section	Item Description
LOT 5-3	Inpatient Services	General Ward	Electrical Bed with mattresses, bed side locker and Over bed Table

5.5. Mattress 12 cm Thick: 01 No.

6. Environmental factors
   - 6.1. Shall meet IEC-60601-1-2:2001 or Equivalent General Requirements of Safety for Electromagnetic Compatibility.
   - 6.2. The unit shall be capable of being stored continuously in ambient temperature of 15 -50 0C and relative humidity of 15-90%
   - 6.3. The unit shall be capable of operating continuously in ambient temperature of 10 - 40 0C and relative humidity of 15-90%
7. Power Supply
   - 7.1. Power input to be 220-240VAC, 50Hz as appropriate fitted with BS plug
   - 7.2. Resettable overcurrent breaker shall be fitted for protection
8. Standards, Safety and Training
   - 8.1. Electrical safety conforms to standards for electrical safety IEC-60601 / IS-13450
   - 8.2. Should be FDA and CE approved product
   - 8.3. Manufacturer should have ISO certification for quality standards.
   - 8.4. Electric Shock Protection level-Class-B
   - 8.5. Electric current Protection- Class -1
   - 8.6. Certified to be compliant with IEC 60601-2-38 Medical Electrical Equipment part 2-38 Particular requirements for safety of Electrically Operated Hospital Beds
   - 8.7. Service manual in English

User manual in English

LOT 5-4: Drip Stand (Portable)

Item Code No.	Department	Section	Item Description
LOT 5-4	Inpatient Services	General Ward	Drip stand (Portable)
1. General Description			
2. Composition			
2.1.	Main unit		
3. Description of the medical supply unit design type			
TECHNICAL SPECIFICATIONS FOR DRIP STAND The drip stand must be made of stainless steel with the following features: 3.1. Stable and strong stainless steel structure 3.2. Four (4) stainless steel hooks each with 1kg load capacity 3.3. Adjustable height between approx. 150cm to 250cm 3.4. Large, five (5) limb stainless base 3.5. Five (5) castors with at least two brakes			

LOT 5-5: Thermometers (Digital)

Item Code No.	Department	Section	Item Description
LOT 5-5	Inpatient Services	wards	Thermometer
4. General Description			
Digital Thermometer			
5. Composition			
5.1.	Main unit		
6. Description of the medical supply unit design type			
6.1. The system should have minimum 4-digit display with 0.1 increment 6.2. Should have degree Celsius and Fahrenheit display 6.3. Measurement Accuracy: ± 0.1^0C (32.0 to 42.0^0C), ± 0.2^0 F (89.6 to 107.6^0 F) 6.4. Measurement Range: 32.0 to 42.0^0C (89.6 to 107.6^0F) 6.5. The sensing unit should be thermistor or equivalent 6.6. Should work with a battery and lasts for a minimum measurement of 1000 readings (10 min operation each)			

LOT 5-6: Blood Pressure Machine (Aneroid)

Item Code No.	Department	Section	Item Description
LOT 5-6	Inpatient	Wards	Blood Pressure Machine (Aneroid Type)

7. General Description

Sphygmomanometer - Aneroid Type

8. Composition

8.1.	Main unit				

9. Description of the medical supply unit design type

9.1. Should be aneroid type,

9.2. Should have ISI mark.

9.3. Should have a measuring range from 0 to 300 mmHg,

9.4. Should be provided with adult arm cuffs of size medium & large and paediatric cuff.

9.5. The dial mano meter markings and graduations should be permanent and clearly visible and filled with pigments, with diameter of minimum diameter of 160 mm.

9.6. Body & Bezel – Aluminum die casted (Powder coated), screw type bezel

9.7. Sensing-corrugated phosphorous bronze twin capsule bellows.

9.8. Movement mechanism – Brass

9.9. Connection: brass, nickel plated for 3-4 mm rubber hose.

9.10. Dial – Aluminum

9.11. Pointer – White coated, thin & sharp made of phosphorous Bronze

9.12. Window lenses – Clear plastic.

9.13. All plastic parts, if any used should not crack, flake, peel or disintegrate in normal use.

9.14. The inflating rubber bag should be capable of withstanding an internal pressure of 450 mmHg without leaking.

9.15. The inflating bulb should be soft and should not have any joints or ridges.

9.16. The fastening arrangements of the cuff should be of hook and loop type (Velcro)

9.17. The threading and fastening arrangement of the cuff should show no sign of slip or failure when subjected to the maximum test conditions.

9.18. The rubber tubes used should have an internal diameter of 3 ± 0.5mm and the external diameter should not be less than 8mm.

9.19. The tubes should be fitted with male and female leur connectors.

Item Code No.	Department	Section	Item Description
LOT 5-6	Inpatient	Wards	Blood Pressure Machine (Aneroid Type)
9.20. Should provide a carry bag to keep the whole system safe and sound. All parts should be replaceable in case of breakage.			

LOT 5-7: Wheelchairs

Item Code No.	Department	Section	Item Description
LOT 5-7	Outpatient	Consulting Room	Wheelchairs

1. General Description

Indoor / low-active basic folding chairs

2. Composition

2.1.	Main unit				

3. Description of the medical supply unit design type

3.1. Detailed specification description of category: Indoor / low-active basic folding chairs.

Basic folding frame, standard back height

Size range:

- 51 cm (20") wide
- 46 cm (18") wide
- 43 cm (17”) wide
- 41 cm (16") wide
- 38 cm (15") wide
- 36 cm (14") wide
- 30 cm (12") wide with 40 cm seat frame length
- 30 cm (12") wide with 30 cm seat frame length
- 25 cm (10”) wide with 30 cm seat frame length
- 25 cm (10”) wide with 25 cm seat frame length

3.2. Basic folding frame, tall back height

Size range:

- 51 cm (20") wide
- 46 cm (18") wide
- 43 cm (17") wide
- 41 cm (16") wide
- 38 cm (15") wide
- 36 cm (14") wide
- 30 cm (12") wide with 40 cm seat frame length
- 30 cm (12") wide with 30 cm seat frame length

3.3. Basic folding frame, short back height

Size range:

- 51 cm (20") wide
- 46 cm (18") wide
- 43 cm (17”) wide
- 41 cm (16") wide
- 38 cm (15") wide
- 36 cm (14") wide
- 30 cm (12") wide with 40 cm seat frame length

Item Code No.	Department	Section	Item Description
LOT 5-7	Outpatient	Consulting Room	Wheelchairs

3.4. Basic folding frame, standard back height attendant-propelled, non-institutional use
Size range:

- 51 cm (20") wide
- 46 cm (18") wide
- 41 cm (16") wide
- 38 cm (15") wide
- 36 cm (14") wide
- 30 cm (12") wide with 40 cm seat frame length

3.5. Backrest / Seat configuration:

- Seat tilt: 5 degree minimum and 8 degree maximum (Approx. minimum of 3.5 cm and maximum of 5.7 cm front and rear seat height differential on 40 cm seat length)
- Back to seat angle not to exceed 90 degrees.
- 8 - 10 degree bend in back post, except for short back and low slung short back categories

3.6. Seat length:

- Standard = 40 cm (allow + 1 cm) long on all chairs with 40 cm seat frame. Exception: 30 cm (allow + 1 cm) long on 30 cm (12") wide with 30 cm seat frame length; 25 cm (10") wide with 30 cm seat frame length; 25 cm (10") wide with 25 cm seat frame length Shorter length may be specified by end user.

3.7. Upholstery:

- Back upholstery: Nylon (600 D) or vinyl: Exception: Reinforced on all 20" or reinforced 18" and 16" chairs. Reinforcement by means of a single nylon strip, at least 4 cm wide stitched to outside of back upholstery.
- Seat upholstery: Nylon (600 D) or vinyl (40 cm long or any shorter length as specified).
- All back and seat upholstery to be reinforced with an inner PVC minimum spec of 500 g/m2. The inner coated PVC to have a minimum tensile strength of 200 kg/50mm WMD and 160kg/50mm AMD and a minimum tear strength of 25kg both WMD and AMD. (Reinforced chairs as specified will therefore have a second, outer layer of PVC for additional reinforcement. Reinforcement by means of strips not acceptable.)

3.8. Armrests:

- Removable sport, full or desk with plastic skirt guard. Exception: Height adjustable full or desk with metal skirt guard only on 30 cm (12") wide with 30 cm seat frame length and 10" wheelchairs
- Arm rest sockets to be on side of seat rail only.
- Shape of arm rests may in no way impede the fitting of commercial rigid adjustable back systems onto back posts.

Item Code No.	Department	Section	Item Description
LOT 5-7	Outpatient	Consulting Room	Wheelchairs

3.9. Castors and forks:

- 8x2" (20cm x 5 cm) castors with plastic hub, outer shore hardness of 65 – 70 and inner shore hardness of 33 – 70, with the inner value not exceeding the outer value.
- Exception: 20" chair: 8x2" (20cm x 5 cm) castors with aluminium hub, and outer shore hardness of 65 – 70 and inner shore hardness of 33 – 70, with the inner value not exceeding the outer value. Alternative, 8x2" (20cm x 5 cm) rubber castors.
- 8x1" (20cm x 2.5 cm) castors with plastic hub to be available as an option on request.
- Forks to be minimum 0.4cm thick mild steel forks. Stem to be fastened to the fork with a thread and nut system to allow for re-fastening.

3.10. Rear wheels and axles:

- 24" x 1 3/8 mag (standard) or spoke (optional) wheel with one part semi-solid tyre as specified by end user. Exception, 12" chair with 30 cm seat rail length to use 22" x 1 3/8 mag (standard) or spoke (optional) wheel complete with semi-solid one-piece tyre
- Axle 1.2cm thick

3.11. Footrest hangers:

- Extra-short (15 cm), short (20 cm), long (25 cm) or fully detachable 90 degree hangers with angle adjustable footplates as specified by end user.

3.12. Footrest:

- Footplate to be plastic, aluminum or mild steel; Height adjustable

3.13. Leg strap:

- Nylon strap (4cm to 5 cm wide) with Velcro. The leg strap should have Velcro fitted to its full length to allow maximum adjustability.

3.14. Frame:

- Basic, non-adjustable folding frame
- Finish: Epoxy coated

3.15. Guarantee:

- Frame and crossbars guaranteed for a minimum of 2 years during appropriate use as stated per category.

3.16. Weight:

- Not to exceed 23 kg (complete). With rubber castors, allow +1 kg.
- Not to exceed 16 kg for 8" & 10" wheelchair. With rubber castors allow +1 kg

3.17. Repair / tool kit:

Item Code No.	Department	Section	Item Description
LOT 5-7	Outpatient	Consulting Room	Wheelchairs

- 4 rear wheel: bearings
- 4 castor: axle bearings
- 4 castor stem bearings
- 4 seat guides (where applicable)
- Adjustment tool

3.18. General requirement:

- Supplier must be able to provide chair with all of above-mentioned options for back and seat upholstery, armrests, rear wheels, footrest hangers, and footrests. The end user will specify the desired option at the time of ordering. The different options available within each specification description must be fully interchangeable and available at the same price. Where the end user does not specify options the chair will be issued as in the option given first for the categories with more than one option.
- The successful tenderer must be able to supply all of the various models and sizes of items per the tender document.
- No part or component may be changed / deviate from the specifications set out in this document.

3.19. Standards

- Durability of chair must be in accordance with SANS 1060:2003 specifications for the rolled bed and seat sag differential tests. Exception: Weight of test dummy to be 120 kg. This is the minimum required user weight specification.
- Dimensions of chair for width, seat length and back rest height must adhere to the specifications set out in this tender:
- Frame to be zinc phosphate rust protected prior to epoxy powder coating.
- Back rest metal tubing wall thickness to be 0.16cm.
- X-bars to be constructed of tubing with a minimum of 2.5 cm diameter and 0.2 cm wall thickness.
- Forks to be a minimum of 0.4.cm thick wall.
- Forks to be attached to the castor stem by means of a thread and bolt system to allow for re- fastening of the stem.
- Upholstery used = 600 D Nylon
- All back and seat upholstery to be reinforced with inner PVC with a minimum specification of 500 g/m2. (Re-enforced chairs as specified will therefore have a second, outer layer of PVC for additional reinforcement)
- Mag wheels to be glass filled nylon.
- Bearing spacer to be used in all bearing applications, i.e. rear wheel, front castor and castor stem.

Summary Specs

WHEEL CHAIR FOLDING

1) Dimension should be 650mm W x 1120mm D x 920mm H.(Approx.)
2) Two solid rubber tyred bicycle wheels with break and self-propelling stainless steel hoops

Item Code No.	Department	Section	Item Description
LOT 5-7	Outpatient	Consulting Room	Wheelchairs

3) Two swivel castors, 200mm dia in front.
4) Seat and back easily removable and replaceable
5) Fine and durable upholstery for seat and back
6) Nylon Handgrips and Padded arm rest
7) Should have polished stainless-steel construct
8) Aluminum leg rest – swing away type
9) All the Stainless Steel should be 304 grade
10) Warranty: 2 years

LOT 5-8: Diagnostic Sets

Item Code No.	Department	Section	Item Description
LOT 5-8	Outpatient	Consulting Room	Diagnostic Sets

1. General Description

Diagnostic set

2. Composition

2.1.	ADULT LARYNGOSCOPES				
2.2.	PEDIATRIC LARYNGOSCOPES				

3. Description of the medical supply unit design type

3.1. ADULT LARYNGOSCOPES

- 3.1.1. Fiber optic bright white halogen for true tissue color
- 3.1.2. Laryngoscope Handle Type C Battery Handle
- 3.1.3. Single-piece type; lightweight
- 3.1.4. Blades can be converted from lamp to fiber optic illumination
- 3.1.5. Light pathways can be repaired; reduced proximal blade height
- 3.1.6. With Macintosh Halogen Fiber Optic Blade 2
- 3.1.7. With Macintosh Halogen Fiber Optic Blade 3
- 3.1.8. With Macintosh Halogen Fiber Optic Blade 4
- 3.1.9. With Miller Blade 2
- 3.1.10. With Miller Blade 3
- 3.1.11. With Miller Blade 4
- 3.1.12. With laryngoscope case

3.2. PEDIATRIC LARYNGOSCOPES

- 3.2.1. Fiber optic bright white halogen for true tissue color
- 3.2.2. Laryngoscope Handle Type C Battery Handle
- 3.2.3. Single-piece type; lightweight
- 3.2.4. Blades can be converted from lamp to fiber optic illumination
- 3.2.5. Light pathways can be repaired; reduced proximal blade height
- 3.2.6. With six (6) Miller Fiber Optic Blade 00
- 3.2.7. With six (6) Miller Fiber Optic Blade 0
- 3.2.8. With six (6) Miller Fiber Optic Blade 1
- 3.2.9. With laryngoscope case

LOT 5-9: Portable Electric Suction Units

Item Code No.	Department	Section	Item Description
LOT 5-9	Inpatient Services	General Ward	Portable Electric Suction Units
1. General Description			
n machine suitable for use in theatre, for both adult and pediatric use. Should be constructed from coated non-corrosive, extreme heat resistance material and electrically insulated and mobile on antistatic castors φ 60 mm, 2 No. lockable, with high level push handle.			
2. Composition			
2.1.	Main unit		
3. Performance Specifications			
3.1.	Main Unit		
3.1.1.	High flow rate	40 litres per minute.	
3.1.2.	Suction vacuum	Maximum 700mmHg	
3.1.3.	Suction pump	oil free	
3.1.4.	Jars	2 X 2 liter polycarbonate autoclavable and unbreakable complete with overflow devices and valves.	
3.1.5.	Vacuum gauge	Graduated in mmHg and kPa.	
3.1.6.	Vacuum control	Adjustable at the front panel	
3.1.7.	Switch	Main on front panel and foot switch (water proof type)	
3.1.8.	Cable towage	On back with reversible cleats	
3.1.9.	Anti-bacterial filters	Available preferable autoclavable	
3.1.10.	Suction tubing connection	Antistatic neoprene or silicone	
3.1.11.	Safety	Overflow pump protection	
3.1.12.	Handle	High level push handle type	
3.1.13.	Movements	Mobile on four antistatic castors 2 No. lockable.	
4.	Physical characteristics		
4.1.	Main unit	Mobile on castors with push handle	
5.	Operating environment		
5.1.	Power Requirements	240V, A/c 50 Hz, Single phase, 3 Pin Plug BS standard, 3m long cord with PE	

Item Code No.	Department	Section	Item Description
LOT 5-9	Inpatient Services	General Ward	Portable Electric Suction Units
5.2.	Ambient temperature	10º C to 40º C	
5.3.	Relative humidity	20% to 90%	
6.	Accessories	The following accessories will be provided as startup kits.	
6.1.	Sterilizable, silicone tubing	5 Set	
6.2.	Bacterial filters	1 Box	
6.3.	Foot switch	1 No.	
6.4.	Cannula with handle for general purpose	4 Sets	
7.	Quality standards		
7.1.	Manufacturing standards	EN 10079-1, IEC 60601-1, ISO 9001, ISO 13485	
7.2.	Conformity to standards	CE and FDA marked	
8.	Local back up service		
8.1.	Available	Should be available locally	
8.2.	Capacity to service equipment	Agent shall have adequate facilities, spare parts, and qualified and skilled technical staff	
9.	Delivery point		
9.1.	See Schedule	For inspection and testing	
9.2.	Nil		
10.	Pre installation requirements		
	Nil		
11.	Installation and testing		
	Complete installation and setup of the machine as per manufacturer's instructions		
12.	Training		
12.1.	User Training	On site user training on operation and daily up keep	
12.2.	Maintenance training	Onsite maintenance training on preventive maintenance	
13.	Technical documentations		

Item Code No.	Department	Section	Item Description		
LOT 5-9	Inpatient Services	General Ward	Portable Electric Suction Units		
13.1.	User manuals	2 Sets			
13.2.	Service Manual	1 Set			
13.3.	Drawings	Nil			
14.	Commissioning				
14.1.	Testing and commissioning of the machine to the satisfaction of the user.				
15.	Warranty				
15.1.	Equipment	Minimum of one year after commissioning on all parts.			
15.2.	Equipment System	Nil			

LOT 5-10: Nebulizers

Item Code No.	Department	Section	Item Description
LOT 5-10	**Inpatient Services**	**General Ward**	**Nebulizer**
1. General Description			
Nebulizer, mounted on a mobile cart			
2. Composition			
2.1.	Main unit		
3. Performance Specifications			
3.1.	Main Unit		
3.1.1.	Type	Ultrasonic type	
3.1.2.	Nebulizing rate	4 ml/min	
3.1.3.	Mist particle	1 to 5 micron	
3.1.4.	Timer	1 to 30 Minute	
3.1.5.	Mist feed hose, adult	2 pcs	
3.1.6.	Mist feed hose, Pead	2 pcs	
3.1.7.	Inhalation mask, adult	10 pcs	
3.1.8.	Inhalation mask, pead	10 pcs	
3.1.9.	Mouth piece	10 pcs	
3.1.10.	Diaphragm	5 pcs	
3.1.11.	Water supply bottle (1L)	1 pc	
4.	Physical characteristics		
4.1.	Main unit	Mounted on mobile cart	
4.2.	Dimensions		
5.	Operating environment		
5.1.	Power Requirements	240V, A/c 50 Hz, Single phase	
5.2.	Ambient temperature	10^{o} C to 40^{o} C	
5.3.	Relative humidity	20% to 90%	
6.	Accessories		
6.1.	Automatic Voltage Regulator (AVR)		
6.1.1.	Capacity	Over VA of the main Unit	

Item Code No.	Department	Section	Item Description
LOT 5-10	**Inpatient Services**	**General Ward**	**Nebulizer**
6.1.2.	Input	Ac 240V, 50Hz, Single phase ± 15%	
6.1.3.	Output	Ac 240V, 50Hz, Single Phase ± 2.5 %	
7.	Startup kit		
7.1.	Air filter	10 pcs	
8.	Quality standards		
8.1.	Manufacturing standards	IEC 60601-1, ISO 9001 or any other internationally recognized standards	
8.2.	Conformity to standards	CE and FDA Approved	
9.	Local back up service		
9.1.	Available	Should be available locally	
9.2.	Capacity to service equipment	Agent shall have adequate facilities, spare parts, and qualified and skilled technical staff	
10.	Delivery point		
10.1.	See Schedule	For inspection, installation and commissioning	
11.	Pre installation requirements		
11.1.	Nil		
12.	Installation and testing		
12.1.	Complete installation and setup of the machine as per manufacturer's instructions		
13.	Training		
13.1.	User Training	On site user training on operation and daily up keep	
13.2.	Maintenance training	Onsite maintenance training on preventive maintenance	
14.	Technical documentations		
14.1.	User manuals	2 Sets	
14.2.	Service Manual	1 Set	
14.3.	Drawings	Nil	
15.	Commissioning		
15.1.	Testing and commissioning of the machine to the satisfaction of the user.		
16.	Warranty		

Item Code No.	Department	Section	Item Description
LOT 5-10	**Inpatient Services**	**General Ward**	**Nebulizer**
16.1.	Equipment	Minimum of one year after commissioning on all parts.	
16.2.	Equipment System	Nil	

LOT 5-11: Macerators

Item Code No.	Department	Section	Item Description
LOT 5-11	Outpatient	Consulting Room	Macerators

1. General Description

2. Composition

2.1.	Main unit				

3. Description of the medical supply unit design type

3.1. Capacity – Should dispose a minimum of four disposable.
3.2. Dimension should be not more than ;-length 525mm ,width 650mm and height 1050mm.
3.3. Water requirement ;-
  3.3.1. Inlet supply with a flow at least 18l/min
  3.3.2. Nominal overall usage at least 30 liters/cycle
3.4. Drainage must be connected below the machine so that it connects to the hospital drainage.
3.5. Should have an overflow connection.
3.6. Should be anchored to the floor due to vibration of the cutting motor system.
3.7. The noise level during operation should be minimal
3.8. Should be electronically controlled with ease of operation.

Accessories, documentation and general

3.9. The macerator must be supplied with 2 extra diaphragms complete with the spring for the drainage.
3.10. Power requirement should be 220-240V /50Hz (thus the cutting motor is single phase)
3.11. The macerator should have a warranty period of not less than two (2) years from the date of installation.
3.12. The user and technical training shall be conducted before the machine is handed to the hospital.
3.13. It shall be supplied with full set of operating, preventive maintenance and service documentation, both soft and hard copies.
3.14. The macerator must comply with international safety standards and carry FDA/CE mark.

LOT 5-12: Commode Chairs

Item Code No.	Department	Section	Item Description
LOT 5-12	Inpatient	Wards	Commode Chairs

1. General Description

Commode, basic

2. Composition

2.1.	Main unit				

3. Description of the medical supply unit design type

3.1. Frame:

3.1.1. Rigid frame, Mild steel, Galvanized, Epoxy coated; Constructed in such a way that it can be reversed over a standard toilet bowl
3.1.2. Size: about Width 46 cm, Depth 40 cm
3.1.3. Seat: Molded polyurethane seat; with a vinyl chair seat cover; Removable bucket system
3.1.4. Backrest: Full length back support in vinyl or nylon; Height 40 cm
3.1.5. Armrests: Completely removable, should not form part of the rigid frame
3.1.6. Footrests: Removable
3.1.7. Castors: 4 x Lockable, Minimum 5 cm diameter
3.1.8. Weight limit: Maximum of 130 kg

LOT 5-13: X-Ray Viewer

Item Code No.	Department	Section	Item Description
LOT 5-13	Inpatient	Wards	X-ray Viewer

4. General Description

X-RAY-VIEW BOX (LED Light)

5. Composition

5.1.	Main unit				

6. Description of the medical supply unit design type

D) Product & Manufacturer Quality Standards:

6.1. Should be FDA/ CE approved product.

6.2. Manufacturer and Supplier should have ISO 13485 certification for quality standards.

E) TECHNICAL CHARACTERISTICS

6.3. Should be ultra-thin X ray film illuminator using LED light

6.4. It should have a thickness of 30 mm

6.5. It should be suitable for viewing 14''x17' film.

6.6. Should have position to insert 8 films in 2 rows.

6.7. The LED light must have a life span of more than 50,000 hours.

6.8. It should have easy insertion & removal of the film.

6.9. It should have homogeneous illumination more than 95% and maximum intensity of over 10,000 lux.

6.10. It should have an on-off switch along with digital feather touch dimmer and a button to set the intensity

6.11. It should have fully electronic continuous brightness control, with adjustment range of approximately 90%.

6.12. It should be directly connected to power supply without any external adapters.

6.13. It should have flicker free high frequency light for reduction of eye strain.

6.14. It should have external fuses for protection against power surge.

6.15. 10 step Digital dimmer facility with step up/step down intensity of 500 lux or less.

6.16. Should have automatic film sensor

6.17. Should have facility to switch on only the section where the film needs to be viewed.

F) Power supply:

6.18. 240V, AC, 50Hz. Single phase

LOT 5-14: Emergency/ Resuscitation Trolley

Item Code No.	Department	Section	Item Description
LOT 5-14	**Inpatient Services**	**General Ward**	**Resuscitation/ Emergency Trolley**

1. General Description

Resuscitation trolley for use in ICU. Epoxy coated mild steel, with drawers, protection perimeter and defibrillator holder. The Unit should be mobile on four castors , 2 lockable

2. Composition

2.1.	Main unit,		

3. Performance Specifications

3.1.
Main Unit

3.2. Should be durable with Ergonomic handle and should have easy grip

3.3. Height should be 40-45”

3.4. Should have 6-8 drawers of sizes 3x3”,2x6”,1x9”

3.5. Should have interchangeable 3”,6”,9” drawers which run smoothly on good quality channels

3.6. Should have provision of side storage which allows storage of variety accessories like can, storage bins, glove storage, sharp container set

3.7. An over bridge can with baskets, shelves and bins to keep important things

3.8. Should have AMS top surface & advance polymer material which is easy to clean. It should not dent, chip flake or corrode

3.9. Should be easily rolling and has toe brakes

3.10. Should have I.V. pole with clamps ach 3” drawer should have provision for 25-30 compartments

3.11. Should have twin swivel castors & central lock

3.12. Should be CE and ISO 9001/2000 and FDA approved

3.13. Should have CPR board & O2 cylinder holder

LOT 5-15: Procedure Trolley

Item Code No.	Department	Section	Item Description
LOT 5-15	Inpatient	Wards	Procedure Trolley

4. General Description					
Procedure/Dressing Trolley					
5. Composition					
5.1.	Main unit				
6. Description of the medical supply unit design type					
6.1. Overall approx. Size: 780mmL x 500mmW x 900mmH 6.2. Approximate shelf dimension 750mmL x 500mmW. 6.3. Tubular CRC frame mounted on four castors of minimum 100mm dia and should be pre-treated and epoxy coated finish. 6.4. Two S.S. of 304 grade shelves with protective railings on three sides. 6.5. Should have provision for holding bowel and bucket. 6.6. Warranty: 2year					

LOT 5-16: Fluid Warmer

Item Code No.	Department	Section	Item Description
LOT 5-16	Inpatient	Wards	Fluid Warmer

1. General Description

2. Composition

2.1.	Main unit				

3. Description of the medical supply unit design type

3.1. Flow Rates should be from kvo to 150ml/min
3.2. Should have temperature range of 36^0 to 42^0C
3.3. Should be easily transportable
3.4. Should able to attach to IV pole and standard electrical sockets
3.5. Should use dry heat technology
3.6. Should have audible and visual alarms for Temperature
3.7. Should have automatic cutoff for set temperature
3.8. Should be easy to use and to clean
3.9. Calibration certificate should be issued during the installation
3.10. 50 disposable adult and 50 no. of pediatric warming sets should be supplied along with each machine
3.11. Warm up time should be less than 60 seconds
3.12. Consumables should have built in filter
3.13. Should have safety certificate from a competent authority
3.14. Should be CE / FDA certified
3.15. Should meet electrical and functional safety with relevant certificates attached from recognized authorities.

LOT 5-17: Patient Trolley

Item Code No.	Department	Section	Item Description
LOT 5-17	Inpatient Services	General Ward	Patient Trolley with side rails

1. General Description					
Resuscitation patient trolley with IV pole , Oxygen Cylinders and with adjustable sides, constructed from chrome plated mild steel and mobile on castors					
2. Composition					
2.1.	Main unit				
3. Physical Specifications					
3.1.	Main Unit				
3.1.1.	Material of main unit	Tubular mild steel, chrome plated			
3.1.2.	Movements	Back rest, trendelenburg/reverse tendelenburg, up and down			
3.1.3.	Operation	By hydraulic mechanical system			
3.1.4.	Side guard rails	Foldable or drop down type			
3.1.5.	Mattress	High density, water proof and fire resistance			
3.1.6.	Mobile	On four antistatic castors diameter 150mm with brakes and central locking system			
3.1.7.	IV pole	Provided			
3.1.8.	Oxygen cylinder	Provided, Medium size 11kg (1.36m^2) mild steal			
3.1.9.	Resuscitation bags	Provided, adult and paed			
3.1.10.	Dimensions (Overall)	Approx. 2050 mm(L) X 780 mm (W) X 620 -900mm (H)			
3.1.11.	Weight to handle	approx. 200 kg			
4.	Quality Standards				
4.1.	Manufacturing standards	ISO 9001, ISO 13485			
4.2.	Conformity to standards	CE Standard			
5.	Delivery point				
5.1.	KCC	Delivery point			
6.	Warranty				
6.1.	Equipment	Minimum of 2 year after delivery			

LOT 5-18: Baby Cots

Item Code No.	Department	Section	Item Description
LOT 5-18	Inpatient Services	General Wards	Baby Cot
1. General Description			
Baby Cot for use in ICU. • Dimensions L124.5 x W67.5 x H93cm • Mattress Size Required L120 x W60cm • Finish White • one-handed drop side mechanism • Designed with narrow bars on every side so baby can see out, while parents can easily see in. • Distressed nickel handles • Large under cot storage drawer • 3 position mattress base height • Sturdy all-stainless steel SS304 frame			
2.	Quality standards		
2.1.	Manufacturing standards	ISO 9001 or any other internationally recognized standards	
2.2.	Conformity to standards	CE Approved	
3.	Delivery point		
3.1.	See Schedule	For inspection, installation and testing	
3.2.	Nil		

LOT 5-19: Reclining Chairs

Item Code No.	Department	Section	Item Description
LOT 5-19	Inpatient	Paeds Ward	Reclining Chairs

1. General Description

COMMON PRODUCT & MANUFACTURER QUALITY MEDICAL FURNITURE ITEMS
1. Manufacturer should be ISO 9001 certified.
2. Manufacturer should have ISO 14001 certification for Environment friendly features.
3. Product must be CE/FDA certified.
4. All stainless steel material used in the medical furniture items must be made up SS 304 grade and should be supported by stainless steel grade certificate from Govt. approved testing laboratory duly mentioned about chemical composition. Copy of previous test report should be furnished in technical bid as well as during supply.
5. Manufacture should produce test certificate from Govt. approved laboratory for test procedure like impact test, bend test, salt spray chamber test, epoxy powder coating & phosphate coating for quoted item in technical bid as well as during delivery.(As applicable)

2. Composition

2.1.	Main unit				

3. Description of the medical supply unit design type

Operational characteristics
1) 14 gauge stainless steel tube frame.
2) Upholstered seat and back with washable cover, non- skid tread.
3) Chair seat and back material: antibacterial, antistatic, flame-retardant, resistant to corrosion of water, detergent soap, 70% ethylic alcohol solution with or without nitrite and to the hypochlorite of sodium.
4) Tilting/removable footrest.
5) Backrest tilt function up to at least 60° from vertical position.
6) Armrest.
7) Head lateral supports.
8) Weight Capacity: of at least 150 kg.
Approximate Dimensions 650x850x1250 mm (LxWxH) based on the available space.

LOT 5-20: Radiant Heaters

Item Code No.	Department	Section	Item Description
LOT 5-20	Inpatient	Paeds Ward	**Radiant Heaters**

1. General Description

2. Composition

2.1.	Main unit				

3. Description of the medical supply unit design type

3.1. It should be microcontroller based radiant warmer with manual and servo options.

3.2. It should have facility to display skin set, skin observed temperature in degree C and heat power separately.

3.3. Should have user friendly touch panel control.

3.4. It should have ceramic or quartz infrared or calrod heater.

3.5. It should have audiovisual alarm facility for overheating beyond set temperature range.

3.6. It should have alarm facility for patient temperature less than or greater than the /required temperature i.e. above or below the set range. Machine should sense the skin probe failure and cut off the heater

3.7. Warmer head should be rotatable in different direction, so as to allow taking X-ray.

3.8. It should have alarm for probe failure, power failure, system failure and heater failure.

3.9. Observation light of 90 to 100 foot candles or 1000 Lux (color temperature range 3700K to 5100K) should be provided for inspection

3.10. Battery back-up for Power failure indication during power fail.

3.11. The desired temperature range from 25 to 40 degree C and settable temperature can be from 32 to 38 degree C.

3.12. The resolution should be 0.1 degree C and accuracy should be 0.2 °C.

3.13. Should have a facility to lock the keyboard to avoid unwanted user modification of the set parameters

3.14. The height of the warmer should be adjustable for different types of bed.

3.15. It should have integrated or separate bassinet trolley, bed should be tiltable with locking facility and have provision for x-ray cassette holder, Mattress should be minimum 2” thickness and foam density of 25 kg/cm3, transparent (made of polycarbonate) collapsible side walls easily detachable for cleaning. Mattress size should be minimum 20"X30"

Item Code No.	Department	Section	Item Description
LOT 5-20	Inpatient	Paeds Ward	**Radiant Heaters**

3.16. Should have a Feather Touch operation with large digital display and comprehensive alarms. Control Panel should be liquid proof and allow easy and hygienic disinfection

3.17. Manual Mode can adjust heater Output 10 -100 %, with 10% increment, an auditory and visual alarm shall be given at least every 15 min

3.18. In manual mode, heater cut off / switch off, if the maximum irradiance at any point of the mattress area exceeds a total irradiance level of 10 mW/cm2 (between 10 to 30 minutes)

3.19. Bed should be about 80 - 100 cms from the Floor and 80-90cms from the heat source.

3.20. Should have lockable castor wheels

3.21. Indicator light shall be provided to indicate that warmer is ready for normal use.

3.22. Markings on the bassinet and X-Ray cassette holder is mandatory to enable proper positioning of the baby while doing the X-Ray.

3.23. The size of the drop down sides should be such that it is 5" above the mattress surface and should be at least 6mm thick; clear and transparent.

3.24. If there is more than 60% heater output for 10 minutes it should cutoff with alarm

3.25. For the purpose of cable management there should be atleast two number of tubing ports (edges covered by silicon rings) on the side walls.

3.26. X-Ray cassette tray should be at least 750X350mm and should adopt up to 20 mm thick X-Ray cassettes.

3.27. The baby bed should be crevice free for ease of cleaning, infection control.

3.28. The mattress used should be of biocompatible material.

3.29. Skin temperature probe should be small in size not more than 10mm diameter and 3-4mm thick to fix the probe firmly on the infant. Baby contact material should be biocompatible as per ISO 10993 standard requirement. It should be insulated on one side and have well conducting non-rusting, non reacting metallic surface on the other side. Probe wire should be pliable, thin and soft. The attachment site of the probe with the wire should also be pliable and non-stiff.

3.30. Device shall not overbalance when placed in any transport position of normal use on a 10° inclined plane from the horizontal plane.

3.31. Transformers of device shall be protected against overheating in the event of short circuit or overload of any output winding.

3.32. Patient leakage current should be less than 100 μA in normal condition

3.33. Temperature on the baby mattress should not exceed 43 degree C when the warmer is operating under steady temperature condition

3.34. Temperature of HEATER GUARDS should not exceed 85 °C in normal use.

3.35. The Temperature differences on the mattress shall not exceed 2 °C.

Item Code No.	Department	Section	Item Description
LOT 5-20	Inpatient	Paeds Ward	**Radiant Heaters**

3.36. Settings
   a) Should have Manual mode and Baby (Servo) mode settings.
   b) Mode of operation should be clearly displayed
   c) In servo mode baby set temperature should be 32 to 38 degree C.

3.37. User's interface: Manual and Servo controlled temperature regulation

3.38. **Software and/or standard of communication:** LED Display and inbuilt software; Interruption and restoration of the power supply does not change the pre-set values.

PHYSICAL CHARACTERISTICS

1) **Configuration:** Atleast 60 degree angle adjustment must be possible in the heat source and it should provide shielding to the infant in case of breakage of tubes/bulbs, All surfaces to be made of corrosion resistant material.
2) **Noise (in dBA):** Auditory alarm shall have a sound level of at least 65 dBA at a distance of 3 m from the front of the infant radiant warmer, and the sound level of the alarm shall not exceed 80 dBA on the mattress.
3) **Heat dissipation:** Should maintain upto 36.5 degree temp and the heat disbursed through a exhaust fan or other provisions, so that effect of UV light is not disturbed.
4) **Mobility, portability:** Yes, on castors (2 of the castors should have breaks; castor size can be at least 4inch).

ENERGY SOURCE:

1) Power Requirements: 220 to 240V, 50 Hz
2) Battery operated: Power failure indication during power fail
3) Tolerance (to variations, shutdowns): ± 10% of input
4) Protection: OVP, earth leakage protection

ACCESSORIES, SPARE PARTS, CONSUMABLES:

1) Accessories (mandatory, standard, optional):
   a. Should have SS IV pole(sturdy; non rusting; medical grade stainless steel; adjustable to a max height of 6 feet from the ground level)
   b. Monitor tray(fixed or swiveling)
   c. Storage trays
2) Spare parts (main ones):
   a. Skin temperature probes-2nos,
   b. Examination lamp-2nos
3) Consumables / reagents (open, closed system):
   a. Thermal reflector to fix the skin probe on baby-10nos

LOT 5-21: Portable Examination Lamp

Item Code No.	Department	Section	Item Description
LOT 5-21	Inpatient	Wards	Examination Lamp

7. General Description

The LED technology should be of highly engineered optical system which delivers the precisely controlled natural white light that is so important for an accurate examination.

8. Composition

8.1.	Main unit				

9. Description of the medical supply unit design type

Should have mobile Floor Stand
SLSE50-CM or Wall/Ceiling Mount

STANDARD DESIGN FEATURES

9.1. High-intensity of 39,000 lux (3623 fc) at 24" (61 cm)

9.2. 4000 K color temperature

9.3. CRI (Color Rendering Index) of 92

9.4. Natural white light

9.5. LED light module with at least 40,000-hour life

9.6. Universal input voltage

9.7. Drift-free K-arm with 42" (107 cm) arm range

9.8. IEC 60601-1/ 60601-2-41 certified

9.9. Should have European CE or USA certificate

9.10. Should be supplied with European or USA country of origin certificate.

LOT 5-22: Weighing Scale

Item Code No.	Department	Section	Item Description
LOT 5-22	Inpatient	Wards	Patient Weighing Scale
7. General Description			
8. Composition			
8.1. Main unit			
9. Description of the medical supply unit design type			
9.1. Mobile Weighing Scale with height meter 9.2. Capacity approx. 0-160kg 9.3. With circular scale/readout 9.4. With mechanical height rod able to measure between 70cm-2000cm 9.5. With BMI display 9.6. Easy to clean platform with reset to zero function 9.7. With flat tread area platform approximately 360mm (W) X 630mm (D) 9.8. Height approx. 1000mm 9.9. With mechanical column scale 9.10. Displays weight with BMI function 9.11. Graduation approximately 500g. 9.12. Warranty 2 years 9.13. With Calibration Certificate 9.14. FDA/ CE Marked 9.15. With heavy duty transport castors 9.16. Operator and service manuals to be provided			

LOT 6: DIAGNOSTIC LABORATORIES

LOT 6-1: Binocular Microscope

Item Code No.	Department	Section	Item Description
LOT 6-1	Diagnostic Laboratories	Routine Lab	Binoculars Microscope
1. General Description			
All-purpose microscopes for general laboratory use, with binocular head, inclined 45º, build in graduated mechanical stage with control knob, with iris diaphragm, and filter holder, eye pieces, objective lens and illumination controls.			
2. Composition			
2.1.	Main unit		
3. Performance Specifications			
3.1.	Main Unit		
3.1.1.	Magnification	50 to 1000x or wider	
3.1.2.	Eyepieces	Paired 10x wide-field	
3.1.3.	Objective	Magnifications 10x, 40x, 100x (oil immersed or dry type)	
3.1.4.	Optical System	Universal Infinity System	
3.1.5.	Observation Tube	Binocular	
3.1.6.	Angle of Inclination	45ºC	
3.1.7.	Interpupillary Adjustment Distance	> 40 – 70 mm	
3.1.8.	Condenser Type	Universal condenser, N.A. 0.9 or Abbe or Swing out	
3.1.9.	Mechanical Stage	Graduated, with coarse and fine focusing control	
3.1.10.	X-Y motion control	Adjustable	
3.1.11.	X-Y motion vernier	0.1 mm or less	
3.1.12.	Vertical movements of stage	20mm or more	
3.1.13.	Focusing Control	Coarse Focusing - Stage Height Movement	
		Fine Focus Graduation	
3.1.14.	Illumination System	built in base illuminator, LED with	
		Brightness control, mains operated.	

Item Code No.	Department	Section	Item Description			
LOT 6-1	Diagnostic Laboratories	Routine Lab	Binoculars Microscope			
		Filters with colour temperature correction.				
		Mirror Unit for Natural Light Illumination				
4.	Physical characteristics					
4.1.	Main unit					
4.1.1.	Approximate dimensions					
5.	Operating environment					
5.1.	Power Requirements	240V, A/c 50 Hz				
5.2.	Humidity					
6.	Accessories					
6.1.	Storage	Lockable Cabinet/Box				
6.2.	AVR					
6.2.1.	Capacity	Over VA of the main Unit				
7.	Consumables					
7.1.	Nil					
8.	Quality standards					
8.1.	Manufacturing standards	IEC 60601-1,ISO 13485, ISO 9001				
	Conformity to standards	CE and FDA marked.				
9.	Delivery point					
9.1.	See schedule					
10.	Pre installation requirements					
	Nil					
11.	Installation and testing					
	Testing at delivery point					
12.	Technical documentations					

Item Code No.	Department	Section	Item Description		
LOT 6-1	Diagnostic Laboratories	Routine Lab	Binoculars Microscope		
12.1.	User manuals	2 Sets			
12.2.	Service Manual	2 Sets			
12.3.	Drawings				
13.	Warranty				
13.1.	Equipment	One year after delivery on all parts			

LOT 6-2: Incubator/Oven

Item Code No.	Department	Section	Item Description
LOT 6-2	Diagnostic Laboratories	Routine Lab	Laboratory Incubator
1. General Description			
To be used for standard laboratory cultivation. The unit should be constructed from robust, corrosion free outer material. Interior part should be constructed from high grade stainless steel with two heights adjustable chrome plated trays. It should have an electronically adjustable temperature control, with inbuilt digital temperature indicator, and timer control.			
2. Composition			
2.1.	Main unit		
3. Performance Specifications			
3.1.	Main Unit		
3.1.1.	Temperature range	Adjustable from +7ºC to + 80ºC	
3.1.2.	Accuracy	± 0.5ºC	
3.1.3.	Temperature control	Microprocessor controlled system	
3.1.4.	Display	Digital for temperature and timer.	
3.1.5.	Door seal	replaceable silicon rubber	
3.1.6.	Air movement	Natural air convection	
3.1.7.	Timer	Auto start/stop at least 100 hours	
3.1.8.	Uniformity of temperature	Constant temperature in the chamber ± 2ºC	
3.1.9.	Interior material	Stainless steel	
3.1.10.	Safety Device	Overheat protection device by independent thermostat	
4.	Physical characteristics		
4.1.	Main unit	Bench top, Robust construction and easy to clean	
	Internal capacity	About 50 liters	
5.	Operating environment		
5.1.	Power Requirements	240V, A/c 50 Hz, Single phase	
5.2.	Ambient temperature	10º C to 40º C	

Item Code No.	Department	Section	Item Description		
LOT 6-2	Diagnostic Laboratories	Routine Lab	Laboratory Incubator		
5.3.	Relative humidity	20% to 90%			
6.	Accessories				
6.1.	Shelves	2 No.			
7.	Consumables/Reagents				
7.1.	Nil				
8.	Quality standards				
8.1.	Manufacturing standards	ISO 13485, IEC 60601-1, ISO 9001			
8.2.	Conformity to standards	CE and FDA marked.			
9.	Local back up service				
9.1.	Available	Should be available locally			
9.2.	Capacity to service equipment	Agent shall have adequate facilities, spare parts, and qualified and skilled technical staff			
10.	Delivery point				
10.1.	See Schedule	For inspection			
10.2.	Hospital	For installation : See hospital schedule			
11.	Pre installation requirements				
11.1.	Nil				
12.	Installation and testing				
12.1.	Complete installation and setup of the machine at various sites as per manufacturer's instructions				
13.	Training				
13.1.	User Training	On site user training on operation and daily up keep			
13.2.	Maintenance training	Onsite maintenance training on preventive maintenance			
14.	Technical documentations				
14.1.	User manuals	2 Sets			
14.2.	Service Manual	1 Set			

Item Code No.	Department	Section	Item Description		
LOT 6-2	Diagnostic Laboratories	Routine Lab	Laboratory Incubator		
14.3.	Drawings	Nil			
15.	Commissioning				
15.1.	Testing and commissioning of the machine to the satisfaction of the user.				
16.	Warranty				
16.1.	Equipment	Minimum of one year after commissioning on all parts.			
16.2.	Equipment System	Nil			

LOT 6-3: Laminar Flow Hood (Biosafety Cabinet)

Item Code No.	Department	Section	Item Description
LOT 6-3	Laboratory	Microbiology	Biosafety Cabinet with stand
1. General Description			
Biosafety cabinet, mobile on four antistatic castors. Class II, type A, microprocessor controlled with digital display, UV light, and laminar air flow			
2. Composition			
2.1.	Main unit		
3. Performance Specifications			
3.1.	Main Unit		
3.1.1.	Application	Capable of providing protection for personnel, environment and product, Class II, Type A	
3.1.2.	Construction	Front open type, with laminar flow, ventilated cabinet and exhaust fan	
3.1.3.	Sterilization	UV light	
3.1.4.	Exhaust	Exhaust fan, low noise operation	
3.1.5.	Ventilation	Mass air flow; recirculation and exhaust; constant velocity	
3.1.6.	Filtration	HEPA filter, replaceable	
3.1.7.	Display	LCD display of Air flow, UV light indicator,	
3.1.8.	Safety class	Class II, Type A	
4.	Physical characteristics		
4.1.	Main unit	About 1.2 meters (4ft)	
5.	Operating environment		
5.1.	Power Requirements	240V, A/c 50 Hz, Single phase, with PE	
	Ambient temperature	10° C to 40° C	
	Relative humidity	20% to 90%	
6.	Quality standards		
6.1.	Manufacturing standards	ISO 13485, ISO 9001, ISO 14001	

Item Code No.	Department	Section	Item Description		
LOT 6-3	Laboratory	Microbiology	Biosafety Cabinet with stand		
6.2.	Product conformity standards	NSF/ANSI 49			
	Conformity to standards	CE and FDA marked			
7.	Local back up service				
7.1.	Available	Should be available locally			
7.2.	Capacity to service equipment	Agent shall have adequate facilities, spare parts, and qualified and skilled technical staff			
8.	Delivery point				
8.1.	See Schedule	For inspection, installation, testing and commissioning			
	Nil				
9.	Installation and testing				
	Complete installation and setup of the machine as per manufacturer's instructions				
10.	Training				
10.1.	User Training	On site user training on operation and daily up keep			
10.2.	Maintenance training	Onsite maintenance training on preventive maintenance			
11.	Technical documentations				
11.1.	User manuals	2 Sets			
11.2.	Service Manual	1 Set			
12.	Commissioning				
12.1.	Testing and commissioning of the machine to the satisfaction of the user.				
13.	Accessories				
13.1.	Automatic Voltage Regulator (AVR)				

LOT 6-4: Refrigerator (2 to 8 deg)

Item Code No.	Department	Section	Item Description
MOH-6-4	Diagnostic Laboratory	Routine lab	Refrigerator
1. General Description			
Refrigerator			
2. Composition			
2.1.	Main unit		
3. Performance Specifications			
3.1.	Main Unit		
3.1.1.	Material	Insulated galvanized steel	
3.1.2.	Type	Compressor, electrical	
3.1.3.	Door	Double door , glass type	
3.1.4.	Temperatures range	2 to 8ºC stable ± 0.5ºC	
3.1.5.	Ambient temperature	10 º C to 35ºC	
3.1.6.	Blood storage capacity	400 No. of blood bags	
3.1.7.	Shelves	Provided, adjustable and extractable with dividers	
3.1.8.	Temperature monitor	Digital display with temperature record history	
3.1.9.	Control	Electronic, Microprocessor based	
3.1.10.	Refrigerant	CFC free	
3.1.11.	Alarm	Provided, audible and visible	
3.1.12.	Power	240V, 50 Hz, a.c	
4.	Quality standards		
4.1.	Manufacturing standards	ISO 9001, ISO 13485, ISO 14001	
4.2.	Conformity to standards	CE and FDA marked.	
5.	Delivery point		
5.1.	See Schedule	For inspection and testing	

Item Code No.	Department	Section	Item Description
MOH-6-4	Diagnostic Laboratory	Routine lab	Refrigerator
5.2.	Nil		
6.	Warranty		
6.1.	Equipment	Minimum of one year after commissioning on all parts.	
6.2.	Equipment System	Nil	
7.	Accessories		
7.1.	Automatic Voltage Regulator (AVR)		
7.1.1.	Capacity	Over VA of the main Unit	
7.1.2.	Input	Ac 240V, 50Hz, Single phase ± 15%	
7.1.3.	Output	Ac 240V, 50Hz, Single Phase ± 2.5 %	

LOT 6-5: Freezer (-20 deg)

Item Code No.	Department	Section	Item Description
LOT 6-5	Diagnostic Laboratories	Routine Lab	**Laboratory Freezer**
1. General Description			
Laboratory Deep freezer front loading			
2. Composition			
2.1.	Main unit		
3. Performance Specifications			
3.1.	Main Unit		
3.1.1.	Material	Insulated galvanized steel	
3.1.2.	Type	Compressor, electrical	
3.1.3.	Door	Single door	
3.1.4.	Net storage capacity	350 litres	
3.1.5.	Temperatures range	Up to -30ºC	
3.1.6.	Ambient temperature	10 º C to 45ºC	
3.1.7.	Blood storage capacity	About 350 litre	
3.1.8.	Shelves	Provided, adjustable and extractable	
3.1.9.	Temperature Display	Digital	
3.1.10.	Control	Electronic, Microprocessor based	
3.1.11.	Refrigerant	CFC free	
3.1.12.	Alarm	Provided, audible and visible	
3.1.13.	Power	240V, 50 Hz, a.c	
4.	Accessories		
4.1.	Nil		
5.	Quality standards		
5.1.	Manufacturing standards	ISO 9001, ISO 13485, ISO14001	

Item Code No.	Department	Section	Item Description
LOT 6-5	Diagnostic Laboratories	Routine Lab	**Laboratory Freezer**
5.2.	Conformity to standards	CE and FDA marked	
6.	Delivery point		
6.1.	See Schedule	For inspection and testing	
6.2.	Nil		
7.	Warranty		
7.1.	Equipment	Minimum of one year after commissioning on all parts.	
7.2.	Equipment System	Nil	
8.	Accessories		
8.1.	Automatic Voltage Regulator (AVR)		
8.1.1.	Capacity	Over VA of the main Unit	
8.1.2.	Input	Ac 240V, 50Hz, Single phase ± 15%	
8.1.3.	Output	Ac 240V, 50Hz, Single Phase ± 2.5 %	

LOT 6-6: Centrifuge refrigerated

Item Code No.	Department	Section	Item Description
LOT 6-6	Diagnostic Laboratories	Routine Lab	Refrigerated Centrifuge
1. General Description Refrigerated centrifuge suitable for blood bank in hospitals, Floor mounted type, constructed from robust, corrosion free outer material. Interior part should be constructed from high grade stainless steel. It should be microprocessor based for adjustable temperature, speed, and timer and with inbuilt digital display of process parameters. Able to carry blood bag adapters and tube adapters 4/5ml, 15ml and aerosol cups.			
2. Composition			
2.1.	Main unit		
3. Performance Specifications			
3.1.	Main Unit		
3.1.1.	The unit should be a model or type on current production, Floor mounted type		
3.1.2.	acity	4 bucket capacity	
3.1.3.	igeration	CFC free, compressor Type	
3.1.4.	perature range	-20ºC to+30ºC, adjustable	
3.1.5.	p accuracy	± 1ºC	
3.1.6.	imum speed	5000 rpm	
3.1.7.	Maximum RCF	Up to 7000G	
3.1.8.	Timer	Provided	
3.1.9.	Brake system	Provided	
3.1.10.	Safety System	Door open	
3.1.11.	Rotor No.1	Swinging rotor 2X4X1000ml and or 8X 450ml blood bags	
3.1.12.	Rotor No.2	Fixed angle rotor able to spin 4/5ml and 15ml tubes	
3.2.	Rotor locking wrench	2 pieces	
4.	Physical characteristics		
4.1.	Main unit		
4.2.	Dimensions	Floor mounted model	
5.	Operating environment		
5.1.	Power Requirements	240V, A/c 50 Hz, Single phase, 3 Pin Plug, 3m long cord BS type with PE	

Item Code No.	Department	Section	Item Description
LOT 6-6	Diagnostic Laboratories	Routine Lab	Refrigerated Centrifuge
5.2.	Ambient temperature	10^{o} C to 40^{o} C	
5.3.	Relative humidity	20% to 90%	
6.	Quality standards		
6.1.	Manufacturing standards	IEC 60601-1, ISO 9001, ISO 13485 and UL 3101-1	
6.2.	Conformity to standards	Directive 2002/98/EC, directive 2004/33/EC, CE and FDA marked	
7.	Local back up service		
7.1.	Available	Should be available locally	
7.2.	Capacity to service equipment	Agent shall have adequate facilities, spare parts, consumables and qualified and skilled technical staff	
8.	Delivery point		
8.1.	See Schedule	For inspection and testing	
8.2.	Nil		

LOT 6-7: Water Bath

Item Code No.	Department	Section	Item Description
LOT 6-7	Diagnostic Laboratories	Routine Lab	Water bath
1. General Description			
To be used in laboratory. Constructed from robust, high grade stainless steel. It should have an inbuilt temperature control and indicator. The unit should be capable of attaining uniform and constant liquid temperature. The unit should be capable of accommodating 150 pieces of test tubes of sizes 16mm diameter each.			
2. Composition			
2.1.	Main unit		
3. Performance Specifications			
3.1.	Main Unit		
3.1.1.	Temperature range	Adjustable from +7°C to + 80°C	
3.1.2.	Accuracy	± 0.5°C	
3.1.3.	Temperature control	Microprocessor controlled system	
3.1.4.	Display	Digital for temperature and timer.	
3.1.5.	Timer	Auto start/stop, adjustable	
3.1.6.	Liquid temperature uniformity	Constant temperature in the chamber ± 0.2°C	
	Temperature stability	± 0.1°C	
3.1.7.	Interior material	Stainless steel –seamless	
3.1.8.	Heater	Sheet heater mounted on the sides of outside tank	
	Insulation	Glass wool	
	Internal Volume	20 litres	
	Safety Device	Overheat protection device by independent thermostat	
4.	Physical characteristics		
4.1.	Main unit	Bench top, Robust construction and easy to clean	
4.2.	Capacity internal	Approximate 15ltres	
5.	Operating environment		

Item Code No.	Department	Section	Item Description
LOT 6-7	Diagnostic Laboratories	Routine Lab	Water bath
5.1.	Power Requirements	240V, A/c 50 Hz, Single phase	
	Ambient temperature	10° C to 40° C	
	Relative humidity	20% to 90%	
6.	Accessories		
	Stainless steel lid	1 No.	
	Tube rack φ 16 mm	1 Unit	
6.1.	Lid with holes	1 Unit	
7.	Consumables/Reagents		
7.1.	Nil		
8.	Quality standards		
8.1.	Manufacturing standards	IEC 60601-1, ISO 9001, ISO 13485 and UL 3101-1	
	Conformity to standards	CE and FDA marked	
9.	Local back up service		
9.1.	Available	Should be available locally	
9.2.	Capacity to service equipment	Agent shall have adequate facilities, spare parts, and qualified and skilled technical staff	
10.	Delivery point		
10.1.	See Schedule	For inspection	
10.2.	Hospital	For installation : See hospital schedule	
11.	Pre installation requirements		
	Nil		
12.	Installation and testing		
	Complete installation and setup of the machine as per manufacturer's instructions		
13.	Training		
13.1.	User Training	On site user training on operation and daily up keep	
13.2.	Maintenance training	Onsite maintenance training on preventive maintenance	

Item Code No.	Department	Section	Item Description		
LOT 6-7	Diagnostic Laboratories	Routine Lab	Water bath		
14.	Technical documentations				
14.1.	User manuals	2 Sets			
14.2.	Service Manual	1 Set			
14.3.	Drawings	Nil			
15.	Commissioning				
15.1.	Testing and commissioning of the machine to the satisfaction of the user.				
16.	Warranty				
16.1.	Equipment	Minimum of one year after commissioning on all parts.			
16.2.	Equipment System	Nil			

LOT 6-8: Block Heaters

Item Code No.	Department	Section	Item Description
LOT 6-8	Outpatient	Consulting Room	Block Heaters

1. General Description

A dry block heater for incubation and activation of cultures, enzyme reactions, melting/boiling
points, and a wide variety of other laboratory procedures is to be supplied.

2. Composition

2.1	Main unit				

3. Description of the medical supply unit design type

3.1 Minimum functions:

A dry block heater for incubation and activation of cultures, enzyme reactions, melting/boiling
points, and a wide variety of other laboratory procedures is to be supplied.

3.2 Capacity

4 blocks.

3.3 Features

Digital with display; robust and compact design.

3.4 Temperature range

Up to 130°C or higher termperatures.

3.5 Temperature uniformity

Capable of achieving ±0.25˚C or better.

3.6 Accessories

Equipment is to be complete, ready for use, with assorted (interchangeable) blocks covering at least
4. tube sizes.

LOT 6-9: Microtomes

Item Code No.	Department	Section	Item Description
LOT 6-9	Laboratory	Histology	Microtome
1. General Description			
ry microtome suitable for paraffin and hard precision sectioning techniques. Motorized complete with hand wheel and knife carrier system.			
2. Composition			
2.1	Main unit		
3. Performance Specifications			
3.1	Main Unit		
3.1.1	The unit should be a model or type on current production		
3.1.2	kness setting	0.5µm to 60µm adjustable at intervals of 0.5µm to 5µ	
3.1.3	Manual coarse	Provided	
3.1.4	Hand wheel	Provided	
3.1.5	Knife carrier system	Provided, Standard conventional knife	
3.1.6	Specimen orientation	Universal 8^{o} and rotation 360^{o}	
3.1.7	Horizontal feed	Provided	
3.1.8	Vertical feed	Provided,	
3.1.9	Accessories	Conventional knives	
4.	Physical characteristics		
4.1	Main unit		
4.2	Dimensions	Table top model	
5.	Quality standards		
5.1	Manufacturing standards	IEC 60601-1, ISO 9001, ISO 13485 and UL 3101-1	
5.2	Conformity to standards	IVD- Directive 98/79/EC ,CE and FDA marked	
6.	Local back up service		
6.1	Available	Should be available locally	

Item Code No.	Department	Section	Item Description		
LOT 6-9	Laboratory	Histology	Microtome		
6.2	Capacity to service equipment	Agent shall have adequate facilities, spare parts, consumables/filters and qualified and skilled technical staff			
7.	Delivery point				
7.1	See Schedule	For inspection and testing			
7.2	Nil				
8.	Installation and testing				
	Complete installation and setup of the machine as per manufacturer's instructions				
9.	Training				
9.1	User Training	On site user training on operation and daily up keep			
9.2	Maintenance training	Onsite maintenance training on preventive maintenance			
10.	Technical documentations				
10.1	User manuals	2 Sets			
10.2	Service Manual	1 Set			
10.3	Drawings	Nil			
11.	Commissioning				
11.1	Testing and commissioning of the machine to the satisfaction of the user.				
12.	Warranty				
12.1	Equipment	Minimum of one year after commissioning on all parts.			
12.2	Equipment System	Nil			

LOT 6-10: Tissue Embedding Station

Item Code No.	Department	Section	Item Description
LOT 6-10	Laboratory	Routine	Tissue Embedding Station

1. General Description

2. Composition

	Main unit				

3. Description of the medical supply unit design type

3.1 Microprocessor controlled bench top unit, fully programmable automatic on/off control with two console unit one heated paraffin dispensing and embedding unit and cryoconsole with cooling plate

3.2 Separate controls and display for each module.

3.3 Can be programmed to turn on automatically to bring all work areas to their proper temperatures in time for the workday.

3.4 Independent programmable temperature settings for paraffin reservoir, mold warmer, cassette bath, and work surface

3.5 Paraffin reservoir capacity at least 3 liter.

3.6 Paraffin wax level indication on display should be available and an alarm indicator when molten paraffin levels are low.

3.7 Paraffin reservoir temperature setting range from 50°c to 70 °c or better with +/-1°c steps.

3.8 Ample cold plate to accommodate at least 60 blocks.

3.9 Cassette bath to store at least 100 cassettes.

3.10 Mold warmer temperature programmable from 50°c to 70°c or better with +/-1°c steps.

3.11 Work surface temperature programmable from 50°c to 70°c or better with +/-1°c steps.

3.12 Cold spot temp with Peltier element

3.13 Cold plate temperature – 5 oc or better.

3.14 Paraffin flow rate adjustment should be available up to 100% flow.

3.15 Activation of paraffin flow via foot switch (optional) or using the pressure clip.

3.16 Spacious paraffin collection tray to collect excess paraffin from work surface.

3.17 Separately heated paraffin dispenser with temperature 50°c to 70°c or better depending up on the paraffin reservoir

3.18 The system should use CFC free gas.

Item Code No.	Department	Section	Item Description
LOT 6-10	Laboratory	Routine	Tissue Embedding Station

3.19 Control panel with LCD display showing temperature, time, filling level, and flow rate

3.20 Bright, even illumination of the embedding area to be provided by a position adjustable halogen/led lamp.

3.21 A position adjustable magnifier lens facilitates specimen orientation when embedding.

3.22 A removable tray (8 -10 cassettes) beneath the cold plate may be used for transferring embedded blocks or discarding frost build-up.

3.23 Instrument should be programmable for work-days, work starting time, work end time, real time and day of the week for automatic switch on/off of the instrument.

3.24 Should have forceps warmer, along with electrically heated forceps with 1mm, 2mm, 4mm tip.

3.25 Should have paraffin trimmer.

3.26 Mains connection voltage : 220-240v/50Hz. And

3.27 Instrument should be US- FDA approved.

3.28 AMC and CMC conditions according to tender document

3.29 Spares to be supplied free of cost with instrument over and above the standard spares provided with the main instrument

- Small, medium and large size base molds - 12 each in number
- Embedding cassettes – 500 in number

LOT 6-11: Tissue Processors

Item Code No.	Department	Section	Item Description
LOT 6-11	Diagnostic Laboratories	Routine Lab	Tissue Processor
1. General Description			
ue processor, automatic, complete with Reagent and paraffin station, and cassette basket with vacuum function and fume control. Microprocessor based with LCD display			
2. Composition			
2.1	Main unit		
3. Performance Specifications			
3.1	Main Unit		
3.1.1	The unit should be a model or type on current production		
3.1.2	gent station	Minimum 10 vessels	
3.1.3	Paraffin Station	Minimum 2	
3.1.4	Basket	Capacity of minimum 120 cassettes	
3.1.5	Movements	Spiral, vertical agitation and centrifugal, all programmable by user	
3.1.6	Display	LCD display of process and set parameters	
3.1.7	Accessories	Standard accessories to be provided	
4.	Physical characteristics		
4.1	Main unit		
4.2	Dimensions	Floor standing	
5.	Quality standards		
5.1	Manufacturing standards	IEC 60601-1, ISO 9001, ISO 13485 and UL 3101-1	
5.2	Conformity to standards	IVD- Directive 98/79/EC ,CE and FDA marked	
6.	Local back up service		
6.1	Available	Should be available locally	
6.2	Capacity to service equipment	Agent shall have adequate facilities, spare parts, consumables/filters and qualified and skilled technical staff	

Item Code No.	Department	Section	Item Description		
LOT 6-11	Diagnostic Laboratories	Routine Lab	Tissue Processor		
7.	Delivery point				
7.1	See Schedule	For inspection and testing			
7.2	Nil				
8.	Installation and testing				
	Complete installation and setup of the machine as per manufacturer's instructions				
9.	Training				
9.1	User Training	On site user training on operation and daily up keep			
9.2	Maintenance training	Onsite maintenance training on preventive maintenance			
10.	Technical documentations				
10.1	User manuals	2 Sets			
10.2	Service Manual	1 Set			
10.3	Drawings	Nil			
11.	Commissioning				
11.1	Testing and commissioning of the machine to the satisfaction of the user.				
12.	Warranty				
12.1	Equipment	Minimum of one year after commissioning on all parts.			
12.2	Equipment System	Nil			

LOT 6-12: Paraffin Dispenser

Item Code No.	Department	Section	Item Description
LOT 6-12	Diagnostic Laboratories	Routine Lab	Paraffin Dispenser

1. General Description

2. Composition

2.1	Main unit				

3. Description of the medical supply unit design type

3.1 Capacity of paraffin tank: min 3 liters
3.2 Capacity of Thermal Chambers for storage of molds: min 1 liters
3.3 Temp. range of Paraffin tank: 50- 70 deg C
3.4 Temp. range of Thermal Chamber: 50- 70 deg C
3.5 Temp. range of Hot plates & forceps wells: 50-70 deg C
3.6 Connection for Electrically heated forcep
3.7 Electric Forcep (1) to be supplied
3.8 4-6 heated wells with individual temp. control for normal forceps
3.9 Precisely metered and adjustable gravity feed paraffin dispenser
3.10 Finger touch plate or foot switch for control of paraffin flow
3.11 Large warm working surface on either side for min 10 cassettes
3.12 Magnifying lens, adjustable
3.13 Bright white LED illumination for specimen orientation

LOT 6-13: Thermometer, glass, min/max -20°C/100°C

Item Code No.	Department	Section	Item Description
LOT 6-13	Laboratory	Laboratory	Thermometer, glass, min/max -20°C/100°C

1. General Description					
It is an instrument meant to measure the heat of material (temperature). This item is to be used during composting to monitor the process (for aeration and water additions)					
2. Composition					
2.1	Main unit				
3. Description of the medical supply unit design type					
3.1 Glass material 3.2 Able to register -20 – 100 ºC					

LOT 6-14: Thermometer, Min/Max -30°C/60°C

Item Code No.	Department	Section	Item Description
LOT 6-14	Laboratory	Laboratory	Thermometer, min/max -30°C/60°C

1. General Description

It is an instrument meant to measure both maximum and minimum air temperature. This item is to be used to monitor the variation of temperature within the laboratory.

2. Composition

2.1	Main unit				

3. Description of the medical supply unit design type

3.1 Scale -30 ºC – 50 ^{0}C; Division of 1 ^{0}C
3.2 Precision +/- 1 ^{0}C
3.3 Dimensions: 240 x 5 x 68mm
3.4 In plastic or woody body
3.5 Internal and external use

LOT 6-15: Timer, 60 min, mechanical

Item Code No.	Department	Section	Item Description
LOT 6-15	Outpatient	Consulting Room	Timer, 60 min, mechanical

1. General Description

2. Composition

2.1	Main unit				

3. Description of the medical supply unit design type

3.1 Ruggedly built, mechanical compact timer to be set from 1 to at least 60 minutes
3.2 To feature a loud 5-second ring that reminds the user of elapsed time for all lab tests.
3.3 To be of high-impact ABS plastic construction that makes it virtually indestructible and resistant to lab chemicals.
3.4 Dial to be graduated with oversized markings for easy reading.
3.5 Selecting the time by automatically winding the timer and the pointer displaying time remaining.
3.6 The timer should be viewed from above, or to be positioned to stand upright on a lab bench.
3.7 To have a powerful spring that ensures 99% accuracy.

LOT 6-16: Timer, digital

Item Code No.	Department	Section	Item Description
LOT 6-16	Diagnostic Laboratories	Routine Laboratory	Timer, Digital

1. General Description					
Traceable Multi-channel Digital 100-Hour Timer					
2. Composition					
2.1.	Main unit				
3. Description of the medical supply unit design type					
3.1. At least a four-channel timer to time up or down to 99 hours, 59 minutes, 59 seconds with 0.01% accuracy 3.2. To act as a stopwatch and give accurate time-of-day. 3.3. A large LCD continuously shows time remaining.					

LOT 6-17: Stainer

Item Code No.	Department	Section	Item Description
LOT 6-17	Diagnostic Laboratories	Routine Laboratory	Stainer

1. General Description

Automated slide stainer with parallel batches

2. Composition

2.1.	Main unit				

3. Description of the medical supply unit design type

3.1. High throughput robotic Stainer for multiple staining applications and should run up to 12 racks in parallel.
3.2. Simultaneous staining of protocols of hematoxylin-eosin and pap stain should be available.
3.3. Equipment should have solvent resistant color touch screen to monitor the staining process using the graphical process representation.
3.4. Racks should be assigned to the correct staining protocol based on transponder and color-code system.
3.5. The equipment should have 34 reagent stations and 6 wash stations of 450m1 capacity.
3.6. The equipment should be programmable for at least 50 programs of up to 40 steps each with incubation time setting from 0 sec to 59 minutes 59 seconds.
3.7. Optional integrated oven with temperature setting from 40°C to 70°C for optimal slide drying is preferred.
3.8. Continuous loading and unloading of slides via rack entry and exit door should be available.
3.9. Specimen slide throughput of at least 200 slides per hour up to 600 slides per hour is required.
3.10. Agitation programmable from 0-20 times or continuous should be available.
3.11. Reagent management system, station information on touch screen and data logging should available.
3.12. Programmable up and down movement of robotic arm should be available.
3.13. Fume extraction fan with charcoal filter to remove hazardous fumes should be available.
3.14. Gentle vibration to slide rack lifting to reduce carry over contamination should be available.
3.15. Audible warning buzzer in case of any error during operation should be a feature of the equipment.

LOT 6-18: Coagulometer

Item Code No.	Department	Section	Item Description
LOT 6-18	Laboratory	Clinical Chemistry/hematology	Fully Automated Coagulometer

1. General Description

Fully automated Coagulometer, capable of measuring at Minimum PT, APTT, and TT. The unit should be fully automatic, with electronic digital read out, in built printer.

2. Composition

2.1.	Main unit				

3. Description of the medical supply unit design type

3.1 The unit should be with the following superior features:The equipment should be a random access system.

3.2 The instrument should be able to provide simultaneous measurement of ZClotting, Chromomeric and Immunological assays.

3.3 Principle based on change in viscosity by electromagnetic clot detection system with steel ball oscillation or multi wave length scanning and sample liquid-sensing technology.

3.4 Technology should be insensitive to LIPEMIC, COLOURED, HEMOLYSED plasma and turbid reagent.

3.5 It is able to calculate low levels of factor VIII and weak clot.

3.6 The instrument should be able to use primary sample tube.

3.7 The instrument should be capable of continuous sample & reagent loading during the run.

3.8 The instrument should be able to add, delete, rerun tests during the run.

3.9 Availability of 30 programmed and up to 60 Test methodologies should be provided.

3.10 Minimum 96 sample positions with all STAT facility should be provided.

3.11 Refrigerated reagent positions of a minimum of 30 all at 15c should be available

3.12 Instrument should have in-built Barcode reader for positive identification of sample and reagents i.e. name, stability, volume, position etc.

3.13 Instrument should be able to detect automatically positive sample and reagent positions.

3.14 Possibility of Auto Rerun and Auto Redilution of samples should be available.

3.15 Positive sample and reagents level detection should be provided.

3.16 Instrument should have online sample reagents monitoring.

3.17 Instrument should have data storage capacity of min 1000 patient including at least 12 results per patient.

Item Code No.	Department	Section	Item Description
LOT 6-18	Laboratory	Clinical Chemistry/hematology	Fully Automated Coagulometer

3.18 Multi batch Q.C. Capacity on levy- Jennings graphs should be available in the system.

3.19 Flexibility to rerun, add a test or delete a test, handling of stat sample at any time should be provided.

3.20 Automatic dilution for sample and calibrators should be possible.

3.21 Provision for bi-directional LIS connectivity should be available.

3.22 Minimum test menu available should include PT, APTT, Fibrinogen, TT, LA, All Factors, ATIII, Heparin, PC, PS, PLG, AP, APCR, DDI, FDP, FM, vWf.

3.23 The system should be equipped with power backup to avoid an loss of date or interfearence in the evnt of power interruption.

4.	Physical characteristics			
4.1.	Main unit	Table top Model		
		Robust construction and easy to clean		
5.	Quality standards			
5.1.	Manufacturing standards	IEC 60601-1, ISO 9001, ISO 13485 and UL 3101-1		
5.2.	Conformity to standards	IVD- Directive 98/79/EC ,CE and FDA marked		
6.	Delivery point			
6.1.	Kisii Cancer Centre Site	For inspection, Installation, commisioning and training		
7.	Training			
7.1.	User Training	On site user training on operation and daily up keep		
7.2.	Maintenance training	Onsite maintenance training on preventive maintenance		
8.	Technical documentations			
8.1.	User manuals	2 Sets	Softy & Hard copies	
8.2.	Service Manual	2 Set	Softy & Hard copies	
9.	Warranty			
9.1.	Equipment	Minimum of two year after commissioning on all parts.		
9.2.	Equipment System	Nil		

Reagents and consumable supply

10. Start-up Kits Controls & calibrates must be provided for all the Tests

C**: Comprehensive Maintenance and repair service**

Item Code No.	Department	Section	Item Description
LOT 6-18	Laboratory	Clinical Chemistry/hematology	Fully Automated Coagulometer
11. Comprehensive preventive and repair service Proof of capacity to provide a comprehensive preventive and repair maintenance service contract including parts and material for a period of 10 years, from commissioning date			

LOT 6-19: Balance Electronic

Item Code No.	Department	Section	Item Description
LOT 6-19	Laboratory	Laboratory	Electronic Balance
1. General Description			
Technical Specifications For Pan Digital Sensitive Chemical Balance			
2. Composition			
2.1.	Main unit		
3. Description of the medical supply unit design type			
3.1 Electronic weighing with LCD display & complete with metal casing & transparent wind shielded cover. 3.2 Weighing range 1mg – 200gms 3.3 Reproducibility – 0.1mg. 3.4 Pan size – minimum 80mm. 3.5 Automatic Internal adjustment 3.6 Electrical adapter for mains 230-240 V / 50-60 HZ. 3.7 Tare & other adjustments. 3.8 To provide weights along with the balance. 3.9 To provide calibration certificate 3.10 Guarantee 5 year			

LOT 6-20: Hematology Analyzer

Item Code No.	Department	Section	Item Description
LOT 6-20	Laboratory	Clinical Chemistry/hematology	5 Part Diff Hematology Analyzer

1. General Description

Hematology analyzer, capable of measuring HB, RBC, WBC, HCT, MCV, MCH, MCHC, PLT and histogram and at least 10 other parameters and 5 differential. The unit should be automatic, with electronic digital read out, with dilutor and in built printer. In addition it should have Automatic recovery after power failure without loss of data.

2. Composition

2.1.	Main unit				

3. Performance Specifications

3.1 It should be fully automated 5 part differential hematology analyser based on at least Flowcytometry and Light scattering technology. Instrument should offer automatic start- up, shut down and sample analysis.

3.2 Should have discrete analysis modes-CBC, CBC+DIFF, CBC+Retic, CBC+Retic +Diff.

3.3 Should give parameters i.e WBC, RBC, Hemoglobin, MCV, MCH,MCHC, HCT, RDWSD/CV, Platelet count, PDW,MPV, PCT, P-LCR(optional), IPF(optional), Retic%, Retic parameters, Absolute and % values for Neutrophil, Lymphocytes, Monocytes, Eosinophils, Basophils, Morphology results(user definable) like WBC : Left shift, Atypical Lymph, Immature Granulocyte, RBC: NRBC, Aniso, Micro, Macro, RBC ghost(optional) along with histograms of RBC, WBC and Platelets.

3.4 Should have an Auto sampler with capacity of 50 and above sample tubes with continuous sample loading. A single sample rack should be able to cater different tube sizes.

3.5 The instrument should have a Bar code reader.

3.6 Should have a high throughput of 100 samples per hour or more in CBC and CBC/Diff mode and 45 or more samples per hour in Retic mode.

3.7 Should have multichannel analysis for better resolution and reproducibility like Dual differential count for WBC

i. Platelets- should have dual angle light scatter/Impedance/Fluorescent dye based measurement
ii. RBC- should have light scatter/Impedance based measurement
iii. Hb-Should have photometric/direct cellular measurement
iv. Retic-should have on board light scatter (Fluorescent dye/Retic stain based) for Reticulocytes.

3.8 Should have clot detection facility.

Item Code No.	Department	Section	Item Description
LOT 6-20	Laboratory	Clinical Chemistry/hematology	5 Part Diff Hematology Analyzer

3.9 Should have onboard reagent facility and automatic reagent inventory management.

3.10 Should have extensive linearity as

i. WBC-0.0-400X103/µL
ii. RBC-0.0-8.0X106/µL
iii. PLT-0.0-3000X103/µL
iv. Hb-0.0-25.0g/dL
v. RETIC- 0.0 – 24.5%

3.11 Should have capability of running CSF and body fluids.

3.12 Sample volume required in all modes not to exceed 300 µL. Should be able to give all parameters with finger prick blood sample(i.e with 20 µL)

3.13 Should have extensive features like L J plot available, Delta check available for cumulative review, Option for Online QC also available, Patient moving average, QC file management.

3.14 Should have comprehensive data management such as User friendly Windows based software Network integration possible with Lab information system.

3.15 Data base storage capacity of 10000 records or more including graphs.

3.16 Suitable printer to be provided.

3.17 Should have extended analysis time for cytopenic sample.

3.18 Should be able to integrate with optional slide maker and stainer.

3.19 List of full range of consumables and spare parts for closed/open system to be given.

3.20 Online UPS compatible with instrument with one hour back-up to be provided.

3.21 Start-up reagent for initial 10,000 tests to be provided.

3.22 Rate of consumables,accessory items and spare parts to be frozen for 3 years.

3.23 Two years comprehensive warranty and five years Comprehensive Maintenance Contract thereafter.

4.	Operating environment	
4.1.	Power Requirements	240V, A/c 50 Hz, Single phase
	Ambient temperature	10° C to 40° C
	Relative humidity	15% to 90%
5.	Quality standards	
5.1.	Manufacturing standards	IEC 60601-1, ISO 9001, ISO 13485 and UL 3101-1

Item Code No.	Department	Section	Item Description		
LOT 6-20	Laboratory	Clinical Chemistry/hematology	5 Part Diff Hematology Analyzer		
	Conformity to standards	IVD- Directive 98/79/EC ,CE and FDA marked			
6.	Delivery point				
6.1.	Kisii Cancer Centre site	For inspection, installation and commissioning			
7.	Installation and testing				
	Complete installation and set-up of the machine as per manufacturer's instructions				
8.	Technical documentations				
8.1.	User manuals	2 Sets	Soft & Hard copies		
8.2.	Service Manual	1 Set	Soft & Hard copies		
9.	Commissioning				
9.1.	Testing and commissioning of the machine to the satisfaction of the user.				
B**: Reagents and consumable supply** 10. Start-up Kits Controls & calibrates must be provided for all the Tests					
C**: Comprehensive Maintenance and repair service**					
11. Comprehensive preventive and repair service Proof of capacity to provide a comprehensive preventive and repair maintenance service contract including parts and material for a period of 10 year, from commissioning date					
D:Training of user and maintenance staff					
12.	User Training	Scheduled on-site user training on operation and daily up keep.			
12.1.	Maintenance training	Scheduled on-site maintenance training on preventive maintenance.			

LOT 6-21: Biochemistry Analyzer

Item Code No.	Department	Section	Item Description
LOT 6-21	Laboratory	Clinical Chemistry/hematology	Clinical Chemistry Analyzer with ISE

1. Performance and safety requirement for the equipment to be placed

Clinical chemistry analyzer with ISE, open system, suitable for a county referral hospital laboratory. It should be capable of measuring the following parameters;

- Specific proteins
- Electrolytes
- Enzymes
- Substrates
- Drug of abuse

The unit should be automatic, bench top, with microprocessor-controlled analyzer, Digital display, with in-built or external printer.

2. Composition

2.1.	Main unit				

3. Performance Specifications

3.1.	Main Unit	
3.1.1.	Test menu	At least 120 selections
3.1.2.	Test per hour	About 200 tests.
3.1.3.	On- board parameters	At least 30-60
3.1.4.	Analyzer system	Random access, Discrete, Automatic, Selectable
3.1.5.		STAT sample priority
3.1.6.	Programming	User defined and calculations
3.1.7.		
3.1.8.	***Sample processing***	
3.1.9.	Sample tray capacity	30 to 60 samples
3.1.10.	Sample handling Reagent Type	Automatic, Pre and post dilutions Liquid, ready to use Automatic with level sensing Abnormal flag capability
3.1.11.	Sample identification	Bar code reader (variety of bar code systems)

Item Code No.	Department	Section	Item Description
LOT 6-21	Laboratory	Clinical Chemistry/hematology	Clinical Chemistry Analyzer with ISE
3.1.12.	Sample probe	Probe crash protection, Liquid level Detection and clot detection	
3.1.13.	Probe cleaning Calibration frequency Preventive calibration	Internal and External Test dependent, up to 30 days, auto-quality Memory capability	
3.2.	***Reagent processing***		
3.2.1.	Reagent tray Capacity	about 50	
3.2.2.	Reagent storage	Refrigerated compartment	
3.2.3.	Reagent probe	Probe crash protection, Liquid level Detection	
3.2.4.	Probe cleaning	Internal and External	
3.3.	***ISE Module***	Capable	
3.4.	***Optical Characteristics***		
3.4.1.	Light source	Halogen- Tungsten lamp, easily replaceable	
3.4.2.	Wavelength	340- 800 nm (approximately)	
3.4.3.	Sensitivity Absorbance Resolution	About 0.0001 OD 0.01-3 0.001AVS	
3.5.	***Data Processor***		
3.5.1.	Operating system	Compatible with Windows 8	
3.5.2.	Interface	Bidirectional RS-232, USB, Ethernet Port	
3.5.3.	Memory	> 10GB	
3.5.4.	Data input	key pads, soft touch	
3.5.5.	Display	Digital display.	
3.5.6.	Printer	In built with provision of external printer	

Item Code No.	Department	Section	Item Description		
LOT 6-21	Laboratory	Clinical Chemistry/hematology	Clinical Chemistry Analyzer with ISE		
3.5.7.	Control and Calibration	Automatic, can be adjusted through the software			
3.5.8.	Parameters	Display of running status, alerts,			
3.5.9.		Diagnosis of working status.			
3.5.10		Software should be upgradeable			
4.	Physical characteristics				
4.1.	Main unit	Bench top			
		Robust construction and easy to clean			
5.	Operating environment				
5.1.	Power Requirements	240V, A/c 50 Hz, Single phase			
5.2.	Ambient temperature	10° C to 40° C			
5.3.	Relative humidity	20% to 90%			
6.	Accessories				
6.1.	UPS (1.25 X the power rating of the machine)				
7.	Quality standards				
7.1.	Manufacturing standards	IEC 60601-1, ISO 9001, ISO 13485 and UL 3101-1			
7.2.	Conformity to standards	IVD- Directive 98/79/EC ,CE and FDA marked			
8.	Delivery point				
8.1.	See Schedule	For inspection			
9.	Installation and testing				
	Complete installation and set-up of the machine at designated hospital as per manufacturer's instructions				
9.1.	Technical documentations				
9.2.	User manuals	2 Sets			

Item Code No.	Department	Section	Item Description		
LOT 6-21	Laboratory	Clinical Chemistry/hematology	Clinical Chemistry Analyzer with ISE		
9.3.	Service Manual	2 Set			
10.	Commissioning				
	Testing and commissioning of the machine to the satisfaction of the user.				
B**: Reagents and consumable supply** **11.** Start-up Kits Controls & calibrates must be provided for all the Tests					
C:Training of user and maintenance staff					
12.	User Training		Scheduled on-site user training on operation and daily up keep.		
12.1.	Maintenance training		Scheduled on-site maintenance training on preventive maintenance.		

LOT 6-22: Immune Analyzer

Item Code No.	Department	Section	Item Description
LOT 6-22	Diagnostic Laboratories	Clinical Chemistry and Immunology	Immune Analyzer

1. General Description

S/No.	Specification	Remarks
1.1.	Brand New Floor Model to be installed and it should not be refurbished one.	
1.2.	Should be based on the principle of chemiluminescence /Electrochemiluminescence. Immunoassay technology with very high sensitivity and linearity.	
1.3.	Fully automated with a throughput of 250 tests or more per hour.	
1.4.	Both the equipment and reagent should have USFDA and European CE Certification	
1.5.	It should be able to detect concentrations below, in and above the range of normal clinical levels.	
1.6.	The sample can be serum, Plasma, urine, CSF and other body fluids.	
1.7.	The test types will include hormones, tumour markers, antibodies to infectious diseases, auto immune diseases, allergy, cardiac, nutrition markers, markers of bone metabolism, reproductive markers, and Triple markers.	
1.8.	There should be random sampling with minimum sample volume ranging from 10-75 microliter with minimum dead volume.	
1.9.	Analyser should have clot detection facility.	
1.10.	Analyser should have facility for paediatric sample cup.	
1.11.	Use of disposable cups, cuvettes, and tips to have minimum carry over.	
1.12.	There should be provision for onboard dilution with automatic calculation.	
1.13.	Provision for both bar code reading and manual entry.	
1.14.	Provision for running emergency (stat) tests.	
1.15.	Noise generated should be less than 50 decibels.	
1.16.	Supplied with UPS with a minimum of 2hrs backup.	
1.17.	Operating software: windows or compatible.	

Item Code No.	Department	Section	Item Description
LOT 6-22	Diagnostic Laboratories	Clinical Chemistry and Immunology	Immune Analyzer

1.18.	System should have high resolution touch screen.	
1.19.	Attachable printer with real time individual sample reporting facility.	
1.20.	Program should be compatible with our Laboratory information system (CDAC e-sushrut G5) for easy reporting.	
1.21.	Program should have access to report retrieval, statistics and storage for data should be up to 1 year or more.	
1.22.	There should be provision for on board refrigeration and stability of reagents for at least 15 days.	
1.23.	40 or more reagents on board at a time, with on board reagent inventory management.	
1.24.	The pack size of reagents should range from 20 to 500.	
1.25.	The reagents should be ready to use.	
1.26.	The reagent should be supplied through authorized dealer in Kenya	
1.27.	All supplied reagents should have a minimum shelf life of 6 months.	

LOT 6-23: Electrophoresis Unit

Item Code No.	Department	Section	Item Description
LOT 6-23	Laboratory	Clinical Chemistry	Electrophoresis Unit
1. General Description			
trophoresis machine, Electric type			
2. Performance Specifications 3. Composition			
3.1.	Main Unit		
3.1.1.	Main unit	Electric Type	
3.1.2.	Electrophoresis Tank	Provided	
3.1.3.	Power supply Unit	Provided	
3.1.4.	UV Transparent Gel Tray	Provided	
3.1.5.	Combs	Provided, 15 and 20 wells	
3.1.6.	Comb Holder	Provided	
3.1.7.	Casting Gates	Provide	
3.1.8.	Gel Caster	Provided	
3.1.9.	Gel Tray Size	25W X 10L cm, Minimum	
3.1.10.	Sample Throughput	24-192	
3.1.11.	Base Buffer Volume	3 litre, minimum	
3.1.12.	Bromophenol Blue Migration	5, 20 cm/hour	
3.1.13.	Migration Rates	@ 100V	
3.1.14.	Input Power	240V, 50 Hz	
3.2.	Conformity to standards	CE and FDA marked	

LOT 6-24: Blood Gas Analyzer

Item Code No.	Department	Section	Item Description		
LOT 6-24	Diagonistic Laboratories	Routine Laboratories	Blood Gas Analyzer		
A. Performance and safety requirement for the equipment to be placed					
1. General Description Blood gas analyzer, capable of measuring at minimum pCO2, pO2, pH, K+, Na+, Cl-, Ca++ and at least 15 calculated parameters in whole blood, serum and plasma. The unit should be automatic, with electronic digital read out, dilutor and in built printer.					
2. Composition					
2.1.	Main unit				
3. Performance Specifications					
3.1.	Main Unit				
3.1.1.	Measuring parameters	pCO2, pO2, pH, K+, Cl-, Ca++			
3.1.2.	Calculated parameters	At least 15 parameters			
3.1.3.	Sample volume	About 150ųl			
3.1.4.	Measuring time	about 2-5 seconds			
3.1.5.	Temperature correction	Automatic			
3.1.6.	Display	Large LCD display			
3.1.7.	Printer	In built			
3.1.8.	Key pad	Soft			
4.	Physical characteristics				
4.1.	Main unit	Bench top			
		Robust construction and easy to clean			
5.	Operating environment				
5.1.	Power Requirements	240V, A/c 50 Hz, Single phase			
	Ambient temperature	10^{o} C to 40^{o} C			
	Relative humidity	20% to 90%			
6.	Accessories				
6.1.	True online UPS (1.25 X the power rating of equipment)				

Item Code No.	Department	Section	Item Description
LOT 6-24	Diagonistic Laboratories	Routine Laboratories	Blood Gas Analyzer
7.	Quality standards		
7.1.	Manufacturing standards	IEC 60601-1, ISO 9001, ISO 13485 and UL 3101-1	
	Conformity to standards	IVD- Directive 98/79/EC (IEC 1010-1),CE and FDA marked	
8.	Delivery point		
8.1.	See Schedule		
9.	Installation, testing and commissioning		
	Complete installation and set-up of the machine as per manufacturer's instructions		
B**: Reagents and consumable supply** 10. Start-up Kits Controls & calibrates must be provided for all the Tests			
D:Training of user and maintenance staff			
11.	User Training	See Schedule on-site user training on operation and daily up keep for two years renewable	
11.1.	Maintenance training	Scheduled on-site maintenance training on preventive maintenance for two years renewable	

LOT 6-25: Centrifuge

Item Code No.	Department	Section	Item Description
LOT 6-25	Diagonistic Laboratories	Routine Laboratories	Centrifuge
1. General Description			
aboratory use. Table top model			
2. Composition			
2.1.	Main unit		
3. Performance Specifications			
3.1.	Main Unit		
3.1.1.	The unit should be a model or type on current production		
3.1.2.	imum speed	Up to 6000 rpm	
3.1.3.	Maximum RCF	4600G	
3.1.4.	Timer	Provided	
3.1.5.	Brake system	Provided	
3.1.6.	Safety System	Door open	
3.1.7.	Rotor Type	Swing out and fixed angle rotor	
3.1.8.	Tube adapter	4/5 ml, 15ml X 12 pcs	
3.2.	Rotor	2 sets : fixed angle and swing out	
3.3.	Tube adapter	2 Sets for fixed angle and swing out	
3.4.	Rotor locking wrench	2 pieces	
4.	Physical characteristics		
4.1.	Main unit		
4.2.	Dimensions	Table top model	
5.	Operating environment		
5.1.	Power Requirements	240V, A/c 50 Hz, Single phase, 3 Pin Plug, 3m long cord BS type with PE	
5.2.	Ambient temperature	10^{o} C to 40^{o} C	
5.3.			
5.4.	Relative humidity	20% to 90%	
6.	Consumable		
6.1.	Test tubes	Start-up Kits must be provided.	
7.	Quality standards		

Item Code No.	Department	Section	Item Description
LOT 6-25	Diagonistic Laboratories	Routine Laboratories	Centrifuge
7.1.	Manufacturing standards	IEC 60601-1, ISO 9001, ISO 13485 and UL 3101-1	
7.2.	Conformity to standards	IVD- Directive 98/79/EC ,CE and FDA marked	
8.	Local back up service		
8.1.	Available	Should be available locally	
8.2.	Capacity to service equipment	Agent shall have adequate facilities, spare parts, consumables and qualified and skilled technical staff	
9.	Delivery point		
9.1.	See Schedule	For inspection and testing	
9.2.	Nil		
10.	Pre installation requirements		
	Nil		
11.	Installation and testing		
	Complete installation and setup of the machine as per manufacturer's instructions		
12.	Training		
12.1.	User Training	On site user training on operation and daily up keep	
12.2.	Maintenance training	Onsite maintenance training on preventive maintenance	
13.	Technical documentations		
13.1.	User manuals	2 Sets	
13.2.	Service Manual	1 Set	
13.3.	Drawings	Nil	
14.	Commissioning		
14.1.	Testing and commissioning of the machine to the satisfaction of the user.		
15.	Warranty		
15.1.	Equipment	Minimum of one year after commissioning on all parts.	
15.2.	Equipment System	Nil	
16.	Accessories		

LOT 6-26: Vortex Mixer

Item Code No.	Department	Section	Item Description
LOT 6-26	Laboratory	Microbiology	Vortex Mixer
1. General Description			
2. Composition			
2.1.	Main unit		
3. Description of the medical supply unit design type			
3.1. Speed range 500-3000 rpm, with manually controllable knob 3.2. Acceleration time – 3 sec 3.3. Orbit-2mm. 3.4. Power supply: External power supply DC 12 V, 500mA 3.5. To be supplied with DC adapter if not built in.			

LOT 6-27: Digital Weighing Scale

Item Code No.	Department	Section	Item Description
LOT 6-27	Laboratory	Routine	Digital weighing scale

1. General Description

Analytical electronic balance

2. Composition

2.1.	Main unit				

3. Description of the medical supply unit design type

3.1. Maximum weighing Capacity 220g
3.2. Resolution 0.01mg
3.3. Readability 0.1mg
3.4. Linearity 0.06mg
3.5. Minimum weight typical 0.16g
3.6. Interfaces RS232; USB Device; USB Host
3.7. Display color TFT touchscreen
3.8. Adjustment Internal and External calibration
3.9. Housing Die-cast aluminum
3.10. Weighing pan Not exceeding 100 mm
3.11. Installation, commissioning and user training
3.12. To be supplied with a calibration certificate from an accredited laboratory

LOT 6-28: PH meter

Item Code No.	Department	Section	Item Description
Lot 6-28	Diagonistic Laboratories	Routine Laboratories	PH Meter
1. General Description			
PH Meter, microprocessor based complete with electrodes, and buffer solution			
2. Composition			
2.1.	Main unit		
3. Performance Specifications			
3.1.	Main Unit		
3.1.1.	Main unit	Microprocessor based with digital display, Table top model	
3.1.2.	Range	0 to 14pH ± 0.1	
3.1.3.	Display	Digital LCD	
3.1.4.	Electrode	Provided, glass tube type	
3.1.5.	Electrode handle	Provided	
3.1.6.	Buffer solutions	Provided	
3.1.7.	Power	240V, 50 Hz	
4.	Delivery point		
4.1.	See schedule	For inspection and testing	
4.2.	Nil		
5.	Warranty		
5.1.	Equipment	Minimum of one year after commissioning on all parts.	
5.2.	Equipment System	Nil	
5.3.	Conformity to standards	IVD- Directive 98/79/EC ,CE and FDA marked	

LOT 6-29: Flow Cytometer

Item Code No.	Department	Section	Item Description
LOT 6-29	Laboratory	Microbiology	Flow Cytometer

1. General Description

Application/Scope
For cells and microorganisms counting

2. Composition

2.1.	Main unit				

3. Description of the medical supply unit design type

3.1. The flow cytometer should be easy to use, simple to maintain, and affordable.

3.2. Should be small enough to easily fit on a benchtop.

3.3. The system should be equipped with appropriate lasers, appropriate scatter detectors, appropriate fluorescence detectors.

3.4. Should be compact optical design, fixed alignment, and pre-optimized detector settings to make the system easier to use.

3.5. Should have a unique pumping system that drives the fluidics.

3.6. The accessory should be able to streamline sample processing with reliable and easy-to- use automation.

3.7. The software should be appropriately designed to provide quick access to the collection, analysis, and statistics functions. The Analysis should be performed easily with the internal system and should also be able to be processed to appropriate third party programs.

Performance Specifications

Optics • Laser power (as shown in table below)

Laser	Wavelength (nm)	Beam-shaping optics (BSO) (mW)	Diode power (mW)
Violet	405	50	100
Blue	488	50	100
Green	532	100	140
Yellow	561	50	100
Red	637	100	140

- **Laser excitation:** Optimized excitation for minimized stray laser-line noise and losses to reflection
- **Laser profile:** 10 x 50 µm flat-top laser providing robust alignment
- **Emission filters:** Up to 14 color channels with wavelength-tuned photomultiplier tubes (PMTs); userchangeable, keyed filters
- **Laser separation:** 150 µm
- **Optical alignment:** Fixed alignment with prealigned welded fiber; no user maintenance required
- **Onboard thermoelectric cooler:** No warm-up delay; fiber isn't affected by on/off

Item Code No.	Department	Section	Item Description
LOT 6-29	Laboratory	Microbiology	Flow Cytometer

- **Simmer mode:** Instant on/off reduces usage and/or aging by 10x; only keep it "on" when acquiring samples; reports hours of usage
- **Flat top specified at the flow cell:** Coefficient of variation (CV) <3% over width of flat top
- Upgradable according to field changes

Fluidics

Flow cell: Quartz cuvette gel coupled to 1.2 numerical aperture (NA) collection lens, 200 x 200 μm

Sample analysis volume: 20 μL to 4 mL

Custom sample flow rates: 12.5–1,000 μL/min

Sample delivery: Positive-displacement syringe pump for volumetric analysis.

Sample tubes: Accommodates tubes from 17 x 100 mm to 8.5 x 45 mm. Should be able to handle a food, meat, fish sample for analysis.

Fluid-level sensing: Should be Active.

Standard fluid reservoirs: Should have 1.8 L focusing fluid tank, 1.8 L waste tank, 175 mL shutdown solution tank, and 175 mL wash solution tank

Fluid storage: All fluids should be stored within instrument

Extended fluidics option: Configuration for 10 L fluid Nominal fluid consumption Should be 1.8 L/day

Automated maintenance cycles: ≤15 min startup and shutdown—deep clean, sanitize, and debubble modes

Performance

Fluorescence sensitivity: ≤80 molecules of equivalent soluble fluorochrome (MESF) for FITC, ≤30 MESF for PE, ≤70 MESF for APC

Fluorescence resolution: CV <3% for the singlet peak of propidium iodide–stained chicken erythrocyte nuclei (CEN)

Data acquisition rate: Up to 35,000 events/sec, 34 parameters, based on a 10% coincidence rate per Poisson statistics

Maximum electronic speed: 65,000 events/sec with all parameters

Carryover: Single-tube format: <1%

Forward and side scatter sensitivity: Able to discriminate platelets from noise

Forward and side scatter resolution: Optimized to resolve bacteria and fungi in Food and feed products, meat/fish and

meat products, and water matrices

Forward scatter: Photodiode detector with 488/10 nm bandpass filter

Item Code No.	Department	Section	Item Description
LOT 6-29	Laboratory	Microbiology	Flow Cytometer

Side scatter:

PMT with default 488/10 nm bandpass filter; optional 405/10 nm bandpass filter

Fluorescence detectors: 14 individual detectors

Electronic pulse: Measured area, height and width pulse for all detectors

Violet side scatter resolution: Can be configured for violet side scatter to better resolve particles from noise.

Minimum particle size: 0.2 µm on side scatter using Recommended calibration kit

Automation

Fully automated cleaning cycles

Fully automated start-up and shutdown

Autosampler option for labs where throughput and automation are a priority

Email alerts notify operator of status changes

Volumetric sample system gives absolute count for every sample

Flexibility

Fully upgradeable to a 4 laser system with 12 optical detectors plus Autosampler

Suitable for a wide range of applications (maximum particle size 100µm)

Sorting

The cytometer should be equipped with a sorting feature for capturing and collecting cells of interest.

All the accessories associated to the flow cytometer

All reagents and materials to be used in and by the Flow cytometer

All spares accompanying the flow cytometer

Should have all Installation Requirements covered as appropriate.

Data Management Requirements

64-bit Windows 8 or later

Minimum screen resolution 1280x1024

16 GB RAM

Min 1TB hard disk space

Workstation Minimum Specifications

Small form chassis

Intel® HD Graphics 2000

Item Code No.	Department	Section	Item Description
LOT 6-29	Laboratory	Microbiology	Flow Cytometer

180-W Energy Star efficient internal power supply

Memory and Processor

16 GB RAM

Core™ i7 processor

Hard Drive and Data Storage Options

1TB or greater hard drive, 8-MB databurst cache

8x DVD reader

Monitor

LCD flat panel 21"

4 USB 2.0 ports (for peripheral devices) Peripheral Devices

USB Entry Keyboard

USB Optical Mouse

Networking

Ethernet LAN 10/100/1000

Operating System should be appropriate and compatible

Other requirements

(i) During Quotation opening the selected suppliers to be available to give a summary the equipment to be supplied.

(ii) Installation and Commissioning -to be done

(iii) Operation and Service Manuals- All Manuals in English(Hard and soft copy)

(iv) Warranty and Nearest service center -Two years warranty with one year spare replacement, if required.
- Post warranty CMC provision for at least 5 years
- Brochures for the equipment to be provided during quotation

(v) Training - onsite training during installation/ commissioning and at least 10 test runs.

The trainer should have all the is required for training to ensure full training.

LOT 6-30: Platelet Agitator/Shaker with Incubator

Item Code No.	Department	Section	Item Description
LOT 6-30	Laboratory	Blood Transfusion	Platelet agitator/shaker with incubator
1. General Description			
Platelet agitator/shaker with incubator for agitation of platelet concentrates at set temperature. The unit should be constructed from robust, corrosion free outer material. Interior part should be constructed from high grade stainless steel with agitation facilities. It should be microprocessor based for adjustable agitation and fixed temperature control, with inbuilt digital display and temperature recorder			
2. Composition			
2.1.	Main unit		
3. Performance Specifications			
3.1.	Main Unit		
3.1.1.	Capacity (internal)	125 litres, Minimum	
3.1.2.	Incubator temperature	+22ºC	
3.1.3.	Accuracy	± 0.5ºC	
3.1.4.	Temperature recorder	Provided for minimum 7 days circular chart	
3.1.5.	Agitator	4 No. at 60-70 strokes per minute	
3.1.6.	Uniformity of temperature	Constant temperature in the chamber ± 0.5ºC	
3.1.7.	Display	Digital for temperature and agitation.	
3.1.8.	Alarm	Audio and visual for , temperature deviation, agitator failure	
3.1.9.	Safety Device	Agitation stops when door is opened	
4.	Physical characteristics		
4.1.	Main unit	Bench top, Robust construction and easy to clean	
	Internal capacity	125 liters, minimum	
5.	Operating environment		
5.1.	Power Requirements	240V, A/c 50 Hz, Single phase	
5.2.	Ambient temperature	10º C to 40º C	
5.3.	Relative humidity	20% to 90%	

Item Code No.	Department	Section	Item Description		
LOT 6-30	Laboratory	Blood Transfusion	Platelet agitator/shaker with incubator		
6.	Quality standards				
6.1.	Manufacturing standards	IEC 60601-1, ISO 9001, ISO 13485 and UL 3101-1			
7.	Conformity to standards	Directive 2002/98/EC, directive 2004/33/EC, CE and FDA marked			
7.1.	Local back up service				
7.2.	Available	Should be available locally			
7.3.	Capacity to service equipment	Agent shall have adequate facilities, spare parts, and qualified and skilled technical staff			
8.	Delivery point				
8.1.	See Schedule	For inspection			
8.2.	Hospital	For installation : See hospital schedule			
9.	Installation and testing				
9.1.	Complete installation and setup of the machine at various sites as per manufacturer's instructions				
10.	Training				
10.1.	User Training	On site user training on operation and daily up keep			
10.2.	Maintenance training	Onsite maintenance training on preventive maintenance			
11.	Technical documentations				
11.1.	User manuals	2 Sets			
11.2.	Service Manual	1 Set			
11.3.	Drawings	Nil			
12.	Commissioning				
12.1.	Testing and commissioning of the machine to the satisfaction of the user.				
13.	Warranty				
13.1.	Equipment	Minimum of one year after commissioning on all parts.			
13.2.	Equipment System	Nil			

LOT 6-31: Blood Donor Chairs

Item Code No.	Department	Section	Item Description		
LOT 6-31	Diagonistic Laboratories	Routine Laboratories	Blood Donor Couch		
1. General Description					
Blood donor couches, foldable type, suitable for use donation of blood. Should be constructed from aluminum material or chrome plated robust metallic material or similar and equivalent light and non-corrosive material. With adjustable backrest, mechanically controlled and foldable. Should be provided complete with waterproof mattress.					
2. Composition					
2.1.	Main unit Blood Donor couch				
3. Physical Specifications					
3.1.	Main Unit				
3.1.1.	Main unit	Foldable type			
3.1.2.	Backrest adjustment	Provided			
3.1.3.	Dimensions (Overall)	Approx. 1900 mm(L) X 650mm (W) X 750mm(H)			
3.1.4.	Weight to handle	200 kg			
4.	Quality Standards				
4.1.	Manufacturing standards	ISO 9001			
4.2.	Conformity to standards	CE Standard			
5.	Delivery point				
5.1.	See Schedule	For delivery, installation and testing			
6.	Warranty				
6.1.	Equipment	Minimum of one year after delivery			
6.2.	Equipment System	Nil			

LOT 6-32: Water Distillation Unit

Item Code No.	Department	Section	Item Description
LOT 6-32	Laboratory	Routine	Water Distillation Unit
1. General Description			
Required for distilled water production for lab			
2. Composition			
2.1.	Main unit		
3. Description of the medical supply unit design type			

Operational Requirements
Double distillation plant with stand not wall mounted and approx. 5 – 10 litres/ hour output.
Instant distilled water flow should be there
Easy to operate, durable, safe for routine use.

Technical Specifications
Quartz distiller, Demountable boiler
Panel box and stand to accommodate regulator and electrical supply, clamps etc
Quality of distillate – pyrogen free, PH- 6.9- 7.0.High purity, low conductivity.
Distilled water should be heavy metal, salts, pyrogon and iron free.
Specific Conductivity at 25 deg C less than 0.4 x 10-6S/cm
Glass material (or chemical inert material)
Equipment should be thermal shock proof.

Gas vent should be there to remove volatile impurities leaving the condensate free from gaseous impurities
Automatic low water cut off.
Tubing should be made up of good quality rubber (heat resistant).
Wiring of the equipment should be enclosed in Case.
It should have deconcentrator a bleeder device on the evaporation that constantly removes a part of the boiling water from it so that the cumulative concentration of non volatile impurities in the water is prevented

System Configuration Accessories, spares and consumables
System as specified-
All consumables required for installation and standardization of system to be given free of cost.

Environmental factors

The unit shall be capable of being stored continuously in ambient temperature of 0 -50deg C and relative humidity of 15-90%
The unit shall be capable of operating continuously in ambient temperature of 10 -40deg C and relative humidity of 15-90%

Power Supply
Power input to be 220-240VAC, 50Hz fitted with UK plug

Item Code No.	Department	Section	Item Description
LOT 6-32	Laboratory	Routine	Water Distillation Unit

Voltage corrector/stabilizer of appropriate ratings meeting ISI Specifications. (Input 160-260 V and output 220-240 V and 50 Hz)
Suitable UPS with maintenance free batteries for minimum one-hour back-up should be supplied with the system.

Standards, Safety and Training

Should be FDA and/or CE approved product
Three years warranty, 5 yrs comprehensive AMC should be available with service centers in close proximity.
Should be compliant to ISO 13485: Quality systems - Medical devices - Particular requirements for the application of ISO 9001
applicable to manufacturers and service providers that perform their own design activities.

Documentation

User/Technical/Maintenance manuals to be supplied in English, both soft and hard copies
Certificate of calibration and inspection.
List of important spare parts and accessories with their part number and costing.

LOT 6-33: Lab Deionizer

Item Code No.	Department	Section	Item Description
Lot 6-33	Diagonistic Laboratories	Routine Laboratories	Deionizer

1. General Description		
nizer for production of pure water for laboratory use. Microprocessor based, compact design water purification system consisting of pre-water treatment, Reverse osmosis, Micro filters and UV treatment.		
2. Composition		
2.1.	Main unit	
3. Performance Specifications		
3.1.	Main Unit	
3.1.1.	The unit should be a model or type on current production	
3.1.2.	acity	Minimum 8 litres per hour
3.1.3.	Pre treatment	Provided, filter type, replaceable
3.1.4.	Reverse Osmosis	Provided, Replaceable Membrane type with pump
3.1.5.	Micro filter	Provided, Replaceable type
3.1.6.	UV treatment	Provided, with replaceable lamps
3.1.7.	Pure water quality	
3.1.8.	Conductivity	Maximum 5µs/cm
3.1.9.	Ionic Rejection	Minimum 95%
3.1.10.	Bacterial and particles rejection	Minimum 99%
3.1.11.	Display	LCD display of conductivity and resistivity
3.2.	Safety devices	Audi and Visual Alarm on water quality, water level, system failure
4.	Physical characteristics	
4.1.	Main unit	
4.2.	Dimensions	Floor mounted top model
5.	Operating environment	
5.1.	Power Requirements	240V, A/c 50 Hz, Single phase, 3 Pin Plug, 3m long cord BS type with PE
5.2.	Ambient temperature	10° C to 40° C
5.3.	Relative humidity	20% to 90%

Item Code No.	Department	Section	Item Description
Lot 6-33	Diagonistic Laboratories	Routine Laboratories	Deionizer
6.	Quality standards		
6.1.	Manufacturing standards	IEC 60601-1, ISO 9001, ISO3696, ISO 13485	
6.2.	Conformity to standards	CE marked and FDA approved	
7.	Local back up service		
7.1.	Available	Should be available locally	
7.2.	Capacity to service equipment	Agent shall have adequate facilities, spare parts, consumables/filters and qualified and skilled technical staff	
8.	Delivery point		
8.1.	See Schedule	For inspection and testing	
8.2.	Nil		
9.	Pre installation requirements		
	Provide for pre installation pipe works and plumbing works		
10.	Installation and testing		
	Complete installation and setup of the machine as per manufacturer's instructions		
11.	Training		
11.1.	User Training	On site user training on operation and daily up keep	
11.2.	Maintenance training	Onsite maintenance training on preventive maintenance	
12.	Technical documentations		
12.1.	User manuals	2 Sets	
12.2.	Service Manual	1 Set	
12.3.	Drawings	Nil	
13.	Commissioning		
13.1.	Testing and commissioning of the machine to the satisfaction of the user.		
14.	Warranty		
14.1.	Equipment	Minimum of one year after commissioning on all parts.	
14.2.	Equipment System	Nil	

LOT 6-34: Slide Scanner

Item Code No.	Department	Section	Item Description
LOT 6-34	Diagnostic Laboratories	Routine Laboratory	Slide Scanner

1. General Description

2. Composition

2.1.	Main unit				

3. General Specification
Fully automated high performance whole side walk away scanner for histopathology glass slides.

4. Slide Capacity
Sample throughout with loading capacity of minimum 350 or more glass slides.

5. **Slide Dimension**
Should handle glass slides having dimensions of 25x75 mm with a thickness of0.9-1.39 mm including the coverslip.

6. Slide loader
Should have an inbuilt automatic slide loader.

7. Random Access
Scanner should have capability to load slides while some of the sliders are being scanned without interrupting the ongoing scanning run-Random Access.

8. Slide throughput
Should be a high speed scanner with minimum throughput of 50 slides per hourfor 15x15mm tissue sample at 20X objective.

9. Stat Access
Ability to prioritize slide scan to support Stat workflow.

10. Barcode reading
Should read 1D and 2D barcode labels

11. Z-stacking
Should allow scanning of multiple planes.

12. Image management
Image management software should facilitate image acquisition, annotations, FOV capture, cell counts, customized reporting and synchronized viewing.

13. Archival and Retrieval
Should provide with a strong database support for image acquisition, archival and retrieval and slide sharing for Tele-pathology.

Item Code No.	Department	Section	Item Description
LOT 6-34	Diagnostic Laboratories	Routine Laboratory	Slide Scanner

14. **Light Source**
LED light source should be provided with due consideration to its longevity, less power consumption with preference to "automatic switch on" while scanning.

15. **Digital Slide Storage Format**
Slide storage format should be BIF, TIFF or JPEG 2000.

16. **Footprint**
Should be compact with minimal additional parts so as to reduce the occurrence of breakdowns of different units.

17. **Case Management**
Should allow complete case management right from patient history acquisition to customized reporting of the case.

18. **Image Analysis Algorithm**
- Should have tune able algorithms for multiple parameters
- Should have US FDA approved Image Analysis algorithms for HER2 (4B5), PR (1E2), ER (SP1), p53 (DO-7) and Ki-67 (30-9).

19. **Training and Service Support**
Well trained service and support team should be provided. Company should be well established and have a track record of expertise in the field.

20. **User Authorization**
Password protected, role based security with limited access in accordance with the user hierarchy.

21. **Remote case management**
Image management (anytime, anywhere thin client image viewing) for case accessioning through reporting.

22. **Software license**
Updated as and when new additions come without any recurrent cost.

LOT 7: PHARMACY

LOT 7-1: Pharmaceutical Refrigerators

Item Code No.	Department	Section	Item Description
LOT 7-1	Pharmacy	Pharmacy	Pharmaceutical refrigerators

1. General Description

Pharmaceutical refrigerator with Freezer

2. Composition

2.1.	Main unit				

3. Technical Specifications

3.1. Should be ISO 9001, 13485 & 14001 certified product
3.2. Pharmaceutical Refrigerator with built in -20oC Deep Freezer
3.3. One unit with dual temperature zone
3.4. Refrigerator capacity should be >300L with temp. range from +2°C to +14°C
3.5. Freezer capacity should be >75L with temp. range from -20°C to -30°C
3.6. Should have overall dimensions approximate 75cmW x 55cmD x 175 cmH
3.7. Exterior material: Galvanized steel with baked on finish
3.8. Interior material for Refrigerator: Stainless steel and Interior material for Freezer: Colored aluminum plate
3.9. Accurate temperature control by Microprocessor control system
3.10. Fan-forced air circulation system for fast recovery of temperature and better uniformity
3.11. Unique cycle defrost system to prevent temperature rising by shorter defrost cycles
3.12. Four-door design that reduces air loss during door opening
3.13. Triple-pane windows with heat reflection film to reduce condensation
3.14. It should have three sections of refrigerator and one section of freezer
3.15. Should have Quiet operation
3.16. Environment-friendly refrigerant: HFC
3.17. Shelves for Refrigerator - Large: 2 No., Small: 3 No., Shelves for Freezer – 1 No.
3.18. Rigid Polyurethane foamed in place Insulation
3.19. Should have 4 casters with 2 adjustable leveling feet
3.20. Should have safety features as Audio visual High/low temperature alarm and Door ajar alarm
3.21. Should have Door key lock for safety
3.22. Should have Memory back-up during power failure and Self diagnostics function
3.23. Should have Remote alarm contact for alarm acknowledgement

LOT 7-2: Balance, Precision

Item Code No.	Department	Section	Item Description
LOT 7-2	Pharmacy	Pharmacy	Balance, Precision

1. General Description		
2. Composition		
2.1. Main unit		
3.		
3.1.	Maximum Capacity (or) Range of the balance	80-90 / 220 gm
3.2.	Readability	0.01 mg (0.00001 gm) / 0.1 mg (0.0001 gm)
3.3.	Tarring Range	0 – 220 gm
3.4.	Display	Backlit graphics display/LCD with touch screen operation.
3.5.	Repeatability (Standard deviation)	0.03 mg (small range)/ 0.10 mg (large range)
3.6.	Linearity	±0.20 mg / ±0.10 mg
3.7.	Eccentric Load	0.30 mg
3.8.	Calibration	Adjustment with internal weights, fully automatic calibration technology with temperature controlled.
3.9.	Data Memory Function	For keeping Weighing data & Calibration history data.
3.10.	Sensitivity drift	±2ppm/°C (when automatic self calibration is not used)
3.11.	Stabilization (typical and fast)	Approx. 4.0 sec (0.1mg) / 15 sec (0.01mg)
3.12.	Size of weighing pan	~ 80 - 90 mm
3.13.	Shielding	Glass draft shield with flexible configuration Protective cover for the terminal, replaceable Feed through for weighing below the balance
3.14.	Power Supply	To be operable with 230 V AC, 50 Hz power supply and on battery
3.15.	Accessories	Power supply cable with all accessories for operation.
3.16.	Operating & Service Manual	2 Sets (of Hard copies) with Calibration certificate of the balance. Soft copy of Instrument Operating manual to be sent during the time of installation.

Item Code No.	Department	Section	Item Description
LOT 7-2	Pharmacy	Pharmacy	Balance, Precision

3.17.	Interface	Standard bi-directional RS-232 interface.
3.18.	Dust Cover	One

General terms and remarks
The above equipment has to be supplied (along with all its accessories), installed and commissioned (functional and performance testing) at MAPS chemistry control section by the supplier. Calibration certificate is to be supplied.
Standard accessories shall be supplied with the main Instruments. A Dust cover to be provided along the instrument.
Supplier must support maintenance of the instrument after warranty period of the instrument expired.
The system should be installed and demonstrated for trouble free operation at MAPS laboratory by the supplier at their own cost.
The equipment should be accompanied with two sets of OPERATION & MAINTANANCE MANUAL with full circuit DIAGRAM.

LOT 7-3: Balance, Heavy duty

Item Code No.	Department	Section	Item Description
LOT 7-3	Pharmacy	Pharmacy	Balance, Heavy duty

1. General Description		
2. Composition		
2.1.	Main unit	
3.		
3.1.	Maximum Capacity (or) Range of the balance	80-90 / 220 gm
3.2.	Readability	0.01 mg (0.00001 gm) / 0.1 mg (0.0001 gm)
3.3.	Tarring Range	0 – 220 gm
3.4.	Display	Backlit graphics display/LCD with touch screen operation.
3.5.	Repeatability (Standard deviation)	0.03 mg (small range)/ 0.10 mg (large range)
3.6.	Linearity	±0.20 mg / ±0.10 mg
3.7.	Eccentric Load	0.30 mg
3.8.	Calibration	Adjustment with internal weights, fully automatic calibration technology with temperature controlled.
3.9.	Data Memory Function	For keeping Weighing data & Calibration history data.
3.10.	Sensitivity drift	±2ppm/°C (when automatic self calibration is not used)
3.11.	Stabilization (typical and fast)	Approx. 4.0 sec (0.1mg) / 15 sec (0.01mg)
3.12.	Size of weighing pan	~ 80 - 90 mm
3.13.	Shielding	Glass draft shield with flexible configuration Protective cover for the terminal, replaceable Feed through for weighing below the balance
3.14.	Power Supply	To be operable with 230 V AC, 50 Hz power supply and on battery
3.15.	Accessories	Power supply cable with all accessories for operation.
3.16.	Operating & Service Manual	2 Sets (of Hard copies) with Calibration certificate of the balance. Soft copy of Instrument Operating manual to be sent during the time of installation.
3.17.	Interface	Standard bi-directional RS-232 interface.

Item Code No.	Department	Section	Item Description
LOT 7-3	Pharmacy	Pharmacy	Balance, Heavy duty

3.18.	Dust Cover	One

General terms and remarks

- The above equipment has to be supplied (along with its all accessories), installed and commissioned (functional and performance testing) at MAPS chemistry control section by the supplier. Calibration certificate is to be supplied.
- Standard accessories shall be supplied with the main Instruments. A Dust cover to be provided along the instrument.
- Supplier must support maintenance of the instrument after warranty period of the instrument expired.
- The system should be installed and demonstrated for trouble free operation at MAPS laboratory by the supplier at their own cost.
- The equipment should be accompanied with two sets of OPERATION & MAINTANANCE MANUAL with full circuit DIAGRAM.

LOT 7-4: Tablet Counter

Item Code No.	Department	Section	Item Description
LOT 7-4	Pharmacy	Pharmacy	Tablet Counter

1. General Description

TABLET COUNTING MACHINE

2. Composition

2.1.	Main unit				

3. Detailed Specifications

3.1. Tablet Counting Machine that must provide 3 counting options that is Single, Multiple and Inventory.
3.2. The counting speed of up to 500 tablets per minute, providing an accuracy of 99.9% and must come with large LCD Colour display which must be easy to read.
3.3. Its construction must be from FDA approved plastic and the machine must have counting sensor
3.4. Dimensions: Approximate (H) 5½ inch *(W) 10½ inch* (D) 12½ inch.
3.5. The machine must be portable weighs about 3-4Kg with voltage of about 110 -220 volt.
3.6. Must come with at least two years warranty.
3.7. Both user and technical training must be provided to staff on the Machine upon installation and commissioning

LOT 7-5: DDA Cupboards

Item Code No.	Department	Section	Item Description
LOT 7-5	Pharmacy	Pharmacy	DDA cupboards
1. General Description			
Wall mounted Lockable cupboard with audio/visual alarm for storage of Psychotropics and controlled substances in the drug store			
2. Composition			
2.1. Main unit			
3. Detailed specifications			
Size: L(cm)- 80-120 W(cm)-30-50 H(cm)-120-140 Steel sheet constructed Twin lockable doors Fixed sheet metal shelves Inner lockable compartment for storage of poison Audio buzzer (12W DC) activated when inner Compartment not closed Visual red pilot lamp (12W DC) activated when doors not closed Finishing: Epoxy powder coated Internal cabinet size: L(cm)- 40-60 W(cm)- 30-50 H(cm)- 80-100 Transformer : AC/DC 230V-250V/ 12W DC			

LOT 10-6 DDA cupboards- satelite pharmacy

Item Code No.	Department	Section	Item Description
LOT 10-6	Pharmacy	Pharmacy	DDA cupboards
1. General Description			
2. Composition			
2.1. Main unit			
3. Detailed specifications			
Size: L(cm)- 60-80 W(cm)-30-50 H(cm)-90-120 Steel sheet constructed Fixed sheet metal shelves Security level 1 Compliant.			

Item Code No.	Department	Section	Item Description
LOT 10-6	Pharmacy	Pharmacy	DDA cupboards
Anti-pick levers and deadlock mechanism. Warning light and buzzer alarm. 3 keys per lock 3 shelves and 2 door trays. Lockable internal DDA cabinet. Epoxy coated. Internal cabinet size: L(cm)- 30-40 W(cm)- 30-50 H(cm)- 40-60			

LOT 7-6: Magnetic Stirrer with Hot Plate

Item Code No.	Department	Section	Item Description
LOT 7-6	Pharmacy	Pharmacy	Magnetic Stirrer with Hot Plate

1. General Description					
2. Composition					
2.1.	Main unit				
3.					
S/No	Technical Description		Qty	Unit	
Maximum stirring speed – 100-1500 rpm with stepless speed control and good speed stability					
Maximum stirring quantity (Liters)- 5liters					
Heating capacity – 500W- 1000W					
Hotplate size – 150- 300 mm diameter					
Supply – 220V-250 V, 50Hz, A.C					
Temperature range- up to 340oC					
Speed/ Temperature display- LCD Speed display resolution(rpm)- 1					
Top plate material – stainless steel chemically resistant to acid and alkali					
Stirring paddle (PTFE coated) length- 25-50mm Stirring Unit – should be enclosed so that corrosive fumes do not enter it					
Controls for both hotplate and stirrer should be provided with suitable indicators					
Necessary electrical cables should be provided					
Warranty – 1 year					

LOT 7-7: Laminar Flow System

Item Code No.	Department	Section	Item Description
LOT 7-7	Pharmacy	Pharmacy	Laminar Flow System
1. General Description			
Biosafety cabinet, mobile on four antistatic castors. Class II, A, microprocessor controlled with digital display, UV light, and laminar air flow			
2. Composition			
2.1.	Main unit		
3. Performance Specifications			
3.1.	Main Unit		
3.1.1.	Application	Capable of providing protection for personnel, environment and product, Class II, Type A	
3.1.2.	Construction	Front open type, with laminar flow, ventilated cabinet and exhaust fan	
3.1.3.	Sterilization	UV light	
3.1.4.	Exhaust	Exhaust fan, low noise operation	
3.1.5.	Ventilation	Mass air flow; recirculation and exhaust; constant velocity	
3.1.6.	Filtration	HEPA filter, replaceable	
3.1.7.	Display	LCD display of Air flow, UV light indicator,	
3.1.8.	Safety class	Class II, Type A	
4.	Physical characteristics		
4.1.	Main unit	About 1.2 meters (4ft)	
5.	Operating environment		
5.1.	Power Requirements	240V, A/c 50 Hz, Single phase, with PE	
	Ambient temperature	10^{o} C to 40^{o} C	
	Relative humidity	20% to 90%	
6.	Quality standards		
6.1.	Manufacturing standards	ISO 13485, ISO 9001, ISO 14001	
6.2.	Product conformity standards	NSF/ANSI 49	

Item Code No.	Department	Section	Item Description		
LOT 7-7	Pharmacy	Pharmacy	Laminar Flow System		
	Conformity to standards	CE and FDA marked			
7.	Local back up service				
7.1.	Available	Should be available locally			
7.2.	Capacity to service equipment	Agent shall have adequate facilities, spare parts, and qualified and skilled technical staff			
8.	Delivery point				
8.1.	See Schedule	For inspection, installation, testing and commissioning			
	Nil				
9.	Installation and testing				
	Complete installation and setup of the machine as per manufacturer's instructions				
10.	Training				
10.1.	User Training	On site user training on operation and daily upkeep			
10.2.	Maintenance training	Onsite maintenance training on preventive maintenance			
11.	Technical documentations				
11.1.	User manuals	2 Sets			
11.2.	Service Manual	1 Set			
12.	Commissioning				
12.1.	Testing and commissioning of the machine to the satisfaction of the user.				
13.	Accessories				
13.1.	Automatic Voltage Regulator (AVR)				

LOT 7-8: Electronic Weighing Scale

Item Code No.	Department	Section	Item Description
LOT 7-8	Pharmacy	Pharmacy	Electronic weighing scale

1. General Description						
2. Composition						
2.1.	Main unit					
3.						

3.1.	Maximum Capacity (or) Range of the balance	80-90 / 220 gm
3.2.	Readability	0.01 mg (0.00001 gm) / 0.1 mg (0.0001 gm)
3.3.	Tarring Range	0 – 220 gm
3.4.	Display	Backlit graphics display/LCD with touch screen operation.
3.5.	Repeatability (Standard deviation)	0.03 mg (small range)/ 0.10 mg (large range)
3.6.	Linearity	±0.20 mg / ±0.10 mg
3.7.	Eccentric Load	0.30 mg
3.8.	Calibration	Adjustment with internal weights, fully automatic calibration technology with temperature controlled.
3.9.	Data Memory Function	For keeping Weighing data & Calibration history data.
3.10.	Sensitivity drift	±2ppm/°C (when automatic self calibration is not used)
3.11.	Stabilization (typical and fast)	Approx. 4.0 sec (0.1mg) / 15 sec (0.01mg)
3.12.	Size of weighing pan	~ 80 - 90 mm
3.13.	Shielding	Glass draft shield with flexible configuration Protective cover for the terminal, replaceable Feed through for weighing below the balance
3.14.	Power Supply	To be operable with 230 V AC, 50 Hz power supply and on battery
3.15.	Accessories	Power supply cable with all accessories for operation.
3.16.	Operating & Service Manual	2 Sets (of Hard copies) with Calibration certificate of the balance. Soft copy of Instrument Operating manual to be sent during the time of installation.
3.17.	Interface	Standard bi-directional RS-232 interface.

Item Code No.	Department	Section	Item Description
LOT 7-8	Pharmacy	Pharmacy	Electronic weighing scale

3.18.	Dust Cover	One

General terms and remarks

- The above equipment has to be supplied (along with its all accessories), installed and commissioned (functional and performance testing) at MAPS chemistry control section by the supplier. Calibration certificate is to be supplied.
- Standard accessories shall be supplied with the main Instruments. A Dust cover to be provided along the instrument.
- Supplier must support maintenance of the instrument after warranty period of the instrument expired.
- The system should be installed and demonstrated for trouble free operation at MAPS laboratory by the supplier at their own cost.
- The equipment should be accompanied with two sets of OPERATION & MAINTANANCE MANUAL with full circuit DIAGRAM.

LOT 7-9: Pestle & Mortar

Item Code No.	Department	Section	Item Description
LOT 7-9	Pharmacy	Pharmacy	Pestle & Motor

1. General Description

2. Composition

2.1.	Main unit				

3.

S/No	Technical Description	Qty	Unit
3.1.	Grey Agate mortar and pestle, Outer Dia (O.D) 3.5"(inch),Inner Dia (I.D) 3.0"(Inch), Depth 0.8" Inch (21 mm)	1	Sets
	Grey Agate mortar and pestle, Outer Dia (O.D) 4.5"(inch), Inner Dia (I.D) 4.0"(Inch), Depth 1.1" Inch (27 mm)	1	Sets
3.2.	Grey Agate mortar and pestle, Outer Dia (O.D) 5.5"(inch), Inner Dia (I.D) 5.0"(Inch), Depth 1.3" Inch (34 mm)	1	Sets
3.3.	Grey Agate mortar and pestle, Outer Dia (O.D) 6.0"(inch), Inner Dia (I.D) 5.5"(Inch), Depth 1.4"Inch(36 mm)	1	Sets
3.4.	Grey Agate mortar and pestle, Outer Dia (O.D) 6.5"(inch), Inner Dia (I.D) 6.0"(Inch), Depth 1.6"Inch(40mm)	1	Set

Each set consists of one mortar and one pestle

Note:

- Tolerance in above dimensions in inch is ± 0.2 inch (± 0.5 mm) maximum.
- The mortar and pestle should be made of natural agate with highly polished grinding surfaces, excellent for preparing laboratory samples and high purity powders. The agate material is a special silicate with a main composition of SiO_2 (~ 97.3%). It should be resistant to detergent and should be resistant to abrasion. Thermal endurance should be up to 350°C (minimum). The material should have the following features;
    a. Colour: Grey,
    b. Material: Silica (SiO_2),
    c. Crystal Habit: Cryptocrystalline silica,
    d. Crystal system: Rhombohedral Microcrystalline,
    e. Cleavage: None,
    f. Fracture: Conchoidal with sharp edges,
    g. Mohs scale hardness: ≥6.5
    h. Luster: Waxy,
    i. Diaphaneity: Translucent,
    j. Density: ≥2.5 gm/cc

LOT 8: OPERATION THEATRES

LOT 8-1: Anaesthetic Machines

Item Code No.	Department	Section	Item Description		
LOT 8-1	Operations Theatre	General Surgery	**Anaesthetic machine with ventilator**		
1. General Description					
Inhalation anaesthetic machine with electronic ventilator complete with all accessories for low and high flow anaesthesia, adult, paediatric and infant application. It should include a patient monitor unit.					
2. Composition					
2.1.	Main unit	1 Unit			
	Electronic Ventilator	1 Unit			
	Patient Monitor	1 Unit			
	Accessories complete start-up kit	1 Set			
3. Performance Specifications					
3.1.	Main Unit				
3.1.1.	Anesthetic trolley with minimum 2 drawers and a table top, with yokes for Oxygen (O_2) and Nitrous Oxide (N_2O) portable cylinder and support for circle systems including hoses and absorbers and support for central pipeline gas system. Model on current production				
3.1.2.	Anesthetic trolley	With minimum of 2 drawers			
3.1.3.	Wheels	With castors, two with brakes			
3.1.4.	Gas delivery system	3 gas delivery system (O_2, N_2O and air) with both inlets for central gas pipeline system, and separate portable cylinders.			
3.1.5.	Yokes	To support portable Oxygen (O_2) and Nitrous Oxide (N_2O) cylinders, 11 liters each			
3.1.6.	Portable Oxygen (O_2) Cylinder connection	Bull nose type			
3.1.7.	Portable Nitrous Oxide (N_2O) cylinder connection	Pin Index type			
3.1.8.	Pressure regulators and gauges for O_2 and N_2O	Intergraded in the trolley			
3.1.9.	Central gas pipeline system	Standard BS connections and colour codes for O_2, N_2O, and Air,			
3.1.10.	Flow meter	Separate flow meter for O_2, Air, and N_2O			
3.1.11.	Breathing Circle System	Capable of performing Open, Semi-Open, Semi-Closed and Closed system			
3.1.12.	All patient connecting hoses	Corrugated, Transparent, autoclavable (134ºC), φ 22 mm, with ISO connectors			

Item Code No.	Department	Section	Item Description
LOT 8-1	Operations Theatre	General Surgery	**Anaesthetic machine with ventilator**
3.1.13.	CO_2 absorber	Integrated, complete with Soda lime and switch for Magill's circuit.	
3.1.14.	Accessories: To be provided as startup kits.		
3.1.15.	Adult Breathing circuit for ventilator	2 Unit	
3.1.16.	Paediatric Breathing circuit for ventilator	2 Unit	
3.1.17.	Face Mask, Adult, Sizes 1, 2, 3 transparent type	2 Sets	
3.1.18.	Face Mask, Paeds, Sizes 1, 2, 3 transparent type	2 Sets	
3.1.19.	Breathing Bag Adult (2 L)	2 Sets	
3.1.20.	Breathing Bag Paeds (1L)	2 Sets	
3.1.21.	Breathing Bag Baby (0.5L)	2 Sets	
3.1.22.	Magill's circuit complete with adult mask	2 Sets	
3.1.23.	Aynes Paed circuit	2 Sets	
3.1.24.	CO_2 absorber gas out let		
3.2.	Vaporizer	Minimum Halothane and Isoflurane	
3.2.1.	Compensation	Temperature, pressure and flow compensated	
3.2.2.	Range	About 0.2% to 4%	
3.2.3.	Accuracy	± 0.15%	
3.2.4.	Keyed filler according to ISO standards		
3.2.5.	Adjustment	Large hand wheel with Zero Lock	
3.2.6.	Ambient Temperature	15ºC to 35ºC at Normal pressure	
3.2.7.	Maintenance	Service free for a minimum period of 5 years of usage	
3.3.	Safety controls		
3.3.1.	O_2 supply failure	audible alarm with reset	
3.3.2.	Hypoxyguard	Minimum O_2 25%: Shut off supply	
3.3.3.		N_2O Shut off	
3.3.4.	O_2 Flush Gas Supply	Above 30 L/ Min 2-6 bars	
3.4.	Ventilator		

Item Code No.	Department	Section	Item Description
LOT 8-1	Operations Theatre	General Surgery	**Anaesthetic machine with ventilator**
3.4.1.	Type	Microprocessor controlled and electrical/gas driven	
3.4.2.	Application	Suitable for adult, paediatric and infant application without changing parts between patient types	
3.4.3.		Ventilation with ambient air possible	
3.4.4.	Modes	Minimal manual, spontaneous, IPPV, PCV,SIMV +PS	
3.4.5.	Ventilator Parameter		
	Tidal Volume: IPPV	20 ml- 1600ml	
	P max (PEEP + 10)	Up to 70hPa	
	PEEP	about 1 to 20mbar	
	Frequency:	about 3 to 60/min	
	Insp flow	Max 150l/min	
	Pinsp (PEEP + 5)	Up to 70kPa	
	I: E ratio	5:1 to 1:5	
	In case of failure	Switch to room air automatically	
3.5.	Display	colour display minimum 6”	
3.5.1.	Display parameters	Minute Volume	
		Tidal Volume	
		Rate	
		Pressure Peak Response, PEEP,FiO2	
		Graphic Trends	
3.6.	Patient monitor	To be mounted on the anesthetic machine	
3.6.1.	Parameters	Pulse rate	
		SpO_2	
		Temperature: 2 probes	
		Blood pressure (NIPB and IPB)	
		ECG 3 leads	
3.6.2.	Display	Colour Display minimum 10”	
		5 Parameter display	

Item Code No.	Department	Section	Item Description
LOT 8-1	Operations Theatre	General Surgery	**Anaesthetic machine with ventilator**
3.6.3.	Accessories: To be provided as startup kits.		
	SpO_2 , Adult Sensor, Reusable	2 Pieces	
	SpO_2 , Paediatric Sensor, Reusable	2 Pieces	
	SpO_2 , Infant Sensor, Reusable	2 Pieces	
	Temperature	2 Probes	
	BP cuff, Large adult, reusable	2 Piece	
	BP cuff, adult, reusable	2 Piece	
	BP cuff, Small adult, reusable	2 Piece	
	BP cuff, Paed, reusable	2 Piece	
	BP cuff, Thigh, reusable	2 Piece	
	ECG 3 Leads Soda lime	2 Piece 3 containers of 5liter each	
4.	Physical characteristics		
4.1.	Main unit	mobile on casters	
	Outer dimensions	Compact design	
5.	Operating environment		
5.1.	Power Requirements	240V, A/c 50 Hz, Single phase, 3 Pin Plug, 3m long cord with PE	
	Ambient temperature	10^{o} C to 40^{o} C	
	Relative humidity	20% to 90%	
6.	Backup Power supply		
6.1.	Internal battery	Internal battery	
7.	Quality standards		
7.1.	Manufacturing standards	ISO 13485, ISO 9001	
	Product conformity standards	EU-93/42/EEC, IEC 60601-1, EN 740 CE and FDA approved	
8.	Delivery point		
8.1.	See Schedule of equipment of equipment delivery		
9.	Pre installation requirements		

Item Code No.	Department	Section	Item Description		
LOT 8-1	Operations Theatre	General Surgery	**Anaesthetic machine with ventilator**		
	Refer to schedule 6 and special condition in section 4l				
10.	Installation and testing				
	Complete installation and set-up of the machine at the hospital as per manufacturer's instructions				
11.	Training				
11.1.	User Training	On site user training on operation and daily up keep			
11.2.	Maintenance training	Onsite maintenance training on preventive maintenance			
12.	Technical documentations				
12.1.	User manuals	2 printed Sets and electronic copy			
12.2.	Service Manual	1 Set			
13.	Commissioning				
13.1.	Testing and commissioning of the machine to the satisfaction of the user.				

LOT 8-2: Operation Tables (with Kidney Bridge)

Item Code No.	Department	Section	Item Description
LOT 8-2	Main Theatre	Operating theatres	**Operating Theatre Table**
1. General Description			
Operating table suitable for use in theatre for major operations. It should be capable of performing lateral tilt, up-down movement, trendelenburg and reverse trendelenburg position, back section refraction and kidney bridge. The movement should be electrohydraulic with manual option control system			
2. Composition			
2.1.	Main unit		
3. Physical Specifications			
3.1.	Main Unit		
3.1.1.	Table top	Approx. Length 2000 X width 600 mm	
3.1.2.		X-ray Permeable	
3.2.	Head rest	Detachable	
3.3.	Leg rests	Detachable/separable	
3.4.	Material of main unit	Made of scratch resistant, hard wearing and easy to clean material	
3.5.	Height of table top	Adjustable, mechanical operated, 600mm to 1100mm	
3.6.	Table top movements		
3.6.1.	Trendelenburg	Forward: 25^{o}, Reverse: 25^{o}	
3.6.2.	Lateral – tilt	~20^{o} both to the left and right	
3.6.3.	Back- section refraction	90^{o}	
3.6.4.	Table top turn	180^{o}	
3.6.5.	Main unit movements	Mobile with antistatic castors with braking mechanism	
3.7.	Maximum load weight	250 Kg	
4.	Accessories	To be provided as startup kits.	
4.1.	Mattress	High density type easy to clean, 3” thickness with 4 sections, breathable, waterproof that does not stick to the table	
4.2.	Arm board with mattress	1 piece	
4.3.	Shoulder support with pads	2 pieces	

Item Code No.	Department	Section	Item Description
LOT 8-2	Main Theatre	Operating theatres	**Operating Theatre Table**
4.4.	Foot board	1 set	
4.5.	Knee crutches	2 pieces	
4.6.	Screen frame	1 piece	
4.7.	Body support with pads	2 pieces	
5.	I. V. pole, adjustable height Orthopedic attachment	1piece 1 piece	
5.1.	Manufacturing standards	ISO 13485, ISO 9001	
5.2.	Product conformity standards	EU-93/42/EEC, CE and FDA approved	
6.	Delivery point		
6.1.	See hospital schedule	For Delivery, inspection and commissioning	

LOT 8-3: Operation theatre LED lights with inbuilt IP Camera & voice capability

Item Code No.	Department	Section	Item Description
LOT 8-3	Operations Theatre	General Surgery	**Operating Theatre light**, Ceiling Type LED Technology

1. General Description					
Surgical light (Operating lamp) ceiling mounting type. The surgical light should consist of two lamp head, main and auxiliary (dual type). It should be constructed from light weight material preferable aluminum, and easily to disinfect. It should have emergency backup power supply to last for at least 2 hours. The Main Light should be fitted with a digital camera for ICT integration.					
2. Composition					
2.1.	Main unit and auxiliary lamp head				
3. Performance Specifications					

3.1.	Main and auxiliary lamp head	
3.1.1.	Diameter	main and auxiliary unit
3.1.2.	Rotation	360º along the central axis
3.1.3.	Maximum light intensity	Above 150,000 lux at 1 meter each
3.1.4.	Focus	Adjustable
3.1.5.	Field	Constant to a depth of at least 500mm
3.1.6.	Field	shadow less
3.1.7.	Light colour Temperature	3600 to 4800 K Colour rendering index >95% Deeming range 30-100%
3.1.8.	Lighting Control	Electronic system with touch button light intensity
3.1.9.		Control mounted at a convenient place preferable on the head lamp.
3.1.10.	Lighting Bulb	Low voltage LEDs service life >40,000 hours
		Light field diameter of 300mm at 1 m
3.1.11.	Mounting ceiling Height	Minimum 2.5m above floor
3.2.	Accessories	
3.2.1.	All mounting accessories	Ceiling anchor plates,

Item Code No.	Department	Section	Item Description
LOT 8-3	Operations Theatre	General Surgery	**Operating Theatre light**, Ceiling Type LED Technology
3.2.2.		Bolts, nuts and other necessary	
4.	Operating environment		
4.1.	Power Requirements	240V, A/c 50 Hz, Single phase, with PE	
4.2.	Ambient temperature	10° C to 40° C	
4.3.	Relative humidity	20% to 90%	
5.	Emergency Backup power	To least for at least 2 hour	
5.1.		With sealed batteries	
		Automatic change over and charger unit	
6.	Quality standards		
6.1.	Manufacturing standards	ISO 13485, ISO 9001	
6.2.	Product conformity standards	EU-93/42/EEC, IEC 60601-1 FDA and CE approved	
7.	Local back up service		
7.1.	Available	Should be available locally	
7.2.	Capacity to service equipment	Agent shall have adequate facilities, spare parts, and qualified and skilled technical staff	
8.	Pre installation requirements		
	Prepare roof for installation		
9.	Installation and testing		
	Complete installation and set-up of the machine at per manufacturer's instructions		
10.	Training		
10.1.	User Training	On site user training on operation and daily up keep	
10.2.	Maintenance training	Onsite maintenance training on preventive maintenance	
11.	Technical documentations		
11.1.	User manuals	2 Sets	

Item Code No.	Department	Section	Item Description		
LOT 8-3	Operations Theatre	General Surgery	**Operating Theatre light**, Ceiling Type LED Technology		
11.2.	Service Manual	1 Set			
11.3.	Drawings				
12.	Commissioning				
12.1.	Testing and commissioning of the machine to the satisfaction of the user.				

LOT 8-4: Electrosurgical Units (with bipolar resection capability)

Item Code No.	Department	Section	Item Description
LOT 8-4	Operations Theatre	General Surgery	**Electrosurgical Unit**
1. General Description			
High frequency electro surgical (diathermy) machine suitable for general surgery. The unit should be microprocessor based and capable of performing cutting, coagulation and blend functions at varying power output and complete with foot switch, electrodes and a cart (trolley).			
2. Composition			
2.1.	Main unit		
3. Performance Specifications			
3.1.	Main Unit		
3.1.1.	Output power	Nominal high frequency output of about 300W adjustable up and down with touch button keys or convenient controls. With automatic output regulation against excess impedance (TUR)	
3.1.2.	Cutting:	Monopolar, bipolar and blend functions	
		Activation by finger-switch and/or foot switch	
3.1.3.	Coagulation	Monopolar, bipolar, low forced and spray	
		Activation by finger switch and / or foot switch	
3.1.4.	Bipolar	Very low voltage	
3.1.5.	Wave form	Modulated pulse or Hemostatic or equivalent	
3.1.6.	Display	Digital Read out	
3.1.7.	Active patient electrode	Active patient electrode with standard electrode handle, with finger switch and connecting cable, reusable and autoclavable at 134^{o}C	
3.1.8.	Patient plate	Patient (in different) plate, reusable rubber With connecting cable, autoclavable at 134^{o}C	
3.1.9.	Foot Switch	Two pedal foot switch for cut and coagulation water proof, explosion proof, cable length about 5 m.	
3.1.10.	Safety/ alarm devices		
	Dosage rate control	Audible and visual alarm	
	Leakage current	Audible and visual alarm	
	Patient plate split	Audible and visual alarm	
	Short circuit	Audible and visual alarm	
4.	Physical characteristics		

Item Code No.	Department	Section	Item Description
LOT 8-4	Operations Theatre	General Surgery	**Electrosurgical Unit**
4.1.	Main unit	Mounted on mobile cart	
5.	Operating environment		
5.1.	Power Requirements	240V, A/C 50 Hz, Single phase, 3 Pin Plug, 3m long cord with PE	
5.2.	Ambient temperature	10° C to 40° C	
5.3.	Relative humidity	20% to 90%	
6.	Accessories: To be provided as startup kits.		
6.1.	Standard electrode handle, with finger switch and connecting cable, reusable	3 Pcs	
6.2.	Monopolar standard surgical electrode set consisting of stainless steel container or plastic container complete with standard electrode set (blades, lancet, knives, needles, wire loops, balls and plates).	2 Sets	
6.3.	Bipolar forceps with connecting cable, reusable	3 Pcs	
6.4.	Standard assorted sizes of bipolar forceps, reusable	1 Set	
6.5.	Patient (in different) plate, reusable rubber With connecting cable	2 Pcs	
6.6.	Foot Switch-Monopolar	1 Pc	
6.7.	Foot Switch-Bipolar		
6.8.	Bipolar Cable	2 Pcs	
6.9.	Active Patient Electrode	2 Set	
7.	Quality standards		

Item Code No.	Department	Section	Item Description		
LOT 8-4	Operations Theatre	General Surgery	**Electrosurgical Unit**		
7.1.	Manufacturing standards	ISO 13485, ISO9001			
7.2.	Product conformity standards	EU-93/42/EEC, IEC 60601-1, EN 740 CE and FDA approved			
8.	Delivery point				
8.1.	See attached schedule on delivery				
9.	Installation and testing				
9.1.	Complete installation and set-up of the machine at the delivery sites as per the schedule				
10.	Training				
10.1.	User Training	On site user training on operation and daily up keep			
10.2.	Maintenance training	Onsite maintenance training on preventive maintenance			
11.	Technical documentations				
11.1.	User manuals	2 Sets + Soft			
11.2.	Service Manual	2 Sets + soft			
12.	Commissioning				
12.1.	Testing and commissioning of the machine as per the contract.				

LOT 8-5: Digital X-ray viewer

Item Code No.	Department	Section	Item Description
LOT 8-5	Operation Theatre	General Surgery	Digital X-Ray Viewer

7. General Description

X-RAY-VIEW BOX (LED Light)

8. Composition

8.1.	Main unit				

9. Description of the medical supply unit design type

G) Product & Manufacturer Quality Standards:

9.1. Should be FDA/ CE approved product.
9.2. Manufacturer and Supplier should have ISO 13485 certification for quality standards.

H) TECHNICAL CHARACTERISTICS

9.3. Should be ultra-thin X ray film illuminator using LED light
9.4. It should have a thickness of 30 mm
9.5. It should be suitable for viewing 14''x17' film.
9.6. Should have position to insert 8 films in 2 rows.
9.7. The LED light must have a life span of more than 50,000 hours.
9.8. It should have easy insertion & removal of the film.
9.9. It should have homogeneous illumination more than 95% and maximum intensity of over 10,000 lux.
9.10. It should have an on-off switch along with digital feather touch dimmer and a button to set the intensity
9.11. It should have fully electronic continuous brightness control, with adjustment range of approximately 90%.
9.12. It should be directly connected to power supply without any external adapters.
9.13. It should have flicker free high frequency light for reduction of eye strain.
9.14. It should have external fuses for protection against power surge.
9.15. 10 step Digital dimmer facility with step up/step down intensity of 500 lux or less.
9.16. Should have automatic film sensor
9.17. Should have facility to switch on only the section where the film needs to be viewed.

I) Power supply:

9.18. 240V, AC, 50Hz. Single phase

LOT 8-6: Electrocautery LEEP Machine

Item Code No.	Department	Section	Item Description
LOT 8-6	Operation Theatre	General Surgery	Electrocautery LEEP Machine

1. General Description

2. Composition

2.1.	Main unit				

3. Description

4. Specifications:

4.1. Should have electrosurgical generator with isolated power output and LED display located in front for precise power selection, deliver and easy to use
4.2. Should have provision of choice to CUT, BLEND and COAGULATE. Wave form to accommodate subtle differences in technique and electrode performance
4.3. Should have RF output frequency 450 kHz power cut 0-100 watt
4.4. Should have flash faceplate membrane
4.5. Should have microprocessor control for increased precession, accuracy, safety, reproducibility
4.6. Should have pneumatic foot pedal for maximum safety
4.7. Should have audible safety features including distinct tones for each operating setting
4.8. Should have automatic self-test mechanism ensuring accurate system operation
4.9. Should have high airflow efficiently capturing smoke plume with a variable speed control
4.10. Should have triple stage filtration to capture airborne particulate matter, vapour and odour with a 99.99% efficiency level
4.11. Should be virtually maintenance free
4.12. Should have replacement filters available
4.13. Following standard accessories should be provided:-
4.14. hand piece adaptor, patent return(single use), smoke evacuator package, smoke evacuator prefilter, smoke evacuator reducers, smoke evacuator disposable tubing
4.15. ball electrode, electrode of various sizes with 12 cm shaft length
4.16. Graves coated speculums-small, medium and large size, coated lateral vaginal wall retractor
4.17. Re-usable metal cartridge syringe, integrated cart
4.18. Should be CE/ FDA approved
4.19. Warranty should be of at least 2 years with 5 years CMC guaranty after the expiry of warranty period
4.20. Installation and commissioning will be the responsibility of the supplier
4.21. After sale service should be provided.

Spare parts:

4.22. Company should give undertaking regarding the availability of spare parts of the quoted model for next 10 years.

5.	**Accessories:-**		

Item Code No.	Department	Section	Item Description
LOT 8-6	Operation Theatre	General Surgery	Electrocautery LEEP Machine

	a. Monopolar Footswitch:- 02 No.		
	b. Bipolar Footswitch:- 01 No.		
	c. Reusable hand switching Pencil: - 02 Nos.		
	d. Reusable Patient Plate : - 02nos.		
	e. Bipolar Forceps: - 01No.		
	f. Forceps Cord:- 02Nos.		
	g. Universal Adaptor: - 01No.		

LOT 8-7: Thermal-Ablation Device

Item Code No.	Department	Section	Item Description
LOT 8-7	Operation Theatre	General Surgery	**Thermal-Ablation Device**

1. General Description

1.1. The system should be state of the art, top of the line model for Radio Frequency Induced Thermal Ablation Technology.

2. Composition

2.1.	Main unit				

3. Required specifications and accessories

3.1. System should include a Radiofrequency generator (Single generator system having capability of performing multiple organ system ablation) for various organ ablation with required following specifications;

- The system should be usable for ablation in liver, lung, bone, kidney, Thyroid, ENT, Gynae with single generator system having capability of performing multiple organ system ablation (Multi-functionality system)
- The system should be capable of generating power of at least 200 W and output frequency should be 400KHz
- The system should be capable of generating temperature of at least 95 deg C.
- The system should be able to support electrode of variable lengths.
- The system should be capable of ablating target volumes of up to 6 cm diameter
- The system should have needle track ablation facility.
- The system should be compatible to use with Ultrasound, DSA (Fluoroscopic) CT and open surgery.
- The system should have LCD touch screen / switch / knob for easy to use.
- The system should have facility for of display real-time power, current, impedance, temperature, and time during operation.
- Treatment algorithms in memory is desirable
- Probe cooling system is desirable to prevent carbonization.
- Pump should be provided with all necessary accessories like tubing etc. at no extra cost.
- System should have self –Test facility.

3.2. Specifications of Probes

- The probes should be disposable
- Probe Specifications: compatible probes must be able to meet the following requirements:
  - Probe Diameter of 1.0 to 1.8 mm should be available with various lengths and adjustable active tips for treating various lesions. Along with that, special Thyroid probes of diameter 1 and 1.2 mm should also be available
  - Probe Lengths up to 20 cm should be available to allow access to deeper areas. Probes should be available in different designs, to enable control of ablation volume. These should allow target volume selection from 1 cm diameter up to 6 cm diameter
  - Probe Active tip of different sizes from 5mm going up to 4 cm, in 5mm steps is desirable.

Item Code No.	Department	Section	Item Description
LOT 8-7	Operation Theatre	General Surgery	**Thermal-Ablation Device**

3.3. Safety Features

- System should have Probe Test system with ability to check integrity of probe Intra-operatively.
- System should have safety mechanism to limit excessive high temperature/power delivery.
- The system should have ability to display all alert conditions and error messages.

3.4. Accessories:

- Mobile Trolley for mounting and transporting of RF unit to be provided.
- The vendor should supply 250 probes (25 every year in the month of January for 10 years).
  - Vendor will quote the unit price of probe. Cost for 250 probes will be calculated from it.
  - Final comparison for determining the L-1 bidder shall be made taking into consideration the cost of the equipment, post warranty CAMC for 6th to 10th year and the total cost of probes (250) for entire life of the equipment i.e. for 10 years calculated from unit cost submitted.
- However, vendor will be paid yearly only for the number of probes procured that year and not for total 250 probes upfront at the time of purchase of machine.
- During price negotiation, rate contract for probes will be made based on the unit price of probes submitted in the price bid.

3.5. UPS of appropriate KV should be supplied to run the entire system for at least completion of ongoing procedure if there is any power failure.

3.6. Upgrading requirements:

- A free, comprehensive software update (compatible with the offered platform) guarantee for 10 years (after installation) of the RFA unit must be provided.

3.7. Guarantee/Warranty:

- Two years comprehensive on-site warranty of entire system (Spares and labour), without exclusion, including UPS and all other accessories. This will be followed by 5 years CMC to be quoted separately and implemented yearly post warranty.
- After the warranty period, 5 years of CAMC will start.
- Warranty & guarantee will cover all the equipment and accessories supplied by the vendor including all third party items.

3.8. Essential requirement:

i. Offered unit must be FDA and/or CE approved. Please enclose its valid certificate

ii. Supplier must ensure availability of expertise service and maintenance at site of installation.

iii. Uninterrupted availability of spare parts and repair for next ten years must be assured.

iv. Original product data sheets, complete manuals and other necessary documents should be provided. Photocopies of these documents or printouts of the email/ web pages will not be accepted.

v. When required, information other than those in the data sheets should be provided as a separate document from the principals only and should refer to the

Item Code No.	Department	Section	Item Description
LOT 8-7	Operation Theatre	General Surgery	**Thermal-Ablation Device**

specific sections being addressed. When standard vendor data sheet disagrees with the bid response (offer/ compliance statement), clarification should accompany in the form of certificate from the principals only. In absence of this, the vendor data sheet will prevail for the purpose of evaluation and decision of the technical committee shall be final and binding on the supplier.

vi. The vendor has to station one application specialist and service engineer at site for a period necessary to familiarize the medical and technical staff to understand the protocols and enable them to achieve fast and efficient service.

vii. Mention the number (with addresses, phone numbers, e mails) of installations of the quoted unit in Kenya for reference purposes.

viii. Supplier should be able to provide services in case of breakdown within 24 hrs after call registration. In case delay of more than 2 days then supplier will provide alternate RFA machine of similar functionality.

LOT 8-8: Cryotherapy Unit

Item Code No.	Department	Section	Item Description
LOT 8-8	Operation Theatre	General Surgery	**Cryotherapy Unit**

1. General Description

Technical Specifications of Cryotherapy unit with airflow technology

2. Composition

2.1.	Main unit				

3.

3.1. The equipment should be based on latest air flow technology for therapeutic purposes.
3.2. The cooled air should reach the therapeutic location via an application tube.
3.3. Air current flow should be able to regulate according to needs.
3.4. It should have intelligent air flow control system with temperature up to -60°C.
3.5. Equipment should use Room air drawn into the device filtered and cooled to the required therapy temperature.
3.6. It should have auto self-detection controlling system.
3.7. It should have continuous compressing for an immediate use (standby mode).
3.8. It should have provision of self-defrosting system for the best cooling performance.
3.9. Display should be user friendly for easy and practical operation preferably inbuilt English and/or Hindi language.
3.10. It should work on power supply of 220-250 V - 50/60 Hz.
3.11. Power consumption should be not more than 1500 VA.
3.12. It should have graded air flow of at least 1000 l/min.
3.13. It should have standby and defrost mode with automatic defrosting.
3.14. It should be supplied with hose of 150cms or more.
3.15. 5, 10, 15 mm and angled nozzles should be included.
3.16. Accessories to allow hands-free/static operation should be included in the standard offer.
3.17. All available Accessories with functionality be included in technical and price quotations that would be frozen for the entire duration of warranty/CMC.
3.18. It should be equipped for mobile operation.
3.19. CVT/UPS and other safety features should be provided for equipment and manpower working on it.
3.20. The Unit should have USA/European Certification on safety and quality assurances.

General

3.21. Equipment should conform to European CE/US FDA standards.
3.22. 2 years Warranty + 5 Years CMC, including all the software upgrades.
3.23. Undertaking to honour Warranty/CMC to be given by both, the Principal/Manufacturer and the Kenyan Vendor.

LOT 8-9: Fluid warmer

Item Code No.	Department	Section	Item Description
LOT 8-9	Operations Theatre	Recovery Area	Fluid Warmer

4. General Description

5. Composition

5.1.	Main unit				

6. Description of the medical supply unit design type

6.1. Flow Rates should be from kvo to 150ml/min
6.2. Should have temperature range of 36^0 to 42^0C
6.3. Should be easily transportable
6.4. Should able to attach to IV pole and standard electrical sockets
6.5. Should use dry heat technology
6.6. Should have audible and visual alarms for Temperature
6.7. Should have automatic cutoff for set temperature
6.8. Should be easy to use and to clean
6.9. Calibration certificate should be issued during the installation
6.10. 50 disposable adult and 50 no. of pediatric warming sets should be supplied along with each machine
6.11. Warm up time should be less than 60 seconds
6.12. Consumables should have built in filter
6.13. Should have safety certificate from a competent authority
6.14. Should be CE / FDA certified
6.15. Should meet electrical and functional safety with relevant certificates attached from recognized authorities.

LOT 8-10: Patient Trolleys

Item Code No.	Department	Section	Item Description
LOT 8-10	Operations Theatre	General Surgery	General Purpose Trolley
1. General Description			
General purpose trolley constructed from epoxy coated mild steel frame, with shelves. The Unit should be mobile on four castors , 2 lockable			
2. Composition			
2.1.	Main unit,		
3. Performance Specifications			
3.1.	Main Unit	Mobile type	
3.1.1.	Material	Epoxy coated mild steel	
	Shelves	Two stainless Steel shelves with three guard rails on each	
3.1.2.	Top	Stainless steel tray with three guard rails	
3.1.3.	Castors	Provided, heavy duty, , 2 with brakes	
3.1.4.	Push/Pull handle	Provided	
4.	Quality standards		
4.1.	Manufacturing standards	ISO 9001	
4.2.	Conformity to standards	CE approved	
5.	Delivery point		
5.1.	See Schedule	For inspection, installation and testing	
5.2.	Nil		

LOT 8-11: Refrigerators

Item Code No.	Department	Section	Item Description
LOT 8-11	Operation Theatre	Theatre Recovery and (Common Use)	Non frost Refrigerator, Food
1. General Description			
1.1. Refrigerator, food.			
2. Composition			
2.1.	Main unit		
3. Performance Specifications			
3.1.	Main Unit		
3.1.1.	Material	Insulated galvanized steel	
3.1.2.	Type	Compressor, electrical	
3.1.3.	Door	Two door, freezer and lower compartment	
3.1.4.	Total net capacity	350 litres	
3.1.5.	Temperatures range	-4ºC to + 10ºC adjustable	
3.1.6.	Ambient temperature	10 º C to 35ºC	
3.1.7.	Shelves	Provided, adjustable and extractable	
3.1.8.	Thermometer	Digital, external mounted, with temperature record history	
3.1.9.	Control	Electronic, Microprocessor based	
3.1.10.	Refrigerant	CFC free	
3.1.11.	Alarm	Provided, audible and visible	
3.1.12.	Dimensions		
3.1.13.	Power	240V, 50 Hz, a.c	
4.	Accessories		
4.1.	Nil		
5.	Quality standards		
5.1.	Manufacturing standards	ISO 9001, ISO 14001	
5.2.	Conformity to standards	CE marked.	
6.	Delivery point		
6.1.	See Schedule	For inspection and testing	

Item Code No.	Department	Section	Item Description
LOT 8-11	Operation Theatre	Theatre Recovery and (Common Use)	Non frost Refrigerator, Food
6.2.	Nil		
7.	Warranty		
7.1.	Equipment	Minimum of one year after commissioning on all parts.	
7.2.	Equipment System	Nil	
8.	Accessories		
8.1.	Automatic Voltage Regulator (AVR)		
8.1.1.	Capacity	Over VA of the main Unit	
8.1.2.	Input	Ac 240V, 50Hz, Single phase ± 15%	
8.1.3.	Output	Ac 240V, 50Hz, Single Phase ± 2.5 %	

LOT 8-12: Instrument Trolleys

Item Code No.	Department	Section	Item Description
LOT 8-12	Main Theatre	Operating theatres	**Instrument Trolley**

1. General Description

Standard Instrument trolley individually packaged and cleared marked in English with the name and characteristics of the article and number of units per carton and with Manufacturer's Name and Origin, Batch No, Date of Manufacture.

- **Submission of sample:**

Submit a brochure for evaluation

2. Composition

	Main Kit				

3.	Description of instrument	Quantity

3.1. General Description

For transporting instruments in the hospital. All stainless steel, tubular frame, robust constructed, with two stainless steel shelves and guard rail on three sides of the top shelve, with four castors, 2 lockable.

3.2. Composition

3.3. 2.1 Main unit

3. Performance Specifications

3.4.	3.1	Main Unit	
3.1.1		Material	All stainless steel
3.1.2		Top	Stainless steel with guard rails
		Shelve	1 No. Stainless steel
		Antistatic Castors	Approx. 100mm, 2 with lockable brakes
3.1.3		Dimensions	Approximately L 700 x W 460 x H 860 mm.
4.		Accessories	
4.1.	4.1	Nil	
5.		Quality standards	
5.1.	5.1	Manufacturing standards	ISO 9001, ISO 13485
5.2.	5.2	Conformity to standards	CE and FDA marked
6.		Delivery point	See Schedule

7.	Quality standards	
	Manufacturing standards	IEC 60601-1, ISO 9001, ISO 13485
	Conformity to standards	CE and FDA marked
8.	Delivery point	See schedule

LOT 8-13: Resuscitaire

Item Code No.	Department	Section	Item Description
LOT 8-13	Operation Theatre	Theatre Recovery and (Common Use)	Resuscitaire

1. General Description

Standard Resuscitaire individually packaged and cleared marked in English with the name and characteristics of the article and number of units per carton and with Manufacturer's Name and Origin, Batch No, Date of Manufacture.

- **Submission of sample:**

Submit a brochure for evaluation

2. Composition

2.1. General Description

Standard Resuscitaire individually packaged and cleared marked in English with the name and characteristics of the article and number of units per carton and with Manufacturer's Name and Origin, Batch No, Date of Manufacture.

- Submission of sample:

Submit a brochure for evaluation

3. Composition

3.1.	Main Kit		

4. Description of instrument

Description of instrument: A mobile infant warming resuscitation unit with integral bassinet having the following features:-

- Readily Mobile, Height adjustable Stand with Caster Breaks
- Multi-position, Overhead Radiant Heater and Examination Light
- Unit equipped with both overhead and base heaters under gel mattress
- Clear Heater Control Indicator. Temperature control Range 35^{o}C to 37^{o}C with Clear Skin Temperature Indicator.
- Audible and Visual Alarms for Sensor disconnect and Power failure
- Equipped with weighing scale
- Apgar Timer
- O_2 and Air pipeline connections.
- O_2 and Air Cylinder yokes
- O_2 / Air Blender
- Inbuilt auto breath system
- O_2 Flow meter 0 to 15 LPM
- Pipeline and Venturi Neonatal Suction
- Airway Pressure limiting system 0 to 50 cm H2O
- Resuscitation Storage compartment and drawers.
- Wide mattress/patient area with dropdown or removable sides and good access on three sides.
- Rails or handles to facilitate easy movement.

Item Code No.	Department	Section	Item Description
LOT 8-13	Operation Theatre	Theatre Recovery and (Common Use)	Resuscitaire
	• Free Clinical Staff training as required. • Free second-line technical training for the biomedical team. • User and technical maintenance manuals and technical support. List of frequently used/ replaceable consumables, their availability and cost.		
5.	Quality standards		
5.1.	Manufacturing standards	IEC 60601-1, ISO 9001, ISO 13485	
5.2.	Conformity to standards	CE and FDA marked	
6.	Delivery point	See schedule	

LOT 8-14: Digital C-Arm

Item Code No.	Department	Section	Item Description
LOT 8-14	Imaging	C-Arm	C- Arm X-Ray Imaging

1. General Description

Mobile C-arm Digital Imaging System on anti-static castors; easy to maneuver and capable of undertaking orthopedic and angiographic procedures

1.1. The system must be of state of the art design and enable mobile Fluoroscopy and radiography of the complete skeletal system Chest and abdominal organs.

1.2. The system must have sufficient capability to provide high quality imaging on large and small patients, with no, or minimal deterioration in image quality.

1.3. The system must have a minimum of 30" free space between the x-ray tube and the image receptor.

1.4. The C-arm depth must be a minimum 24" in depth to provide C-arm clearance around the patient and table.

1.5. The C-arm must provide a minimum of 115˚ C-arm orbital rotation, 90˚ under-scan and 25˚ over-scan capabilities.

1.6. The system must allow user to reverse the x-ray tube and Image Intensifier positions and maintain C-arm under-scan and over-scan capabilities.

1.7. The C-arm must be able to rotate 180˚ to facilitate angled projections.

1.8. The system shall have a minimum of 18" of vertical C-arm travel for height adjustment.

1.9. The C-arm must provide side-to-side movement and horizontal travel to allow for "panning" during imaging.

1.10. Shall be counter-balanced in all positions.

1.11. Shall include a laser positioning system.

1.12. Generator Requirements

1.13. The generator must be a 60 KHz or higher high frequency inverter type, microprocessor controlled.

1.14. The output power rating of the generator must be 15 kW or greater.

1.15. The system shall be capable of performing examinations on large patients.

1.16. The generator shall be capable of providing a high dose fluoroscopic exposure at a minimum of 15mA.

1.17. The generator must be capable of providing pulse fluoroscopy.

1.18. The generator must be capable of providing cine pulse mode for cardiac & vascular imaging to reduce imaging lag caused by patient motion or C-arm movement with DSA digital subtraction angiography.

1.19. The mAs range in radiography mode must be approximately 1 to 300 mAs

1.20. The generator must meet the following minimum power requirements:

- Radiographic kVp range: 40 – 120 kVp

Item Code No.	Department	Section	Item Description
LOT 8-14	Imaging	C-Arm	C- Arm X-Ray Imaging

- Radiographic mA range: 50 mA or higher
- Fluoroscopic mA range: 20mA or better
- Fluoroscopic kVp range: 40 – 120 kVp
- The Vendor must complete the following:
- Trade name of quoted generator ____
- kW ____
- KHz high frequency ____
- KVp range ____
- Fluoroscopy mA range ____
- Pulsed fluoroscopy in pulses per second ____
- Digital spot maximum mA ____
- Pulsed fluoroscopy maximum mA at what PPS ____

1.21. X-Ray Tube

1.22. The X-Ray tube must be a rotating anode X-Ray tube.

1.23. The focal spot size shall be 0.6 mm to 0.8 mm dual focal spots for fluoroscopy and 1.2mm to 1.5mm for radiography.

- The Vendor must complete the following:
- Anode heat capacity ____
- Anode cooling capacity ____
- Cooling rate ____
- Housing heat capacity ____

1.24. The system should have a warning for the user before and when the anode reaches its maximum heat storage capacity

1.25. The anode temperature should automatically monitored for its protection?

1.26. State the system dose management capabilities.

1.27. Imaging System

1.28. The system shall have a 12” tri-mode image intensifier.

1.29. State type of video capture device.

1.30. Monitors must be at least 16” dual monitors with 1 K2 resolution. Flat panel LCD type antiglare

1.31. The system must provide an ambient room light sensor to automatically adjust the monitor brightness for optimum image display (Automatic Brightness Control).

1.32. Digital Image Processing

1.33. Shall have automatic brightness control.

1.34. Shall have noise filter.

1.35. Shall have motion artifact ad noise reduction.

1.36. Shall have edge enhancements.

Item Code No.	Department	Section	Item Description
LOT 8-14	Imaging	C-Arm	C- Arm X-Ray Imaging

1.37. Shall have maximum image storage.

1.38. Shall have last image hold.

1.39. Shall have patient & image information annotation.

1.40. Shall have dose summary.

1.41. System Functions and Image Management

1.42. The system must provide a simple method to input patient information.

1.43. The system shall be equipped with a backlit X-ray control panel that allows for operation of the system in dim light situations.

1.44. The system shall allow for the change of image orientation on the display screen during exposure or using the last image hold. Functions should include: image rotation, left to right and top to bottom image reversals.

1.45. The system shall provide integration to a laser camera and shall include any & all required software/hardware. Please provide additional options for hard copy printing.

1.46. The system must provide a DICOM 3.0 interface capability that can be connected to the hospital's network to facilitate the transfer of images for archiving and print purposes.

1.47. Networking

1.48. The system must be PACS / DICOM 3.0 & HL-7 compatible / compliant.

1.49. The system must support the following DICOM 3.0 interfaces:

- DICOM print/store
- DICOM Modality Work list Management for HIS/RIS
- DICOM send/receive
- DICOM query/retrieve

2.	Technical documentations				
2.1.	User manuals	2 Sets			
2.2.	Service Manual	1 Set			
2.3.	Drawings	Nil			
3.	Commissioning				
3.1.	Testing and commissioning of the machine including radiation and calibration testing to the satisfaction of the user.				
4.	Warranty				
4.1.	Equipment	Minimum of one year after commissioning on all parts.			

Item Code No.	Department	Section	Item Description
LOT 8-14	Imaging	C-Arm	C- Arm X-Ray Imaging
4.2.	Equipment System	Nil	
5.	Maintenance contract		
5.1.	Capacity to provide maintenance and repair service		Vendor/manufacturer shall have adequate facilities, spare parts, qualified and skilled technical staff to offer comprehensive maintenance contract for at least 10 years
5.2.	Comprehensive preventive and repair service		Provision for a comprehensive preventive and repair maintenance service contract including parts and material for a period of 10 years from commissioning date (see attached annex for details)

LOT 8-15: Syringe Pumps

Item No.	Department	Section	Item Description
LOT 8-15	**Operation Theatre**	**Theatre Recovery and (Common Use)**	Syringe Pump

1. General Description

Syringe pump

2. Composition

2.1.	Main unit				

3. Performance Specifications

3.1. Main Unit

3.1.1. Should be easy to use and nurse friendly.
3.1.2. Should have automatic syringe size and model detection
3.1.3. System should be front loading
3.1.4. Should have large format LCD/TFT display.
3.1.5. Should have a minimum flow rate range from 0.1 – 1200 ml/hr. for 50ml syringe, 0.1 – 100 ml/hr. for 20ml syringe and 0.1 – 60 ml/hr. for 10ml syringe.
3.1.6. Syringe range from 20-50/60 ml.
3.1.7. Should have a flow rate accuracy of ±2%
3.1.8. Should have a bolus rate up to 1000ml/hr. for 50 ml syringe.
3.1.9. Should have automatic and manual bolus.
3.1.10. Should have at least 3 levels of programmable occlusion pressure.
3.1.11. Should have automatic bolus reduction system to avoid accidental bolus delivery after occlusion incident.
3.1.12. Should have a rechargeable battery with back up time of minimum 3 hours.
3.1.13. System should have a docking station
3.1.14. Pump must trigger following alarms with visual indication:-
i. Occlusion Pressure Alarm
ii. KVO or 3 min pre- alarm
iii. Syringe empty and volume infused alarm
iv. Internal malfunction and Battery Charge Low Alarm
v. Syringe disengaged and incorrectly placed alarm
vi. Alarm loudness control.
vii. No mains
viii. Line disconnected (rapid pressure drop).
3.1.15. Should work with input 200 to 240Vac 50 Hz supply.
3.1.16. Should be CE and FDA marked.

Item No.	Department	Section	Item Description
LOT 8-15	**Operation Theatre**	**Theatre Recovery and (Common Use)**	Syringe Pump
3.1.17. Copy of the certificate / test report shall be produced along with the technical bid			

LOT 8-16: Infusion Pumps

Item Code No.	Department	Section	Item Description
LOT 8-16	Operation Theatre	Theatre Recovery and (Common Use)	Infusion Pump

1. General Description

1.1. Infusion pump

2. Composition

2.1.	Main unit				

3. Performance Specifications

3.1. Main Unit

3.1.1. Should be operated on drip rate Peristaltic finger pump method.
3.1.2. Should be compatible with most of the IV set (macro/micro drip sets).
3.1.3. Should have the following flow rates.
3.1.4. IV Set ml/hr. drops/min
- 15 drops/ml 3~450ml/hr. 1~100drops/min
- 20 drops/ml 3~450ml/hr. 1~100drops/min
- 60 drops/ml 1~100ml/hr. 1~100drops/min

3.1.5. Should have a flow rate accuracy of ±10% and drip rate accuracy of ±2%.
3.1.6. Should have a volume infused display from 0 to 999.9ml.
3.1.7. Should have a purge and KVO facility.
3.1.8. Should have an audible and visual alarm for occlusion pressure, air alarm, door open, empty, low battery.
3.1.9. Should have a LCD display with backlight and graphical display of infusion.
3.1.10. Should have a minimum 2hr battery back up at highest delivery rate.
3.1.11. Should work with input 240Vac 50 Hz supply.
3.1.12. Should be CE and FDA marked
3.1.13. Copy of the certificate / test report shall be produced along with the technical

LOT 8-17: Operation Microscope (Transplant Procedures)

Item Code No.	Department	Section	Item Description
LOT 8-17	Operation Theatre	General Surgery	Operation Microscope

1. General Description

1.1. SPECIFICATIONS FOR OPERATING MICROSCOPE

2. Composition

2.1.	Main unit				

3. Detailed Specifications

3.1. CLASSIFICATION : CLASS 1
3.2. MAGNIFICATION : 6:1 motorized zoom activated through hand control ,foot switch control panel
3.3. WORKING DISTANCE :motorized focus +manual over ride
3.4. FOCUSING: min 224 or less – max 470 mm or more.
3.5. EYE PIECE : wide field eye piece for eyeglass wearers dioptre setting -5 d or less to + 5 d or more with adjustable eyecup interpupillar distance 55-75 mm
3.6. OBJECTIVE : multifocal length min 224 or less max 470 mm or more motorized focus with manual over ride
3.7. MAIN ILLUMINATION :should be 300 w xenon arc – indirect type illumination with stand by xenon with changeover facility
3.8. FIELD DIAMETER :17-143 mm /10 x eyepiece
3.9. MAGNIFICATION RANGE: 1.5-1.2 x or more /10 x eyepiece.
3.10. CONTROL UNIT: graphic LED/LCD display having facility for adjusting speed of zoom and focus.
3.11. TYPE /STAND SYSTEM : floor stand with electromagnetic brakes modular/ integrated (compact design) configuration for each application
3.12. HAND GRIPS: controls for zoom focusing, recording, light intensity, adjustment, joy stick control preferable for finer adjustments of the microscope.
3.13. A sepsis for all controls: sterilize/disposable protective glass encasement for objective sterilization components for all drive knobs /drapes.
3.14. OBSERVER: coordinated stereo co observation .stereo –co observation system for cranial procedures with additional observer unit at 180* for final procedures
3.15. CONFORMITY: should comply with CE/FDA standard to assure quality and safety of the system.
3.16. ACCESSORIES : should have camera with integrated HD recording system –DVD digital recording system ,DVD burning ,USB storage device ,video format dvi, DICOM COMPATIBILITY, FIRE WIRE INPUT/OUTPUT, video compression MPEG 4 still image JPEG/ TIFF/ BMPO/ GIFF
3.17. POWER SUPPLY : 220-240 vac +/- 10% 50 Hz
3.18. FEATURES : automated illumination brightness ,auto zoom synchronized illumination
3.19. VASCULAR FLUORESCENCE: should have vascular fluorescence (ICG). Rate to be quoted separately and the rate offered will be taken for evaluation
3.20. should be upgradable to :

Item Code No.	Department	Section	Item Description
LOT 8-17	Operation Theatre	General Surgery	Operation Microscope

3.20.1. Neuro-navigation compatibility. The details of additional hardware required for up gradation shall be provided with technical bid. Rate to be quoted separately. The rate offered will not be taken for evaluation

3.20.2. Image injection facility and tumour fluorescence if available shall be quoted separately. This rate will not be taken for evaluation

3.21. Shall supply 32” or above LCD/LED monitor.

LOT 8-18: Endoscopy Tower

Item Code No.	Department	Section	Item Description
LOT 8-18	Operation Theatre	General Surgery	Endoscopy Tower

1. General Description

1.1. UPPER GI ENDOSCOPE, COLONOSCOPE, DUODENOSCOPY

2. Composition

3.	Main unit				

3.1. Product Quality Standards:

3.1.1. Should be USFDA and CE (Notified) approved model.

3.1.2. Manufacturer should be ISO 13485 certified for quality standards.

3.1.3. Shall comply with EN/IEC 60601, Particular requirements for electrical safety of the device.

4. Technical Specification:

4.1. Video Processor, Light source & Monitor:

4.1.1. Should be fully digital system.

4.1.2. Should have high illumination xenon (100W to 300W) light source or equivalent LED technology.

4.1.3. Brightness control: Auto/Manual

4.1.4. Should have colour correction facility.

4.1.5. Should have colour enhancement facility.

4.1.6. Convenient digital to digital recording of both still and moving images.

4.1.7. Picture and picture display for any combination of endoscopic images.

4.1.8. Convenient index display for documentation.

4.1.9. Scope ID function for endoscopy suite management.

4.1.10. Analog output: RGB, Y/C & Composite.

4.1.11. Digital Output: HD-SDI, DVI

4.1.12. Should be provided with high resolution medical grade monitor of minimum 21-inch size diagonally.

4.1.13. Should have video storing facility in inbuilt or external memory.

4.2. Video Gastroscope for both Diagnostic & therapeutic purpose:

4.2.1. Should be capable of high resolution imaging.

4.2.2. Should be provided with water irrigation system with complete accessories.

- Field of view: 140 degrees or more
- Depth of field: 2-100mm
- Forward viewing facility
- Total length:1340 to 1365mm
- Working length more than 1000mm
- Insertion tube outer diameter 9.8mm
- Distal end diameter 9.8 to 10.3mm
- Bending section tip deflection Up – 210 degrees,
  Down – 90 to 120 degrees
  Left - 100 to 120 degrees
  Right – 100 to 120degrees
- Instrument channel - Diameter – 2.8 to 3mm

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4.3. Video Colonoscope:

4.3.1. Should be capable of high resolution imaging.

4.3.2. Should be provided with water irrigation system with complete accessories.

- Field of view- 140 degrees or more
- Depth of field: 2-100mm
- Forward viewing facility
- Total length - 1600 to 2000mm
- Working length more than 1300 to 1700mm
- Insertion tube outer diameter 12 mm or more
- Bending section tip deflection
  Up – 180 degrees,
  Down – 180 degrees
  Left - 160 degrees
  Right – 160 degree
- Instrument channel - Diameter – 3.8mm or more

4.4. Video Duodenoscope:

4.4.1. Should be capable of high-resolution imaging.

4.4.2. Should be provided with water & suction irrigation system with complete accessories.

- Field of view- 100 degrees or more
- Depth of field: 5-60mm
- Direction of view: Side Viewing (Retro 5 to 10 degrees)
- Total length - 1500 to 1600mm
- Working length more than 1230 mm
- Insertion tube outer diameter 11.5 to12.5
- Bending section tip deflection
  Up – 120 degrees,
  Down – 90 degrees
  Left - 90 degrees
  Right – 100 to 110 degrees
- Instrument channel - Diameter – 4 mm or more

4.5. Endoscope Washing/Reprocessing Station:

4.5.1. The Endoscopic Washing/reprocessing station should be able to reprocess two scopes simultaneously.

4.5.2. The Endoscopic washing Machine should be able to perform ultrasound cleaning and high pressure cleaning to remove debris from the endoscope.

4.5.3. The Endoscopic Washing Machine should have different sensors that include :
Pressure Sensor
Disinfectant Level Sensor
Leak Detect Sensor

4.5.4. It should be compatible with all kinds of flexible endoscopes.

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4.5.5. It should have different time settings for various steps during disinfection such as cleaning, disinfection, drying etc.

4.5.6. It should be compatible with most types of disinfectants available commercially e.g. Gluteraldehyde, Paracetic acid etc

4.6. Accessories to supply:

NOTE: Each accessory should be from reputed make having USFDA & CE certification

4.6.1. Compatible biopsy forcep-5nos.
4.6.2. Endoscopic CVT basket-5nos.
4.6.3. Endoscopic Lithotripter-5nos.
4.6.4. Endoscopic Sphincterotomes-5nos.
4.6.5. CBD Ballon-5nos.
4.6.6. Guide wire -5nos.
4.6.7. Stent Pusher-5nos.
4.6.8. Cleaning brush: 1no.
4.6.9. Rubber inlet seal: 1no.
4.6.10. Silicone oil-1 jar
4.6.11. Soaking cap-1no.
4.6.12. Cleaning adapter-1no.
4.6.13. Leakage tester-1no.
4.6.14. Computer system, at least (Core i7, 16GB RAM, 1TB HDD) with 17 inch monitor & laser colour printer and compatible image transfer and reporting software.
4.6.15. Endoscope trolley (S.S 304 grade) to carry all the required equipment with castor wheel having front locking facility.

4.7. Power supply:

4.7.1. Power input to be 220 – 240V AC, 50Hz fitted with B.S. plug of appropriate rating.

4.8. Warranty:

4.8.1. Should have at least 2yrs. of manufacturer warranty including all the flexible scopes mentioned above.

4.9. Environmental Factors:

4.9.1. Operating condition: The unit shall be capable of operating in ambient temperature of 10-40 deg C and relative humidity of 15-90%

4.9.2. Storage: The unit shall be capable of being stored continuously in ambient temperature of 0-50deg C and relative humidity of 15-90%

4.10. Training:

4.10.1. Operational as well as general troubleshooting/ User level maintenance training should be given to the user during supply & as when required by the user.

LOT 8-19: Complete Laparoscopic towers with 4K image quality (Either on pendant or trolley)

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1. General Description

2. Composition

	Main unit				

1.1 Arthroscopy Tower

A complete arthroscopic tower with the following items:

i. Camera box endoscopic camera system -1
ii. Camera head -1
iii. Light source, LED -1
iv. Light guide calbe - 1
v. Surgical monitor, UHD 4K, 32 inches - 1
vi. 30° arthroscope, 4mm - 2
vii. 30° arthroscope 2.7mm - 1
viii. 70° arthroscope 4mm - 1
ix. 70° arthroscope 0.27mm - 1
x. Sheath/cannula for 4mm scope with inflow/out flow - 2
xi. Sheath/cannula for 2.7mm scope with inflow/out flow -2
xii. Conical obturator/trocar compatible with Inflow/outflow sheaths -1 for 4mm and 1 for 2.7mm
xiii. Shaver/resection system/consol -1
xiv. Shaver hand pieces - 2
xv. Arthroscopy pump -1
xvi. Arthroscopic RF system -1
xvii. A video cart to accommodate the camera box, light source shaver system, RF system and arthroscopy pump- 1
xviii. All Items must be compatible with one another
xix. Backup Power UPS:
- Input -220-240V (ac) 50/60Hz
- Output- 220-240V (ac) 2500VA

xx. Manuals
a. User manuals (both hard and soft copy)
b. Technical manual (both hard and soft copy)

xxi. Installation
a. Supplier to Supply, Install, test and Commission, Provide user and technical training of the equipment

xxii. Warranty – at least two (2) years. After the warranty period is over, five (5) years {annual comprehensive maintenance contract (CMC) will have to be entered. The bidder to provide the price for CMC for the 5 years as a guide in analysis but will not be factored in the current price. The successful bidder has to ensure that all the required spares and services are available during the period of CMC and three (10) years after that period.

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xxiii. User & Technical Training:
   a. supplier to train users on site
   b. Factory training 2 officers

xxiv. The supplier to provide evidence of local capacity to service equipment

1.2 GENERAL SURGERY LAPAROSCOPIC EQUIPMENT

1.2.1 General System

1.2.1.1 The system must be a high-definition universal endoscopy camera system capable of accepting a wide range of camera heads and video- scopes

1.2.1.2 The system should display full HD images in both 1080/50P and 1080/50i formats to an LCD display to produce an HD image

1.2.1.3 Camera Control Unit (Processor) and Camera Heads :
   a. Processor - 1
   b. Camera Head - 1

1.2.1.4 The camera system must be suitable for a wide range of endoscopic disciplines, and be capable of connecting to a range of high definition and standard definition surgical camera heads and video-laparoscopes

1.2.1.5 The camera Control Unit/ Processor must be capable of processing an advanced imaging system that applies optic digital methods to enhance endoscopic images and improves visualization of the mucosal surface architecture and microvascular pattern.
A 3CCD HD Autoclavable camera head should be available

1.2.1.6 Control of the image capture and video recording devices must be possible from buttons on the camera head or videoscopes and these buttons must also be programmable to control other commonly required functions of the camera system, e.g. Automatic white balance adjustment white.

1.2.1.7 Camera head must have power focus buttons as well as power zoom buttons, independent of the 3 programmable buttons. Camera head must be less than 400g by weight.

1.2.1.8 Three-Chip FULL HD Camera Head, max. resolution 1920x 1080 pixels, progressive scan, soakable, gas- and plasma-sterilizable, with integrated Parfocal Zoom Lens, focal length f = 15 - 31 mm (2x), 2 freely programmable camera head buttons.

1.2.1.9 Camera control unit, for use with three chip Full HD Camera Heads, resolution 1920 x 1080 pixels.

1.2.1.10 Power supply 200 - 240 VAC, 50/60 Hz.

1.2.2 Light Source : Qty 1

1.2.2.1 In order to allow the enhancement of tissue structures the light source must be capable of providing an optically filtered light output as well as white light for routine diagnostic imaging.

1.2.2.2 The Light Source must be capable of providing the natural optical light enhancement technology.

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1.2.2.3 The light source and camera processor should be linked to enable the camera control unit to automatically control the output of the light source to achieve optimal light distribution.

1.2.2.4 The light source must operate on a Xenon Lamp 300W or equivalent LED lighting

1.2.2.5 Cold Light Fountain Power Light source, high-performance, power supply 240 VAC, 50/60 Hz

1.2.3 Video Recording: Qty 1

1.2.3.1 The system must come with a video recorder- either DVD or USB or both

1.2.4 Insufflator : Qty 1

1.2.4.1 The laparoscopic insufflator should be high-flow (45 litres/minute), with adjustable automatic smoke/ mist evacuation that removes the smoke/mist whilst maintaining the pneumoperitoneum.

1.2.4.2 The insufflator should have a large digital display with a choice of display mode settings, which show the preset levels and actual readings of intra-abdominal pressure and flow rates, and also displays the total gas volume delivered. It should have audible and visible alarms that differentiate between excessive pressure and tube obstruction, and have two types of protection against gas embolism: automatic suction and automatic overpressure relief.

1.2.4.3 The insufflator should have normal and small cavity modes to allow for the use in paediatrics.

1.2.5 Monitor : Qty 2

1.2.5.1 At least 26 Inch full HD LCD Monitor

1.2.5.2 Aspect Ration 16:10

1.2.5.3 Should have Advanced Image Multiple Enhancer for accurate image rendition

1.2.5.4 Should have Various inputs and outputs, including 3G/HD/SD SDI, DVI, HD15 Y/C and VIDEO

1.2.6 Workstation/ Trolley: Qty 2

1.2.6.1 The workstation should be supplied with an isolation transformer which complies with BS-EN 60601-1 and have anti-static castors.

1.2.6.2 The workstation should have an articulating arm with both horizontal and vertical movement to allow the monitor to be positioned at the optimal height and position.

1.2.6.3 Should be complete with brackets for holding gas cylinders.

1.2.7 Surgical Tissue Management System: Qty 1

1.2.7.1 Must have a full range of bipolar and monopolar modes

1.2.7.2 Must be able to perform Resection in saline*

1.2.7.3 Must have a tissue adaptive response, and apply optional required energy for fast effective precise cutting

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1.2.7.4 input power should be not less than 1500 VA
1.2.7.5 High frequency functions include Monopolar / Bipolar functions
1.2.7.6 High frequency should be 430 kHz ± 20%
1.2.7.7 Maximum high frequency power should not be greater than 320 W
1.2.7.8 Protection class according to IEC60601-1CF, Class I
1.2.7.9 Classification according toMDD93/42/EEC IIb
1.2.7.10 Sockets present should include

MONOPOLAR

- x 3-pin (Ø 4 mm), International standard
- 1 x 1-pin (Ø 8 mm)
- 1 x coaxial (Ø inner 5 mm / Ø outer 9 mm)

BIPOLAR

- 1 x 2-pin (Ø 4 mm, pin spacing 28.8 mm), International standard
- 1 x coaxial (Ø inner 4 mm / Ø outer 8 mm)

UNIVERSAL

- 1 x 7-pin
- Neutral electrode
- 2-pin standard, single or split

1.2.7.11 Unit must have communication capability with insufflator for automatic smoke evacuation
1.2.7.12 Unit must be supplied with a footswitch.
1.2.7.13 System should be supplied with compatible Ultrasonic Generator to perform single Bipolar/ Ultrasonic sealing and cutting functions with a single hand piece
1.2.7.14 Ultrasonic generator unit must be compatible with diathermy unit and Insufflator for Automatic Smoke evacuation
1.2.7.15 Generator must be able to deliver both ultrasonic and bipolar energy for reliable vessel sealing and fast tissue cutting from a single hand piece.
1.2.7.16 Must have a graphical user interface, for ease of use
1.2.7.17 Must recognize instruments automatically, and automatic application of default settings, on plug in of instrument
1.2.7.18 Must come with a suitable trolley for mounting the system
1.2.7.19 Must be complete with transducer

1.2.8 LAPAROSCOPY INSTRUMENTS (RE - USEABLE)

1.2.8.1 Reusable Trocar and Cannula 11mm with Gas Tap - Qty – 2
1.2.8.2 Reusable Threaded Trocar and Cannula 5.5mm with Gas Tap - Qty – 2
1.2.8.3 Reusable Trocar and Cannula 5.5mm without Gas Tap - Qty – 2
1.2.8.4 11mm Trocar Caps - Qty – 20
1.2.8.5 11mm Cannula Flaps - Qty-20
1.2.8.6 5.5mm Trocar Caps - Qty-20
1.2.8.7 5.5mm Cannula Valves - Qty- 20

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1.2.8.8 Insulated Reduction Tube 10mm to 5mm - Qty-1
1.2.8.9 Reduction Tubes 13/11mm to 5.5mm - Qty -2
1.2.8.10 Veress Needle 120mm - Qty-2
1.2.8.11 Fascial Closure Needle, 250mm Lgth - Qty -1
1.2.8.12 Straight Needle Holder - Qty -1
1.2.8.13 Self-alignment Needle Holder - Qty-2
1.2.8.14 Knot Pusher - Qty-1
1.2.8.15 Monopolar Needle - Qty-2
1.2.8.16 Monopolar Hook - Qty-2
1.2.8.17 Monopolar HF Cord - Qty-2
1.2.8.18 Metzenbaum 5mm Laparoscopic Scissors, Length 330mm(33cm) - Qty-2
1.2.8.19 5mm Hooked Scissors, single action jaws, Length 330mm (33cm) - Qty-1
1.2.8.20 5mm Straight Scissors, Length 330mm (33cm) - Qty-1
1.2.8.21 Maryland 5mm Dissector with Monopolar Connection - Qty-1
1.2.8.22 Traumatic 5mm Grasping Forceps - Qty-1
1.2.8.23 Grasping Forceps, rotating, dismantlable, insulated with Monopolar connection, Atraumatic, Fenestrated - Qty-1
1.2.8.24 Fine Maryland Cross Tooth Dissector, 5mm Length 330mm - Qty-1
1.2.8.25 Bipolar 5mm Johann Grasping Forceps Length 330mm - Qty-1
1.2.8.26 Bipolar 5mm Maryland Dissecting Forceps Length 330mm - Qty-1
1.2.8.27 Bipolar HF Cable - Qty-2
1.2.8.28 Lymph Node Grasping Forceps, Atraumatic 5mm, 330mm Length - Qty-1
1.2.8.29 Babcock Forceps, 5mm, Length 330mm - Qty-1
1.2.8.30 Claw Forceps, 2*3 Teeth Short 5mm, Length 330mm - Qty-1
1.2.8.31 5mm Johann Grasping Forceps, non-single action, Length 330mm - Qty-1
1.2.8.32 Suction and Irrigation Handle with pistol grip and clamping Valve - ty-1
1.2.8.33 Suction Irrigation Cannula 5mm, with lateral holes - QTY-1

1.2.9 Backup Power UPS:

1.2.9.1 Input -220-240V (ac) 50/60Hz
1.2.9.2 Output- 220-240V (ac) 2500VA

1.2.10 MANDATORY REQUIREMENTS

1.2.10.1 Manuals
- User manuals (Both hard copy and soft copy)
- Technical Manuals (Both hard and soft copy)

1.3 GYNAECOLOCOGY LAPARASCOPY TOWER

1.3.1 GENERAL SYSTEM

This is highly specialized equipment for use in gynecological surgeries. The system must be a high-definition universal endoscopy camera system capable of accepting a wide range of camera heads and video-scopes.

The components to include:

1.3.2 IMAGING AND CART –(Quantity - 1)

1.3.2.1 Equipment Cart, wide, high, rides on 4 antistatic dual wheels equipped with locking brakes, mains switch on cover, central beam with integrated

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electrical sub distributors with 12 sockets, grounding plugs, Dimensions in mm (w x h x d): Equipment cart: 830 x 1474 x 730, Shelf: 630 x 25 x 510, Caster diameter: 150 mm consisting of: Base Module, equipment cart wide Cover, equipment cart wide Beam Package, equipment cart high 3x Shelf, wide Drawer Unit with Lock, wide 2x Equipment Rail long, Camera Holder

1.3.2.2 Monitor Holder, height adjustable, swiveling and tilting, swivel range approx. 360°, and loading capacity max. 18 kg, with monitor mount VESA 75/100 -(Quantity-1)

1.3.2.3 27" FULL HD Monitor, with VESA 100 adaption, color systems PAL/NTSC, max. screen resolution 1920 x 1080, image format 16:9, Video inputs: DVI, 3G-SDI, VGA, S-Video, Composite, Video outputs: DVI, 3G-SDI, Composite, power supply 100 - 240VAC, 50/60 Hz, 5 V DC output (1 A) including: External 24 VDC Power Supply Mains Cord and a slave monitor of the same specification mounted on cart with same specifications-(Quantity-1)

1.3.2.4 IMAGE 1 H3-Z SPIES Three-Chip FULL HD Camera Head, SPIES compatible, progressive scan, soakable in gluteraldehyde, gas- and plasma-sterilizable, with integrated Parfocal Zoom Lens, focal length f = 15 - 31 mm (2x), 3 freely programmable camera head buttons for use with IMAGE 1 SPIES and IMAGE 1 HUB HD/HD. The system must come with video recording DVD/USB/both. Camera head must be less than 400g-(Quantity-1)

1.3.2.5 Full HD CONNECT module (Processor), for use with up to 3 link modules, resolution 1920 x 1080 pixels or better, with integrated Communication and digital Image Processing Module, power supply 100-240 VAC, 50/60 Hz consisting of: Mains Cord, length 300 cm, DVI Signal Cable, length 300 cm, Digital Communication Connecting Cable, length 100 cm and USB Flash Drive, at least 128 GB-(Quantity-1)

1.3.2.6 Camera link module, for use with FULL HD three-chip camera heads, power supply 100 - 240 VAC, 50/60 Hz including: Mains Cord, length 300 cm, Link Cable, length 20 cm-(Quantity-1)

1.3.3 LIGHT SOURCE:

1.3.3.1 Cold Light Fountain Power LED 175Watt with integrated Communication module, high-performance LED and one light outlet, power supply 110 - 240 VAC, 50/60 Hz consisting of: Cold Light Fountain Power LED 175Watt, Mains power Cord and Communication Connecting Cable. To come with 2 spare lumps. -(Quantity-1)

1.3.3.2 Insufflator -40-45Litres

1.3.3.3 INSUFFLATOR Set, with integrated communication module (touch screen indicating intra-abdominal pressure, flow rate, gas consumption, status of cylinder and in-built alarm), power supply 100 - 240 VAC, 50/60 Hz consisting of: 40Litres Insufflator, Communication Connecting Cable length 100 cm, Universal Wrench, Insufflation Tubing Set with gas filter, sterile, single use package of 10, smoke evacuator-(Quantity-1)

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1.3.3.4 Insufflation Tube, sterilizable, inner diameter 9 cm, length 250 mm, for use with Insufflator 40 Litre Set-(Quantity-1) High Pressure CO2 Hose, American/Pin-Index-(Quantity-1)

1.3.4 ELECTROSURGICAL GENERATOR

1.3.4.1 Electrosurgical Generator 400Watt, High-End, power supply 220 - 240 VAC, 50/60 Hz, including mains cord, HF connecting sockets

1.3.4.2 unipolar: 2x 3-pin US type 5 mm connector, 2x 4 mm connector (via footswitch) (via footswitch) bipolar: 2x 2-pin US type (28.58) 3x, Neutral electrode 2-pol. System must have bipolar hysteroscopy resection functionality and TURP-(Quantity-1)

1.3.4.3 One-Pedal Footswitch, with button for swtichover function, for use with generators-(Quantity-1) Neutral Electrode-(Quantity-1)

1.3.4.4 Connecting Cable , for Neutral Electrodes, Length 300 cm-(Quantity-1)

1.3.5 IRRIGATION AND SUCTION UNIT

1.3.5.1 Endoscopic Automatic System for Irrigation and Suction, with integrated Communication module, suction and irrigation pump for gynecology with pre-programmed procedures, incl. power cord, power supply 100 - 240 VAC, 50/60 Hz, -(Quantity-1)

1.3.5.2 Single-use SUCTION tubing set. Sterile, 10 per pack-(Quantity-5)

1.3.5.3 Single-use IRRIGATION tubing set with two puncture needles, Sterile, 10 per pack-(Quantity-5)

1.3.6 INTRAUTERINE SHAVER SYSTEM

1.3.6.1 Wide-Angle Straight Forward Rod Lens Telescope 6°, with parallel eyepiece, length 20 cm, autoclavable, fiber optic light transmission incorporated with working channel, with LUER-Lock connection for inflow, Colour Coded.-(Quantity-1)

1.3.6.2 Operating Sheath, 24 Fr., rotating, for continuous irrigation and passive outflow, with LUER-Lock stopcock, Colour coded-(Quantity-1)

1.3.6.3 Hollow obturator for Operating Sheath-(Quantity-1) DrillCut XII shaver handpiece-(Quantity-1)

1.3.6.4 Handle, adjustable, for use with shaver handpiece-(Quantity-1) Shaver Blade-(Quantity-5)

1.3.7 GYNAECOLOGY MOTOR SYSTEM

1.3.7.1 Gynecology motor system set, with Integrated Communication Module, power supply 100 -120/230 - 240 VAC, 50/60 Hz consisting of: GYN Motor unit, Power Mains Cord, One-Pedal Footswitch, two-stage, with proportional function and pump switch function, Communication Connecting Cable length 100 cm-(Quantity-1)

1.3.7.2 Control Cable, length 100 cm, for transmission of foot switch control signal between Gynecology Motor System and Endoscopic Automatic Suction and Irrigation System-(Quantity-1)

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1.3.8 HAND INSTRUMENTS SCHEDULE ITEM DESCRIPTION &NO.

1.3.8.1 Fiber Optic Light Cable, with straight connector, extremely heat-resistant, safety lock, diameter 4.8 mm, length 250 cm : 2

1.3.8.2 Forward-Oblique Rod Lens Telescope 30°, enlarged view, diameter 10 mm, length 31 cm, autoclavable, fiber optic light transmission : 2

1.3.8.3 Pneumoperitoneum Needle with spring loaded blunt stylet, LUER-lock, length 13 cm and 20cm:1

1.3.8.4 Trocar, size 11 mm, color coded consisting of: Trocar only, with pyramidal tip, Cannula without valve, with insufflation stop- cock, length 10.5 cm and Multifunctional Valve:5

1.3.8.5 Trocar, size 6 mm, consisting of: Trocar only, with pyramidal tip, Cannula without valve, with insufflation stop- cock, length 10.5 cm and Multifunctional Valve:5

1.3.8.6 6mm trocar seals 100

1.3.8.7 11mm trocar seals

1.3.8.8 Sleeve Reducer 11/5mm: 1

1.3.8.9 Flip-on Reducer 11/5 mm 2

1.3.8.10 3 piece modular Bowel Grasping Forceps, rotating, with connector pin for unipolar coagulation, size 5 mm, length 36 cm, atraumatic, fenestrated, single action jaws, consisting of: Plastic Handle, with ratchet, with larger contact area, Outer Tube, insulated and Forceps Insert:3

1.3.8.11 3 piece modular Grasping Forceps, rotating, with connector pin for unipolar coagulation, size 5 mm, length 36 cm, "Tiger-jaw", 2 x 4 teeth, single action jaws, consisting of: Plastic Handle, with ratchet, with larger contact area, Outer Tube, insulated, and Forceps Insert:3

1.3.8.12 3 piece modular Dissecting and Grasping Forcep rotating, with connector pin for unipolar coagulation, size 5 mm, length 36 cm, long, double action jaws, consisting of: Plastic Handle, without ratchet with larger contact area, Outer Tube, insulated and Forceps Insert:3

1.3.8.13 3 piece modular Scissors, rotating, with connector pin for unipolar coagulation, size 5 mm, length 36 cm, curved, serrated, spoon blades, length of blades 17 mm, double action jaws:3

1.3.8.14 Rotating Bipolar Grasping Forceps, rotating, dismantling, with connector pin for bipolar coagulation, double action jaws, fenestrated, with especially fine atraumatic serration, size 5 mm, length 36 cm :3

1.3.8.15 Claw Forceps (Crocodile), rotating, size 10 mm, length 36 cm, 2x3 teeth, single action jaws:1

1.3.8.16 Coagulating and Dissecting Electrode, L-shaped, with connector pin for unipolar coagulation, size 5 mm, working length 36 cm:1

1.3.8.17 Suction and Irrigation Tube, anti-reflex surface with two-way stopcock, for single hand control, size 5 mm, length 36 cm:5

1.3.8.18 Needle Holder, ergonomic axial handle with disengage-able ratchet, ratchet release on the right side, straight jaws, with tungsten carbide insert ø 5 mm, length 33 cm:2

1.3.8.19 Needle Holder, ergonomic axial handle with disengage-able ratchet, ratchet release on the right side, Left Curved jaws, with tungsten carbide insert ø 5 mm, length 33 cm:2

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1.3.8.20 Knot Tier for extracorporeal knotting, with L-shaped windowing at the distal end, for security adaption of the basic knot, size 5mm, length 36 cm :1

1.3.8.21 Injection Needle, LUER-lock, diameter 1.2 mm, size 5 mm, length 36 cm.:1

1.3.8.22 3 piece modular grasping forceps :2

1.3.8.23 High Frequency Needle, for splitting and coagulation, insulated with connector pin for unipolar coagulation, size 5 mm, length 31 cm:1

1.3.8.24 Uterine Cannula, with 1 large and 1 small cone, spring-loaded fixation for use with Uterine tenaculum forceps, with LUER-lock adaptor for cleaning:1

1.3.8.25 Unipolar High Frequency Cord, with 5 mm plug for HF unit, length 300 cm:1

1.3.8.26 Bipolar High Frequency Cord, length 300 cm:1

1.3.8.27 3 piece modular Ovarian Grasping Forceps:1

1.3.8.28 Uterine Manipulator , consisting of; Handle, with fixation screw, Manipulator Rod, Sealing Cylinder, Silicone Seal, package of 3 (3 sizes), Sheath, Working Insert, conical, with thread, medium, Working Insert, atraumatic, diameter 7 mm, length 50 mm, Working Insert, with connector for chromopertubation, atraumatic, diameter 4 mm, length 40 mm, Anatomical Blade, short, diameter 36 mm, length 48 mm, Cleaning Adaptor:1

1.3.8.29 Plastic Container for sterilization and storage. With separated rack for storage of up to 12 instruments with diameter 2,5 to 10mm and separated insert tray for up to 6 trocars. Perforated, with transparent lid. external dimensions (w x d x h): 532 x 254 x 165 mm:2

1.3.8.30 30 degree 10mm telescope and 30degree 5mm telescope:2

1.3.9 HYSTEROSCOPY SETS SCHEDULE ITEM DESCRIPTION & NO.

1.3.9.1 2.9mm 30degree hysteroscope,5.5mm diagnostic/operative sheath with 5fr channel, 5fr hysteroscopy scissors(4), 5fr hysteroscopy forceps(4) must be compatible with sheath, light cable 3m:2

1.3.9.2 Bipolar resectoscope for hysteroresection kit(1); Bipolar working element, outer sheath, Inner sheath to work with outer sheath, bipolar HF cable compatible with generator, bipolar cutting loops, bipolar roller ball and collins knife, 12 degree hysteroscope compatible with resectoscope:2

1.3.9.3 5mm myoma spiral:1

1.3.9.4 A brochure should be provided for technical evaluation

1.3.10 Manuals

1.3.10.1 User manuals (both hard copy and soft copy)

1.3.10.2 Technical Manual (both hard copy and soft copy)

1.3.11 Installation

1.3.11.1 Supplier to Supply, install, test, commission and offer training for the equipment

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1.3.12 Warranty- at least 2-Years.

After the warranty period is over, five years annual Comprehensive Maintenance Contract (CMC) will have to be entered into with the terms and conditions mentioned in the tender specification. The Bidder will prude the CMC cost that will be applicable after expiry of the warranty. The price will be for reference purposes but will not be part of the bid. The successful bidder has to ensure that all the required spares and services are available during the period of CMC and has to be guaranteed for at least 10 years after from the time of equipment installation.

1.3.13 User training

1.3.13.1 Supplier to train users on site

1.3.13.2 Technical Training for at least two officers

Supplier to train at least one(1) biomedical Engineer and one(1) nurse at the factory

1.3.13.3 The supplier should provide references of previous Supplier of similar equipment in Kenya

1.3.13.4 The supplier to provide evidence of local capacity to service equipment.

1.3.13.5 The supplier must provide Manufacturers authorization

1.3.14 GYNAECOLOGY TELESCOPES

1.3.14.1 Laparoscopy Forward-Oblique Rod Lens Telescope 30°, enlarged view, diameter 10 mm, length 31 cm, autoclavable, fiber optic light transmission incorporated, color coded -(Quantity 1)

1.3.14.2 Hysteroscopy Shaver Wide-Angle Rod lens Straight Forward Telescope 6°, with parallel eyepiece, length 20 cm, autoclavable, fiber optic light transmission incorporated with working channel, with LUER-Lock connection for inflow, color coded-(Quantity 1)

1.3.14.3 Hysteroscopy Forward-Oblique Rod Lens Telescope 30°, ø 2.9 mm, length 30 cm, autoclavable, fiber optic light transmission incorporated, color coded-(Quantity 1)

1.3.14.4 Hysteroscopy Resection Forward-Oblique Rod lens Telescope 12°, enlarged view, diameter 4 mm, length 30 cm, autoclavable, fiber optic light transmission incorporated, color coded. -(Quantity 1)

1.4 LAPAROSCOPIC EQUIPMENT FOR UROLOGY

1.4.1 General System

1.4.1.1 The system must be a high definition universal endoscopy camera system capable of accepting a wide range of camera heads and video-scopes

1.4.1.2 The system should display full HD images in both 1080/50P and 1080/50i formats to an LCD display to produce an HD image

1.4.2 Camera Control Unit (Processor) and Camera Heads : Qty 1 Processor, 1

a. Camera Head

i. The camera system must be suitable for a wide range of endoscopic disciplines, and be capable of connecting to a range of high definition and standard definition surgical camera heads and video-laparoscopes

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ii. The camera Control Unit/ Processor must be capable of processing an advanced imaging system that applies optic digital methods to enhance endoscopic images and improves visualization of the mucosal surface architecture and microvascular pattern
iii. A 3CCD HD Autoclavable camera head should be available
iv. Control of the image capture and video recording devices must be possible from buttons on the camera head or videoscopes and these buttons must also be programmable to control other commonly required functions of the camera system, e.g. white balance.
v. Camera head must have power focus buttons as well as power zoom buttons, independent of the 3 programmable buttons.
vi. Camera head must be less than 400g by weight for ease of management.
vii. Three-Chip FULL HD Camera Head, max. resolution 1920x 1080 pixels or better, progressive scan, soakable, gas- and plasma-sterilizable, with integrated Parfocal Zoom Lens, focal length f = 15 - 31 mm (2x), 2 freely programmable camera head buttons.
viii. Camera control unit, for use with three chip Full HD Camera Heads, resolution 1920 x 1080 pixels or better.
ix. Power supply 100 - 240 VAC, 50/60 Hz.

1.4.3 Light Source : Qty 1

1.4.3.1 In order to allow the enhancement of tissue structures the light source must be capable of providing an optically filtered narrow- band light output as well as white light for routine diagnostic imaging.
1.4.3.2 The Light Source must be capable of processing an advanced imaging system that applies optic digital methods to enhance endoscopic images and improves visualization of the mucosal surface architecture and microvascular pattern
1.4.3.3 The light source and camera processor should be linked to enable the camera control unit to automatically control the output of the light source to achieve optimal light distribution.
1.4.3.4 The light source must operate on a Xenon Lamp 300W or equivalent LED technology source.
1.4.3.5 Cold Light Fountain Power Light source, high-performance, power supply 240 VAC, 50/60 Hz

1.4.4 Video Recording: Qty 1

1.4.4.1 The system must come with a video recorder- either DVD or USB or both

1.4.5 Insufflator : Qty 1

1.4.5.1 The laparoscopic insufflator should be high-flow (45 litres/minute), with adjustable automatic smoke/ mist evacuation that removes the smoke/mist whilst maintaining the pneumoperitoneum.

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1.4.5.2 The insufflator should have a large digital display with a choice of display mode settings, which show the preset levels and actual readings of intra-abdominal pressure and flow rates, and also displays the total gas volume delivered. It should have audible and visible alarms that differentiate between excessive pressure and tube obstruction, and have two types of protection against gas embolism: automatic suction and automatic overpressure relief.

1.4.5.3 The insufflator should have normal and small cavity modes to allow for the use in paediatrics.

1.4.6 Monitor : Qty 2 – at least 26 Inch full HD LCD Monitor

1.4.6.1 Aspect Ration 16:10

1.4.6.2 Should have Advanced Image Multiple Enhancer for accurate image rendition

1.4.6.3 Should have Various inputs and outputs, including 3G/HDMI/SD SDI, DVI, HD15 Y/C and VIDEO

1.4.7 Workstation/ Trolley : Qty 2

1.4.7.1 The workstation should be supplied with an isolation transformer which complies with BS-EN 60601-1 and have antistatic castors'

1.4.7.2 The workstation should have an articulating arm with both horizontal and vertical movement to allow the monitor to be positioned at the optimal height and position.

1.4.7.3 Should be complete with brackets for holding gas cylinders.

1.4.8 Surgical Tissue Management System: Qty 1

1.4.8.1 Must have a full range of bipolar and monopolar modes

1.4.8.2 Must be able to perform Resection in saline

1.4.8.3 Must have a tissue adaptive response, and apply optional required energy for fast effective precise cutting

1.4.8.4 Power supply Voltage range should be 220- 240 V~ with a Frequency 50 / 60 Hz and maximum input power should be not less than 1500 VA

1.4.8.5 High frequency functions include Monopolar / Bipolar functions

1.4.8.6 High frequency should be 430 kHz ± 20%

1.4.8.7 Maximum high frequency power should not be greater than 320 W

1.4.8.8 Protection class according to IEC60601-1CF, Class I

1.4.8.9 Classification according to MDD93/42/EEC IIb

1.4.8.10 Sockets present should include

- **MONOPOLAR**

i. 2 x 3-pin (Ø 4 mm), International standard

ii. 1 x 1-pin (Ø 8 mm)

iii. 1 x coaxial (Ø inner 5 mm / Ø outer 9 mm)

- **BIPOLAR**

i. 1 x 2-pin (Ø 4 mm, pin spacing 28.8 mm), International standard

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ii. 1 x coaxial (Ø inner 4 mm / Ø outer 8 mm)

- **UNIVERSAL**

i. 1 x 7-pin
ii. Neutral electrode
iii. 2-pin standard, single or split

1.4.8.11 Unit must have communication capability with insufflator for automatic smoke evacuation
1.4.8.12 Unit must be supplied with a footswitch.
1.4.8.13 System should be supplied with compatible Ultrasonic Generator to perform single Bipolar/ Ultrasonic sealing and cutting functions with a single hand piece
1.4.8.14 Ultrasonic generator unit must be compatible with diathermy unit and Insufflator for Automatic Smoke evacuation
1.4.8.15 Generator must be able to deliver both ultrasonic and bipolar energy for reliable vessel sealing and fast tissue cutting from a single hand piece.
1.4.8.16 Must have a graphical user interface, for ease of use
1.4.8.17 Must recognize instruments automatically, and automatic application of default settings, on plug in of instrument
1.4.8.18 Must come with a suitable trolley for mounting the system
1.4.8.19 Must be complete with transducer

1.4.9 Bipolar Resectoscope Set: Qty 1

1.4.9.1 System must be Bipolar, with Plasma Vaporization functionality
1.4.9.2 System should be continuous flow and rotatable
1.4.9.3 Must be compatible to variety of loops including Bipolar 12 Deg Loops, Plasma Vaporization Button Electrodes, Bipolar Roller Balls etc.
1.4.9.4 System should comprise of:

- 1 X 12 Deg 4mm Telescope
- 1 X Light Guide Cable compatible with 4mm Telescope
- 1 X 26Fr Rotatable Outer Sheath with 2 stopcocks
- 1 X Inner Sheath for 26Fr Outer Sheath
- 1 X Active Working Element for Bipolar Resection
- 1 X Cable for Bipolar resection, compatible with Diathermy Machine above
- 1 X Ellik Evacuator with glass bulb, rubber bulb and adaptor
- X Visual Obturator

1.4.10 Backup Power UPS:

1.4.10.1 Input -220-240V (ac) 50/60Hz
1.4.10.2 Output- 220-240V (ac) 2500VA

1.4.11 UROLOGY REQUIREMENT FOR LAPARASCOPIC TOWERS

1.4.11.1 **Lower Tract Set**

a. Telescopes

i. Telescope 4mm 0 Degrees-1
ii. Telescope 4mm 12 Degrees-2

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iii. Telescope 4mm 30 Degrees – 2
iv. Telescope 4mm 70 Degrees -1
v. Telescope 4mm 110 Degrees -1

b. Cystoscope Sheaths & Attachments

i. Cystoscopy Sheath 19.8Fr with Obturator - 1
ii. Optical Obturator for 19.8 Fr Cystoscope Sheath
iii. Cystoscopy Sheath 21Fr with Obturator
iv. Optical Obturator for 21 Fr Cystoscope Sheath
v. Cystoscopy Sheath 22Fr with Obturator
vi. Optical Obturator for 22 Fr Cystoscope Sheath
vii. Cystoscopy Bridge One way - 2
viii. Cystoscopy Bridge Two Way - 2
vi. Albaraan with Bridge

c. Monopolar 26Fr Rotatable Continuous Flow System consisting of

i. Active Monopolar Working Element- Qty 1
ii. Inner Sheath Qty-1
iii. Outer Sheath Qty-1
iv. Monopolar Cable- Qty - 2
v. Monopolar Loop Electrode – Qty - 12
vi. Monopolar Roller Ball- Qty - 12
vii. Ellik Evaluator Plastic - Qty - 1

d. TURIS Bipolar 26Fr Rotatable Continuous Flow System consisting of:

i. Active Working Element- Qty 1
ii. Inner Sheath - Qty 1
iii. Outer Sheath - Qty 1
iv. Bipolar Cable - Qty 2
v. Bipolar Loop Electrodes- Qty 12
vi. Bipolar Vaporization Electrode (Mushroom) - Qty 12
vii. Bipolar Roller Ball - Qty 12
viii. Plastic Ellik Evacuator- Qty 1

e. DVU Kit Consisting of:

i. 22Fr Sheath- Qty 1
ii. 26Fr Outer Sheath - Qty 1
iii. Insertion Sleeve For Balloon Catheter- Qty 1
iv. Working Element - Qty 1
v. Knife, Lancet Type, Straight- Qty 5
vi. Knife Serrated- Qty 5
vii. Knife Semi Circular- Qty 5

f. Bladder Stone crushing forceps Qty 1

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1.4.12 Upper Tract Set

i. Semi-rigid Ureterescope QTY 2

- Angled Ocular
- Single Channel,
- 7° Direction Of View,
- 6.4/7.8FRx430mm
- 4.2Fr Channel

ii. Video Ureteroscope - QTY 1

- 8.2Fr Slim Videoscope compatible with Video processor & Light Source
- Forward Viewing
- Working Length 670mm
- Channel 3.6FR
- Up Angulation 275°
- Down Angulation 275°
- Fibreoptic Flexible Ureteroscope

iii. Field of view 90°, QTY 1

- Forward Viewing,
- Evolution Tip 4.5Fr,
- Working Length 670mm

iv. Nephroscope- Qty 1

- 4mm 30Deg OP Nephrosocpe
- Outer Sheath 25Fr (Rotatable) Sheath
- Sheath Acc For Amplatz

v. Stopcock Rotatable - Qty 2

- 11Fr 7Deg OP Nephroscope
- Outer Sheath Fixed, 15.9Fr
- Guiding Tube
- Guiding Tube for Second Guide wire

vi. Bougie Dilator Tubes 9-28Fr - Qty 5

vii. Nephroscope Graspers-1

- 1.Toothed Grasper 3.25x400mm
- 1Grasper With Lumen 3.25x400mm
- Fine Toothed Grasper 3.25x400mm
- Grasping Forceps 5Fr X 340mm

viii. Bugbee Electrode with Monopolar HF Cable - Qty – 2

1.4.13 ANCILLARY EQUIPMENT

a. Ultrasonic Lithotripsy QTY-1

- Advanced Dual Action Lithotripsy
- Plug and Play

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LOT 8-19	Operation Theatre	General Surgery	Laparoscopic towers

- Hand Activated
- Large Single Lumen Probes for Quick Drilling And Continuous Fragment Removal
- Complete with suitable probes for immediate use

b. 30 Watt Holmium Laser- 1 Quantity

Descriptions:

i. A 30-watt holmium laser for lithotripsy on stones of all types and sizes with high energy per pulse of 5J and reputation rate of 25Hz.

ii. The multipurpose, multi-specialty holmium wavelength ideal for fragmenting stones and for precision surgery, including the ablation and vaporization of soft tissue with minimal bleeding.

a. FEATURES:

i. High-resolution screen multi-touch interface screen.
ii. Should be able to recognize fiber size.
iii. Green aiming beam
iv. Save the laser setting for at least last ten treatments used.
v. Should be on castors/ on a trolley.

b. System Includes:

- 1 Single Foot Pedal
- 1 20A Inlet 3 wire cable
- 1 UK Power cable,
- 1 Operator Manual CD
- 1 Debris Shields
- 1 English Laser Warning Sign

c. Accessories.

- 200µm reusable laser fiber
- 365µm reusable laser fiber
- 550µm reusable laser fiber
- 2 Laser Safety Goggles
- 1 ceramic scissor
- 1 Fiber Inspection Scope
- 3 Steam Sterilization Tray

d. SYSTEM SPECIFICATIONS:

- Average Power: 30 Watts
- Laser Source: Holmium: YAG
- Wavelengths: 2.1 µm

e. Energy per:

- Pulse: 0.2-5 Joules

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- Repetition Rate: 3-25 Hertz
- Pulse Duration: 650 μsec ± 20% (full width)
- Aiming Beam: Green, with 5 intensity settings
- Display: at least 7" Touch screen color display
- Delivery Systems: Compatible with reusable and disposable fibers.
- Cooling: Internal water-to-air heat exchanger
- Utilities: 50/60 Hz, 220-240 V

1.4.14 A brochure should be provided for reference

1.4.15 Manuals

i. User manuals (both hard copy and soft copy)

1.4.16 Technical Manual (both hard copy and soft copy)

1.4.17 Installation

1.4.17.1 Supplier to Supply, install, test, commission and offer training for the equipment

1.4.18 Warranty-2-Years.

1.4.18.1 After the warranty period is over, five years annual Comprehensive Maintenance Contract (CMC) will have to be entered into with the terms and conditions mentioned in the tender specification. The Bidder will provide the CMC cost that will be applicable after expiry of the warranty. The price will be for reference purposes but will not be part of the bid. The successful bidder has to ensure that all the required spares and services are available during the period of CMC and has to be guaranteed for at least 10 years after from the time of equipment installation.

1.4.19 User training

1.4.19.1 Supplier to train users on site

1.4.19.2 Technical Training

1.4.19.3 Supplier to train at least one biomedical technician and one nurse at the onsite

1.4.20 The supplier should provide references of previous Supplier of similar equipment in Kenya

1.4.21 The supplier to provide evidence of local capacity to service equipment.

1.4.22 The supplier must provide Manufacturers authorization

LOT 9: INTENSIVE CARE UNIT (CRITICAL CARE)

LOT 9-1: Ventilators

Item Code No.	Department	Section	Item Description
LOT 9-1	**Intensive Care Unit**	**Critical Care Unit**	**Ventilator**
1. General Description			
Advanced microprocessor based ventilator for ICU, mobile on trolley, proof of model on current production, for use in adult, peadiatric, and neonates			
2. Composition			
2.1.	Main unit		
3. Performance Specifications			
3.1.	Main Unit		
3.1.1.	Ventilation mode	CMV, PEEP, CPAP ,PSV, SIMVand NIV	
3.1.2.		Supports, invasive and non-invasive ventilation, Nasal CPAP, ASV	
3.1.3.	Ventilation rate CMV	up to 100 bpm	
3.1.4.	Inspiratory flow	5-80 lpm	
3.1.5.	Tidal Volume	5-2000 ml	
3.1.6.	I/E ratio	5:1- 1:5	
3.1.7.	Inspiration time	0.3-5.0 sec	
3.1.8.	Trigger sensitivity	Flow/pressure	
3.1.9.	PEEP/CPAP	1 to 40 cmH_20	
3.1.10.	Oxygen Concentrations	21-100%	
3.1.11.	Alarms	Upper and lower airway pressure, Gas supply pressure, system error, (audio and visible)	
3.1.12.	Nebulizer	In CMV, SIMV mode	
3.1.13.	Display	LCD colour screen, Display respiratory parameters	
3.1.14.	Connectivity	Serial port RS 232, Ethernet, Wi-Fi, etc.	
3.1.15.	Batter back up	Provided, rechargeable	
3.1.16.	Back up time	4 hrs. approximately	
3.2.	Components		
3.2.1.	Trolley	Mobile on castors with brakes	
3.2.2.	Tubing support arm	1 pc	

Item Code No.	Department	Section	Item Description
LOT 9-1	**Intensive Care Unit**	**Critical Care Unit**	**Ventilator**
3.2.3.	Breathing circuit set (reusable)	1 pc	
3.2.4.	Bacteria filter	2 sets	
3.2.5.	O_2 pressure hose	1pc	
3.2.6.	Air pressure hose	1 pc	
3.2.7.	Cylinder support	1 pc	
3.2.8.	Test bag	1 pc	
3.2.9.	Laryngeal mask	1 pc	
3.2.10.	Air way, 3 type	1 Set	
3.3.	Humidifier	Heated humidifier 1 pc	
3.4.	Trends	At least 24 hrs.	
3.5.	Medical air supply	Should have a Gas delivery system by soundless in built compressor /external integrated compressor with the unit	
4.	Physical characteristics		
4.1.	Main unit	Mounted on mobile cart	
5.	Operating environment		
5.1.	Power Requirements	240V, A/c 50 Hz, Single phase	
5.2.	Ambient temperature	10^{o} C to 40^{o} C	
5.3.	Relative humidity	20% to 90%	
6.	Accessories		
6.1.	Automatic Voltage Regulator (AVR)		
6.1.1.	Capacity	Over VA of the main Unit	
6.1.2.	Input	Ac 240V, 50Hz, Single phase ± 15%	
6.1.3.	Output	Ac 240V, 50Hz, Single Phase ± 2.5 %	
7.	Consumables/Reagents		
7.1.	Nil		
8.	Quality standards		
8.1.	Manufacturing standards	IEC 60601-1, ISO 9001 and ISO 13485	
8.2.	Conformity to standards	CE and FDA marked	

Item Code No.	Department	Section	Item Description		
LOT 9-1	**Intensive Care Unit**	**Critical Care Unit**	**Ventilator**		
9.	Local back up service				
9.1.	Available	Should be available locally			
9.2.	Capacity to service equipment	Agent shall have adequate facilities, spare parts, and qualified and skilled technical staff			
10.	Delivery point				
10.1.	See Schedule	For inspection, testing and installation			
11.	Pre installation requirements				
	Nil				
12.	Installation and testing				
	Complete installation and setup of the machine as per manufacturer's instructions				
13.	Training				
13.1.	User Training	On site user training on operation and daily up keep			
13.2.	Maintenance training	Onsite maintenance training on preventive maintenance			
14.	Technical documentations				
14.1.	User manuals	2 Sets			
14.2.	Service Manual	1 Set			
14.3.	Drawings	Nil			
15.	Commissioning				
15.1.	Testing and commissioning of the machine to the satisfaction of the user.				
16.	Warranty				
16.1.	Equipment	Minimum of one year after commissioning on all parts.			
16.2.	Equipment System	Nil			

LOT 9-2: Neonatal Ventilators

Item Code No.	Department	Section	Item Description
LOT 9-2	**Intensive Care Unit**	**Critical Care Unit**	**Neonatal Ventilator**
1. General Description			
Neonatal ventilator for neonate, mobile on trolley, model on current production			
2. Composition			
2.1.	Main unit UPS		
3. Performance Specifications			
3.1.	Main Unit 3.1.1. Advanced microprocessor based continuous flow – pressure limited time cycled ventilator for very low body weight infants (premature, newborn) up to maximum 15 kg. 3.1.2. The neonatal ventilator should have the following ventilation modes: IMV, Assist Control, SIMV, CPAP, and PSV. Volume Guarantee should possible in Assist Control and SIMV. 3.1.3. Monitor with LCD/TFT (12" or higher size) graphical display for real time simultaneous display of two waveforms. Should display minimum 3 graphs and 2 loops and may not simultaneously. 3.1.4. Should have settings for a. Peak Inspiratory Pressure : 0 – 50 cmH2O b. PEEP : 0 – 20 cmH2O c. Fraction of inspired oxygen : 21 – 100% d. Inspiratory Time : 0.1 – 3 sec e. Expiratory Time : 0.2 – 25 sec f. Inspiratory flow : 1 – 30Lpm g. Base flow : 1 – 20 lpm h. Volume guarantee : 2 - 100ml i. Respiratory Rate : 0 - 100 bpm j. Tidal volume range : 2 - 100 ml 3.1.5. Should have real time monitoring for: a. Pressure – Peak, Plateau, Mean, PEEP b. Expired Tidal Volume (Monitored), Expired Minute Volume, leakage in %. c. Frequency/Rate – Set (Inspiratory), Spontaneous MV in %, total, I.E ratio d. FiO2, Pressure and Flow wave forms and loops 3.1.6. Should have an internal battery (maintenance free) with minimum one hour operating time for ventilator. 3.1.7. Should have automatic compliance and leak compensation for circuits and ET tubes. 3.1.8. Should have expiratory valve for easy sterilization. 3.1.9. Should have automatic alarm settings.		

Item Code No.	Department	Section	Item Description
LOT 9-2	**Intensive Care Unit**	**Critical Care Unit**	**Neonatal Ventilator**

3.1.10. It should have trending of measured parameters – 12Hrs

3.1.11. MV alarm can be manually adjusted along with audio and visual alarms for:

a. High/low pressure
b. High/low Minute Volume/Tidal Volume
c. Apnea alarm
d. Compressor failure
e. Failure of Sensor's
f. Tube obstruction
g. Power failure
h. Ventilator failure

3.1.12. Standard accessories (for each equipment)

a. Modular corrosion free Original Trolley
b. Silicon patient circuit with Y piece sensor for neonates – 2 Set start
c. Servo controlled humidifier with heated wire type and reusable chamber.
d. Temperature probe & adaptor - 2 no's start
e. Flow sensor - 10 no's start
f. Inbuilt Nebulizer
g. Original Hinged arm for rail (support for patient circuit)
h. Test lung for each patient circuit. - 1 no
i. Servo heated Humidifier with Temp Display - 1no
j. Hose for O2 connection - 5 mts
k. Hose for compressed air - 5 mts
l. Hose plug for O2 and air - 2 on each
m. Oxygen conversion kit with 5m Hose - 1no
n. Nasal mask and prongs(three different size) -3 each
o. Expiratory Valve per ventilator - 2 Nos. start

3.1.13. Should have a Gas delivery system by soundless inbuilt compressor /external integrated compressor with the unit. In case of compressor failure it should also be operable with compressed air/oxygen supply of 45 to 60 psi.

3.1.14. Replacement guarantee should be provided for flow sensors and oxygen sensor for the entire 3 years warranty period and also the rate offered for CMC should include the replacement guarantee for flow sensors and oxygen sensor.

3.1.15. Trolley/ Cart mounting for easy transport.

3.1.16. Should work with input 240Vac 50 Hz supply.

3.1.17. Equipment should have inbuilt battery backup for at least 30 minutes backup.

Item Code No.	Department	Section	Item Description
LOT 9-2	**Intensive Care Unit**	**Critical Care Unit**	**Neonatal Ventilator**
	3.1.18. Should have safety certificate from a competent authority CE / FDA (US) Copy of the certificate / test report shall be produced along with the technical bid. **Documentation** 3.1.19. Certificate of Calibration and inspection from the factory 3.1.20. List of Equipment available for providing calibration and routine maintenance support as per manufacturer documentation in service / technical manual. 3.1.21. List of important spare parts and accessories with their part number and costing 3.1.22. Log book with instruction for daily, weekly, monthly and quarterly maintenance checklist. The job description of the hospital technician and company service engineer should be clearly spelt out 3.1.23. Service manual in English 3.1.24. User manual in English		

LOT 9-3: Patient ICU Bed

Item Code No.	Department	Section	Item Description
LOT 9-3	**Intensive Care Unit**	**Critical Care Unit**	**ICU Bed with mattresses**

1. General Description

Electrical and Manual operated ICU bed complete with adjustable backrest, knee rest, trendelenberg/ reverse trendelenberg, and water proof mattress

2. Composition

2.1.	Main unit				

Physical Specifications

Main Unit

2.2. Operational Requirements

2.2.1. The system should be electrically and manually operated and adjustable for heights, trendelenburg etc. It should also be having radiotransluscent top for carrying out X-Ray at the bedside

2.3. Technical Specifications

2.3.1. Should have four section mattress base

2.3.2. Should be able to handle weight of up to 200Kg

2.3.3. Should have X-Ray translucent back section made up of high pressure laminate.

2.3.4. Should have X-Ray cassette holder underneath the back section & should allow insertion of X-Ray cassette from either side of the bed.

2.3.5. Base frame & support frame should be made up of steel for long life & prevention from rusting.

2.3.6. Should have stepless electrical adjustment for the following :-

- Height : 450-840 mm
- Back section : 0- 50 degrees
- Leg Section : 0-30 degrees

2.3.7. Should have stepless pneumatic adjustment for Trendelenburg (20-25° approx.), reverse-trendelenburg (10-15° approx.)

2.3.8. Should have a manual quick release mechanism for back section adjustment during emergency situation

2.3.9. Should be equipped with four articulated half-length tuck away side rails

2.3.10. Should be equipped with large castors (diameter 150 mm) with central braking and steering facility.

2.3.11. Mattress of the Bed should be made up of high density foam with Anti-Microbial agent incorporated into all components that assists in Prohibiting growth of bacteria & fungi and easy to clean.

2.3.12. Mattress should be fully Radiolucent for ease in performing portable X-Rays.

2.3.13. Should have bumpers at all four corners and place for fixing accessories

2.3.14. Dimensions of bed :

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LOT 9-3	**Intensive Care Unit**	**Critical Care Unit**	**ICU Bed with mattresses**

- Length : 2100 -2290 mm
- Width : 850 -1020mm
- Mattress Size : appropriate as per bed size

2.4. System Configuration Accessories, spares and consumables

2.4.1. I.C.U Bed Mainframe -01

2.4.2. Bed Ends, detachable : 01 pair

2.4.3. Articulated half-length tuck away side rails: 04 Nos.

2.4.4. IV Rods: 01 No.

2.4.5. Mattress 12 cm Thick: 01 No.

2.5. Environmental factors

2.5.1. Shall meet IEC-60601-1-2:2001 or Equivalent General Requirements of Safety for Electromagnetic Compatibility.

2.5.2. The unit shall be capable of being stored continuously in ambient temperature of 15 -50 0C and relative humidity of 20-90%

2.5.3. The unit shall be capable of operating continuously in ambient temperature of 10 -40 0C and relative humidity of 20-90%

2.6. Power Supply

2.6.1. Power input to be 220-240VAC, 50Hz as appropriate fitted with BS plug

2.6.2. Resettable overcurrent breaker shall be fitted for protection

2.7. Standards, Safety and Training

2.7.1. Electrical safety conforms to standards for electrical safety IEC-60601 / IS-13450

2.7.2. Manufacturer should have ISO certification for quality standards.

2.7.3. Electric Shock Protection level-Class-B

2.7.4. Electric current Protection- Class -1

2.7.5. Certified to be compliant with IEC 60601-2-38 Medical Electrical Equipment part 2-38 Particular requirements for safety of Electrically Operated Hospital Beds

2.7.6. Service manual in English

2.7.7. User manual in English

3.	Quality Standards				
3.1.	Manufacturing standards	ISO 9001 and 60601, ISO 13485			
3.2.	Conformity to standards	CE or FDA Appproved, IP X4 electrical protection standard			
4.	Delivery point				
4.1.	See Schedule	Delivery point			

Item Code No.	Department	Section	Item Description		
LOT 9-3	**Intensive Care Unit**	**Critical Care Unit**	**ICU Bed with mattresses**		
5.	Warranty				
5.1.	Equipment	Minimum of one year after delivery			
5.2.	Equipment System	Nil			

LOT 9-4: Stethoscope

Item Code No.	Department	Section	Item Description
LOT 9-4	**Intensive Care Unit**	**Critical Care Unit**	**Cardiac stethoscope, adult**
1. General Description			
Dual Stethoscope (Adult) : - Dual sided chest-piece. - Diaphragm for best auscultation. - Provided with Non-Chill retaining ring and bell ring. - Chrome plated internal spring binaural. It Should be CE marked.			

LOT 9-5: Autoclavable Laryngoscopes

Item Code No.	Department	Section	Item Description		
LOT 9-5	**Intensive Care Unit**	**Critical Care Unit**	**Laryngoscope with blade, adult & Paediatric**		
1. General Description					
goscope with blade for adult & Paeds					
2. Composition					
2.1.	Main unit Handle with battery Blades Casing				
3. Performance Specifications					
3.1. Main Unit 3.1.1. Should supply 4 different size standard blades and one handle for adult and paediatric separately and one short stubby handle 3.1.2. Should be stainless Steel matt finished. 3.1.3. Should provide curved blades for both adult and paediatric. 3.1.4. An extra-large blade should be supplied along with each scope. 3.1.5. Should be provided with battery 3.1.6. Should provide spare bulb – 6 no's as part of start-up kit 3.1.7. Should provide casing					
4.	Quality standards				
4.1.	Manufacturing standards	ISO 9001 , ISO 13485			
4.2.	Conformity to standards	CE and FDA marked			
5.	Delivery point				
5.1.	See Schedule	For inspection and testing			
5.2.	Nil				
6.	Warranty				
6.1.	Equipment	Minimum of one year after commissioning on all parts.			
6.2.	Equipment System	Nil			

LOT 9-6: Bair Hugger

Item Code No.	Department	Section	Item Description
LOT 9-6	Intensive Care Unit	Critical Care Unit	Bair Hugger

1. General Description

2. Composition

3.	Main unit				

3.1. Should have the facility for Forced Air warming.
3.2. Should have Two Air flow setting for the air flow 48cfm / 32cfm for adult and infant patient in same machine.
3.3. Should have single Hose for all type/Size of Blankets.
3.4. Should have at-least 3 temperature control sensor
3.5. Should have over temperature sensor at the end of the Hose.
3.6. Should have Digital Hour Meter
3.7. Should have microprocessor control system to allow a multi-staged Heater.
3.8. Three heater elements to eliminate flicker of OR lighting.
3.9. Should have Temp. Range – Ambient to 43°C + 1.5°C Max.
3.10. Should have High Efficiency Air Filter of 0.2 Micro size.
3.11. The weight of Equipment should be less than 8.0 kg.
3.12. Should distribute even temperature across the blankets and patient.
3.13. Blanket should not be more than 160 gm. weight.
3.14. Should have safe warming to void tissue damaging.
3.15. Should have Facility to use Blood / Fluid and Patient warmer at the same time.
3.16. Should ensure even temperature from head to toe.
3.17. The equipment should have easy attachment to IV pole, Bedrail or Freestanding.
3.18. Should have service facility locally.
3.19. Meet Regulatory standard for leakage current.
3.20. The products should be (F.D.A.) and/or CE approved.

Blankets:

I.	Adult Full Body Blankets:	25
II.	Paediatric Full Body Blankets	25
III.	Adult Under-Body Blanket	25
IV.	Paediatric Under-Body Blankets	25
V.	Large Paediatric Under-Body Blankets	25

LOT 9-7: Blood Sugar Machines

Item Code No.	Department	Section	Item Description
LOT 9-7	Intensive Care Unit	Critical Care Unit	Blood Sugar Machines

1. General Description

2. Composition

2.1.	Main unit				

GLUCOMETER WITH

STRIPS Product
Eligibility Criteria:

- Product should be CE as per IVD (Invitro Diagnostic Device) or USFDA Certified.
- Manufacturer should be ISO 13485 certified for quality standards.
- Test strips should be certified by the Kenya Laboratory Technologists and Technicians Board.

3. **Technical Specifications**

3.1. Small, portable and user-friendly device is required. Blood should not go into the Glucometer while measurement.
3.2. It should be able to measure whole blood in capillary mode.
3.3. Measurement range: 30 to 600 in mg/dl.
3.4. Accuracy should be as per International Standard ISO 15197: 2013 (Requirements for Blood- glucose monitoring systems for self-testing in managing diabetes mellitus). Supporting certificate or test reports from the National Institutes of Biologicals (NIB) must be furnished of last 2years with the technical bid.
3.5. Reproducibility/Precision: ± 5%
3.6. Display should be 40mm ± 5 mm or better measured diagonally.
3.7. It should be battery operated electronic system and the battery life should be for at least 500 tests.
3.8. Self-life of strips: Minimum 6 months at the time of delivery to consignee.
3.9. Packing of strips should not be more than 50 strips in a pack.
3.10. Strips should work for minimum 3 months after opening of strips pack.
3.11. Operating temperature for both device and test strip should be 100C to 400C.
3.12. Control solution for checking reliability of strips will be supplied free of cost as & when required.
3.13. Ready availability of reagent test strips, battery & other consumables across BIHAR for at least 5 years.
3.14. **A complete user operational guide shall have to be supplied along with each machine, printed in Hindi and English language.**
3.15. **A lancet applicator/ lancet holder shall have to be supplied along with each machine.**

Scope of supply:
a) Glucometer: 1no.

Item Code No.	Department	Section	Item Description
LOT 9-7	Intensive Care Unit	Critical Care Unit	Blood Sugar Machines
b) Standard batteries: 1Set c) Carrying case: 1no. d) Control solution/Control Strips e) Glucose test strips: As per Order f) Auto disables lancets: As per order g) **A lancet applicator/ lancet holder**			
4.			

LOT 9-8: Blood warmers

Item Code No.	Department	Section	Item Description
LOT 9-8	Intensive Care Unit	Critical Care Unit	Blood/Fluid Warmers

1. General Description

1.1. Delivers blood and intravenous fluid to the patient at norm thermic temperature at wide range of flow rates from gravity flow rates to 50-5,000 ml/hr.

2. Composition

2.1.	Main unit				

2.1.1. Should be able to warm fluid/blood to a temperature range of 37-40 degree C
2.1.2. Should be able to maintain or warm fluid/blood at a flow rate of 2.5 L/min
2.1.3. Should have a digital temperature display of fluid
2.1.4. Should have inbuilt water tank/ dry in line heating system to warm the infused fluid/blood
2.1.5. Should have a warm water column or heated sleeve up to the patient end to maintain the temperature up to the point of entry into the vein
2.1.6. Alarms for disconnections, less water and over temperature
2.1.7. At least 350 disposable tubing sets for fluid/blood along with each unit, the cost of which should be included in the financial bid
2.1.8. Should be useful for both in adult and Pediatric patients

2.2. Operational Requirements:
2.2.1. The Blood Warming and Infusion Set should be user friendly, safe to use

2.3. Standards, Safety and Training:
2.3.1. Should be FDA or CE approved product.
2.3.2. Electrical safety conforms to standards for electrical safety IEC-60601-1 General Requirements. (or equivalent Standard)
2.3.3. Manufacturer/Supplier should have ISO certification for quality standards.
2.3.4. Certified for meting IEC60601-2-24: Particular requirements for the safety of infusion pumps and controllers
2.3.5. Should meet IEC 529 Level 3 and 4 (IP3X)(spraying and splashing water) for enclosure protection, water ingress.
2.3.6. Electrical Safety Classification Class I/II, Type CF and Internally powered equipment.

2.4. Power Supply:
2.4.1. Power input to be 220-240VAC, 50Hz fitted with UK plug

2.5. Documentation:
2.5.1. User Manual and Service manual in English must be provided, both soft and hard copies.

2.6. Installation, Commissioning and Testing,

Item Code No.	Department	Section	Item Description
LOT 9-8	Intensive Care Unit	Critical Care Unit	Blood/Fluid Warmers

2.6.1. The equipment and all accessories should be transported, installed, tested and commissioned at Kisii Cancer Centre project site.

2.7. Warranty and After Sales Service:

2.7.1. The Equipment including all accessories including bought out items should be under WARRANTY for a period of at least TWO YEARS after successful commissioning.

2.7.2. Comprehensive maintenance contract rates for 5 YEARS after warranty must be quoted separately and these would be taken into consideration while comparing price bids.

2.7.3. All spare parts and consumables should be available with supplier or principals for a period of at least 10 years.

2.7.4. Should have local service facility. The service provider should have the necessary equipment recommended by the manufacturer to carry out preventive maintenance test as per guidelines provided in the service/maintenance manual.

2.8. Other tender conditions

2.8.1. Suppliers should have been in the market for at least 3 years and should have a satisfied userbase for this equipment.

2.8.2. All Essential Spare parts / Consumables rates to be given separately which may be frozen for next 10 Years.

2.8.3. Suppliers should have made a large number of installations, within the last five years, in the country in reputed institutions and preferably in Government Hospitals with a proven track record of excellent after sales support for this system.

2.8.4. List of references to be enclosed.

LOT 9-9: Pacemakers

Item Code No.	Department	Section	Item Description
LOT 9-9	**Intensive Care Unit**	**Critical Care Unit**	**Temporary pacemaker**

1. General Description

Temporary pace maker, externally type, Single chamber for synchronous and asynchronous pacing

2. Composition

2.1.	Main unit				

3. Performance Specifications

3.1. Main Unit

3.1.1. Should be a Single Chamber Pacemaker (Temporary) for bradycardia treatment before, during or after a surgery.

3.1.2. Stimulation burst and permanent stimulation should be available for high pacing rate.

3.1.3. Should be compact & easy-to-operate device, particularly suitable for emergency treatments.

3.1.4. Safety features, including automatic lead and battery check.

3.1.5. Should have continuous monitoring of the battery voltage.

3.1.6. Should have transparent cover for parameter protection.

3.1.7. Should have shock and water-resistant housing.

3.1.8. Should have back up pacing during battery change.

3.1.9. Should have Modes AOO, AAI, VOO, VVI

3.1.10. Should have pacing rate 40-180 ppm.

3.1.11. Should have fast pacing (Burst rate) of 80-200 ppm.

3.1.12. Should have Pulse Amplitude of 0.1-17V

3.1.13. Should have sensitivity 1.0-20mV

3.1.14. Should have minimum battery backup > 200 hours.

3.1.15. Should be supplied with at least 2 patient cables

3.1.16. Should have safety certificate from a competent authority CE and FDA marked with valid detailed electrical and functional safety test report

LOT 9-10: Drug Fridges

Item Code No.	Department	Section	Item Description
LOT 9-10	**Intensive Care Unit**	**Critical Care Unit**	**Refrigerator, Drug**
1. General Description			
1.1. Refrigerator, drug.			
2. Composition			
2.1.	Main unit		
3. Performance Specifications			
3.1.	Main Unit		
3.1.1.	Material	Insulated galvanized steel	
3.1.2.	Type	Compressor, electrical	
3.1.3.	Door	Single door , glass type	
3.1.4.	Total net capacity	350 litres	
3.1.5.	Temperatures range	+2ºC to + 8ºC stable	
3.1.6.	Ambient temperature	10 º C to 35ºC	
3.1.7.	Shelves	Provided, adjustable and extractable	
3.1.8.	Thermometer	Digital, external mounted, with temperature record history	
3.1.9.	Control	Electronic, Microprocessor based	
3.1.10.	Refrigerant	CFC free	
3.1.11.	Alarm	Provided, audible and visible	
3.1.12.	Power	240V, 50 Hz, a.c	
4.	Accessories		
4.1.	Nil		
5.	Quality standards		
5.1.	Manufacturing standards	ISO 9001, ISO 14001, ISO 13485	
5.2.	Conformity to standards	CE and FDA marked.	

Item Code No.	Department	Section	Item Description
LOT 9-10	**Intensive Care Unit**	**Critical Care Unit**	**Refrigerator, Drug**
6.	Delivery point		
6.1.	See Schedule	For inspection and testing	
6.2.	Nil		
7.	Warranty		
7.1.	Equipment	Minimum of one year after commissioning on all parts.	
7.2.	Equipment System	Nil	
8.	Accessories		
8.1.	Automatic Voltage Regulator (AVR)		
8.1.1.	Capacity	Over VA of the main Unit	
8.1.2.	Input	Ac 240V, 50Hz, Single phase ± 15%	
8.1.3.	Output	Ac 240V, 50Hz, Single Phase ± 2.5 %	

LOT 9-11: Food Fridge

Item Code No.	Department	Section	Item Description
LOT 9-11	**Intensive Care Unit**	**Critical Care Unit**	**Non frost Refrigerator, Food**
1. General Description			
1.1. Refrigerator, food.			
2. Composition			
2.1.	Main unit		
3. Performance Specifications			
3.1.	Main Unit		
3.1.1.	Material	Insulated galvanized steel	
3.1.2.	Type	Compressor, electrical	
3.1.3.	Door	Two door, freezer and lower compartment	
3.1.4.	Total net capacity	350 litres	
3.1.5.	Temperatures range	-4ºC to + 10ºC adjustable	
3.1.6.	Ambient temperature	10 º C to 35ºC	
3.1.7.	Shelves	Provided, adjustable and extractable	
3.1.8.	Thermometer	Digital, external mounted, with temperature record history	
3.1.9.	Control	Electronic, Microprocessor based	
3.1.10.	Refrigerant	CFC free	
3.1.11.	Alarm	Provided, audible and visible	
3.1.12.	Dimensions		
3.1.13.	Power	240V, 50 Hz, a.c	
4.	Accessories		
4.1.	Nil		
5.	Quality standards		
5.1.	Manufacturing standards	ISO 9001, ISO 14001	

Item Code No.	Department	Section	Item Description
LOT 9-11	**Intensive Care Unit**	**Critical Care Unit**	**Non frost Refrigerator, Food**
5.2.	Conformity to standards	CE marked.	
6.	Delivery point		
6.1.	See Schedule	For inspection and testing	
6.2.	Nil		
7.	Warranty		
7.1.	Equipment	Minimum of one year after commissioning on all parts.	
7.2.	Equipment System	Nil	
8.	Accessories		
8.1.	Automatic Voltage Regulator (AVR)		
8.1.1.	Capacity	Over VA of the main Unit	
8.1.2.	Input	Ac 240V, 50Hz, Single phase ± 15%	
8.1.3.	Output	Ac 240V, 50Hz, Single Phase ± 2.5 %	

LOT 9-12: Endoscopic Laryngoscope

Item Code No.	Department	Section	Item Description
LOT 9-12	Intensive Care Unit	Critical Care Unit	Endoscopic Laryngoscope

1. General Description

Diagnostic set

2. Composition

2.1.	ADULT LARYNGOSCOPES				
2.2.	PEDIATRIC LARYNGOSCOPES				

3. Description of the medical supply unit design type

3.1. ADULT LARYNGOSCOPES
- 3.1.1. Fiber optic bright white halogen for true tissue color
- 3.1.2. Laryngoscope Handle Type C Battery Handle
- 3.1.3. Single-piece type; lightweight
- 3.1.4. Blades can be converted from lamp to fiber optic illumination
- 3.1.5. Light pathways can be repaired; reduced proximal blade height
- 3.1.6. With Macintosh Halogen Fiber Optic Blade 2
- 3.1.7. With Macintosh Halogen Fiber Optic Blade 3
- 3.1.8. With Macintosh Halogen Fiber Optic Blade 4
- 3.1.9. With Miller Blade 2
- 3.1.10. With Miller Blade 3
- 3.1.11. With Miller Blade 4
- 3.1.12. With laryngoscope case

3.2. PEDIATRIC LARYNGOSCOPES
- 3.2.1. Fiber optic bright white halogen for true tissue color
- 3.2.2. Laryngoscope Handle Type C Battery Handle
- 3.2.3. Single-piece type; lightweight
- 3.2.4. Blades can be converted from lamp to fiber optic illumination
- 3.2.5. Light pathways can be repaired; reduced proximal blade height
- 3.2.6. With six (6) Miller Fiber Optic Blade 00
- 3.2.7. With six (6) Miller Fiber Optic Blade 0
- 3.2.8. With six (6) Miller Fiber Optic Blade 1
- 3.2.9. With laryngoscope case

LOT 9-13: Non-Invasive ventilators

Item Code No.	Department	Section	Item Description
LOT 9-13	Intensive Care Unit	Critical Care Unit	Non-invasive Ventilator
1. General Description			
2. Composition			
2.1.	Main unit		
2.2.	2.2.1. **Description of function** ICU ventilator (Neonatal to adult) provide artificial respiratory support both invasive and non-invasively to critical patients 2.2.2. **Operational Requirement** a. Should be microprocessor controlled ventilator with integrated facility for ventilation monitoring suitable for neonatal, Pediatric and adult ventilation. b. The unit should be compressor based with same make and automatic switch over facility to central air supply. c. Ventilator and compressor should be operable on mains and battery (up to 60 min) 2.2.3. **Technical specification** a. Hinged arm holder for holding the circuit b. Should have colored Touch Screen, 12 Inch or more, should be able to turn and tilt the display monitor c. Should have facility to measure and display i. 3 Scalar waves – Pressure and time, volume and time and flow and time. ii. 2 loops P-V, F-V. iii. Graphic display to have automatic scaling facility for waves iv. Status indicator for ventilator mode, battery life, patient data, alarm setting etc. d. Should have trending facility for 24 hours e. Should have Automatic compliance and leakage compensation for circuit f. Should have following settings for all age groups. i. idal Volume 5 ml to 2000 ml in volume control ii. Pressure (insp) 2 – 80 cmH_20 iii. Pressure Ramp / Flow patterns iv. Respiratory Rate 1 to 150 bpm, Insp. Time 0.1 to 3 sec, I: E Ratio 4:1 to 1:9 v. Insp. Flow (Resultant) 0.2 to 180 LPM, continuous Flow 0-40 LPM PAP/PEEP 0-35 cmH_2O vi. Pressure Support 2-80 cmH_2O		

Item Code No.	Department	Section	Item Description
LOT 9-13	Intensive Care Unit	Critical Care Unit	Non-invasive Ventilator

vii. FiO_2 21 to 100%
viii. Pause Time 0 to 2 sec
ix. Flow trigger 0.2 to 9 LPM or Pressure trigger 0.5 to 10 cm H_2O

g. Should have monitoring of the following parameters.
   i. Airway pressure (Peak & Mean)
   ii. Tidal Volume (Inspired & Expired)
   iii. Minute Volume (Expired)
   iv. Spontaneous Minute Volume
   v. Total Frequency
   vi. iO_2 dynamic
   vii. Intrinsic PEEP (or trapped volume)
   viii. Plateau Pressure
   ix. Resistance & Compliance
   x. Use Selector Alarms for all measured & monitored parameters
h. Should have modes of ventilation
   i. Volume controlled
   ii. Pressure controlled – BIPAP with/without pressure support with spontaneous breathing
   iii. SIMV with/without pressure support – VC + PS; PC + PS; PRVC + PS
   iv. CPAP/ PEEP
   v. Non Invasive ventilation in all ventilation modes
   vi. PRVC/ Autoflow/PSV + assured tidal volume
   vii. Bivent
   viii. Volume support
   ix. Apnea / backup ventilation in CPAP/ PSV, SIMV mode
   x. Neonatal mode of ventilation- nasal CPAP with its entire kit (including bonnet, nasal tubing, nasal prongs and nasal mask)
i. Expiratory block should be autoclavable and no routine calibration required.
j. Should have below advanced monitoring
   i. Intrinsic PEEP
   ii. Occlusion Pressure, Max Inspiratory pressure (p1 Max)
   iii. RSBI
   iv. Patient circuit compensation
k. Should have integrated ultrasonic nebulizer with capability to deliver fine particle size of < 3 micron to be used in online.
l. Ventilator should have optional upgradation facility for integrated EtCO2.

Item Code No.	Department	Section	Item Description
LOT 9-13	Intensive Care Unit	Critical Care Unit	Non-invasive Ventilator

m. Replacement of oxygen cells should be free within the period of warranty and CMC.
n. Should have ports for data transfer and software compatible with windows. Should have facility for network connection and should be HL7 compatible.
o. With each ventilator, two sets each of reusable patient interface (masks) for non-invasive ventilation should be provided for infants, children and adolescents (that is total of six patient interfaces for non-invasive ventilation with each ventilator).
p. It should be supplied with 50 nos. of disposable pediatric and adult circuits each with heater wire and chamber and also quote the price separately, to be fixed for next 3 years.

2.2.4. ICU Ventilator with OEM, non-corrosive trolley – 01
2.2.5. Adult, Pediatric reusable silicon patient circuit – 02 each
2.2.6. Expiratory valve/ expiratory cassette – 02 nos. with each ventilator. Reusable flow sensor -10 nos. with each ventilator. Minimum Warranty on expiration cassette/expiratory valve should be 3 years. In case it fails, the company/ supplier should replace it without any charge.
2.2.7. Proximal flow sensor for neonatal use- 05nos
2.2.8. Hinged Support Arm – 1 no
2.2.9. Oxygen Hose – 1 no; Air hose – 2 nos.
2.2.10. Medical Air compressor USFDA and European CE Certified
2.2.11. Reusable Masks (Small, Medium, Large) with each machine – 02 each
2.2.12. Humidifier –Automated, Servo Controlled with digital monitoring of inspired gas temperature, complete with heating wire – 01; with reusable infant and pediatric chamber. Should be USFDA and European CE certified product.
2.2.13. **Power and inlet gas pressure requirement**
a. Power input to be 220 – 240 VAC, 50 Hz
b. Gas input (air and oxygen) – 50-100 psi
2.2.14. **Standards, Safety and Training**
a. The ventilator should be US FDA and European CE certified Product. The company should attach USFDA and European CE certificate along with in the technical bid.
b. Should have local service facility. The service provider should have the necessary equipment recommended by the manufacturer to carry out preventive maintenance test as per guidelines in the service/ maintenance manual.
c. Company should ensure the supply of consumables and spares for the period of warranty and CMC Rates of

Item Code No.	Department	Section	Item Description
LOT 9-13	Intensive Care Unit	Critical Care Unit	Non-invasive Ventilator
	consumables and accessories should be quoted separately in financial bid.		

LOT 9-14: Diagnostic Set

Item Code No.	Department	Section	Item Description
LOT 9-14	Intensive Care Unit	Critical Care Unit	Diagnostic Sets

1. General Description

Diagnostic set

2. Composition

2.1.	ADULT LARYNGOSCOPES				
2.2.	PEDIATRIC LARYNGOSCOPES				

3. Description of the medical supply unit design type

3.1. ADULT LARYNGOSCOPES

- 3.1.1. Fiber optic bright white halogen for true tissue color
- 3.1.2. Laryngoscope Handle Type C Battery Handle
- 3.1.3. Single-piece type; lightweight
- 3.1.4. Blades can be converted from lamp to fiber optic illumination
- 3.1.5. Light pathways can be repaired; reduced proximal blade height
- 3.1.6. With Macintosh Halogen Fiber Optic Blade 2
- 3.1.7. With Macintosh Halogen Fiber Optic Blade 3
- 3.1.8. With Macintosh Halogen Fiber Optic Blade 4
- 3.1.9. With Miller Blade 2
- 3.1.10. With Miller Blade 3
- 3.1.11. With Miller Blade 4
- 3.1.12. With laryngoscope case

3.2. PEDIATRIC LARYNGOSCOPES

- 3.2.1. Fiber optic bright white halogen for true tissue color
- 3.2.2. Laryngoscope Handle Type C Battery Handle
- 3.2.3. Single-piece type; lightweight
- 3.2.4. Blades can be converted from lamp to fiber optic illumination
- 3.2.5. Light pathways can be repaired; reduced proximal blade height
- 3.2.6. With six (6) Miller Fiber Optic Blade 00
- 3.2.7. With six (6) Miller Fiber Optic Blade 0
- 3.2.8. With six (6) Miller Fiber Optic Blade 1
- 3.2.9. With laryngoscope case

LOT 9-15: Pneumatic Pumps

Item Code No.	Department	Section	Item Description
LOT 9-15	Intensive Care Unit	Critical Care Unit	Pneumatic Pumps

1. General Description

Intermittent Pneumatic Compression Device

2. Composition

2.1.	Main unit				

3. Description of the medical supply unit design type

3.1. It should be of portable size with handle.
3.2. It should be US FDA & CE approved.
3.3. It should weigh between 3 to 5 kgs.
3.4. It should have power input of 230 volts, 20-25 watts with power cord of length min. 3 meters.
3.5. Battery backup should last for minimum 3-4 hour after fully charged.
3.6. The pressure adjustable range of 40-65 mm Hg.
3.7. LCD/LED with separate pressure display of both legs numeric & indicating the Inflated Leg. It should have timer sittings from 1to24 hour.
3.8. Safety Standards: -
- Audio and visual Alarms For Leak, For Maximum Pressure:
- Automatic shutdown if pressure exceeds the maximum limit.

3.9. Disposable Garments: -
- For Ankle to thigh level,
- For Ankle to below knee &
- For foot.

3.10. Garments should have inner cotton lining.
3.11. Sizes Available Disposable Garments: -
[a] Small [b] Medium [c] Large [d] XL [e] XXL

LOT 9-16: Portable Examination Lamp

Item Code No.	Department	Section	Item Description
LOT 9-16	Intensive Care Unit	Critical Care Unit	Examination Light

10. General Description

The LED technology should be of highly engineered optical system which delivers the precisely controlled natural white light that is so important for an accurate examination.

11. Composition

11.1.	Main unit				

12. Description of the medical supply unit design type

Should have mobile Floor Stand
SLSE50-CM or Wall/Ceiling Mount

STANDARD DESIGN FEATURES

12.1. High-intensity of 39,000 lux (3623 fc) at 24" (61 cm)

12.2. 4000 K color temperature

12.3. CRI (Color Rendering Index) of 92

12.4. Natural white light

12.5. LED light module with at least 40,000-hour life

12.6. Universal input voltage

12.7. Drift-free K-arm with 42" (107 cm) arm range

12.8. IEC 60601-1/ 60601-2-41 certified

12.9. Should have European CE or USA certificate

12.10. Should be supplied with European or USA country of origin certificate.

LOT 9-17: Transport Ventilators

Item Code No.	Department	Section	Item Description
LOT 9-17	Intensive Care Unit	Critical Care Unit	Ventilator
1. General Description			
Advanced microprocessor-based ventilator for ICU, mobile on trolley, proof of model on current production, for use in adult, peadiatric, and neonates			
2. Composition			
2.1.	Main unit		
3. Performance Specifications			
3.1.	Main Unit		
3.1.1.	Ventilation mode	CMV, PEEP, CPAP ,PSV, SIMVand NIV	
3.1.2.		Supports, invasive and non-invasive ventilation, Nasal CPAP, ASV	
3.1.3.	Ventilation rate CMV	up to 100 bpm	
3.1.4.	Inspiratory flow	5-80 lpm	
3.1.5.	Tidal Volume	5-2000 ml	
3.1.6.	I/E ratio	5:1- 1:5	
3.1.7.	Inspiration time	0.3-5.0 sec	
3.1.8.	Trigger sensitivity	Flow/pressure	
3.1.9.	PEEP/CPAP	1 to 40 cmH_20	
3.1.10.	Oxygen Concentrations	21-100%	
3.1.11.	Alarms	Upper and lower airway pressure, Gas supply pressure, system error, (audio and visible)	
3.1.12.	Nebulizer	In CMV, SIMV mode	
3.1.13.	Display	LCD colour screen, Display respiratory parameters	
3.1.14.	Connectivity	Serial port RS 232, Ethernet, Wi-Fi, etc.	
3.1.15.	Batter back up	Provided, rechargeable	
3.1.16.	Back up time	4 hrs. approximately	
3.2.	Components		

Item Code No.	Department	Section	Item Description
LOT 9-17	Intensive Care Unit	Critical Care Unit	Ventilator

3.2.1.	Trolley	Mobile on castors with brakes
3.2.2.	Tubing support arm	1 pc
3.2.3.	Breathing circuit set (reusable)	1 pc
3.2.4.	Bacteria filter	2 sets
3.2.5.	O_2 pressure hose	1pc
3.2.6.	Air pressure hose	1 pc
3.2.7.	Cylinder support	1 pc
3.2.8.	Test bag	1 pc
3.2.9.	Laryngeal mask	1 pc
3.2.10.	Air way, 3 type	1 Set
	Humidifier Trends	Heated humidifier 1 pc At least 24 hrs.
3.3.	Medical air	Should have a Gas delivery system by soundless in built
3.4.	Supply	compressor /external integrated compressor with the unit
4.	Physical characteristics	
4.1.	Main unit	Mounted on mobile cart
5.	Operating environment	
5.1.	Power Requirements	240V, A/c 50 Hz, Single phase
5.2.	Ambient temperature	10^{o} C to 40^{o} C
5.3.	Relative humidity	20% to 90%
6.	Accessories	
6.1.	Automatic Voltage Regulator (AVR)	
6.1.1.	Capacity	Over VA of the main Unit
6.1.2.	Input	Ac 240V, 50Hz, Single phase ± 15%

Item Code No.	Department	Section	Item Description
LOT 9-17	Intensive Care Unit	Critical Care Unit	Ventilator

6.1.3.	Output	Ac 240V, 50Hz, Single Phase ± 2.5 %			
7.	Consumables/Reagents				
7.1.	Nil				
8.	Quality standards				
8.1.	Manufacturing standards	IEC 60601-1, ISO 9001 and ISO 13485			
	Conformity to standards	CE and FDA marked			
9.	Local back up service				
9.1.	Available	Should be available locally			
9.2.	Capacity to service equipment	Agent shall have adequate facilities, spare parts, and qualified and skilled technical staff			
10.	Delivery point				
10.1.	See Schedule	For inspection, testing and installation			
11.	Pre installation requirements				
	Nil				
12.	Installation and testing				
	Complete installation and setup of the machine as per manufacturer's instructions				
13.	Training				
13.1.	User Training	On site user training on operation and daily up keep			
13.2.	Maintenance training	Onsite maintenance training on preventive maintenance			
14.	Technical documentations				
14.1.	User manuals	2 Sets			
14.2.	Service Manual	1 Set			
14.3.	Drawings	Nil			
15.	Commissioning				

Item Code No.	Department	Section	Item Description		
LOT 9-17	Intensive Care Unit	Critical Care Unit	Ventilator		
15.1.	Testing and commissioning of the machine to the satisfaction of the user.				
16.	Warranty				
16.1.	Equipment	Minimum of one year after commissioning on all parts.			
16.2.	Equipment System	Nil			

LOT 9-18: Syringe Pumps

Item Code No.	Department	Section	Item Description
LOT 9-18	**Intensive Care Unit**	**Critical Care Unit**	**Syringe Pump**

1. General Description

1.1. Syringe pump

2. Composition

2.1.	Main unit				

3. Performance Specifications

3.1. Main Unit

3.1.1. Should be easy to use and nurse friendly.
3.1.2. Should have automatic syringe size and model detection
3.1.3. System should be front loading
3.1.4. Should have large format LCD/TFT display.
3.1.5. Should have a minimum flow rate range from 0.1 – 1200 ml/hr. for 50ml syringe, 0.1 – 100 ml/hr. for 20ml syringe and 0.1 – 60 ml/hr. for 10ml syringe.
3.1.6. Syringe range from 20-50/60 ml.
3.1.7. Should have a flow rate accuracy of ±2%
3.1.8. Should have a bolus rate up to 1000ml/hr. for 50 ml syringe.
3.1.9. Should have automatic and manual bolus.
3.1.10. Should have at least 3 levels of programmable occlusion pressure.
3.1.11. Should have automatic bolus reduction system to avoid accidental bolus delivery after occlusion incident.
3.1.12. Should have a rechargeable battery with back up time of minimum 3 hours.
3.1.13. System should have a docking station
3.1.14. Pump must trigger following alarms with visual indication:-
ix. Occlusion Pressure Alarm
x. KVO or 3 min pre- alarm
xi. Syringe empty and volume infused alarm
xii. Internal malfunction and Battery Charge Low Alarm
xiii. Syringe disengaged and incorrectly placed alarm
xiv. Alarm loudness control.
xv. No mains
xvi. Line disconnected (rapid pressure drop).
3.1.15. Should work with input 200 to 240Vac 50 Hz supply.
3.1.16. Should be CE and FDA marked.
3.1.17. Copy of the certificate / test report shall be produced along with the technical bid

LOT 9-19: Infusion Pumps

Item Code No.	Department	Section	Item Description
LOT 9-19	**Intensive Care Unit**	**Critical Care Unit**	**Infusion Pump**

1. General Description

1.1. Infusion pump

2. Composition

2.1.	Main unit				

3. Performance Specifications

3.1. Main Unit

a. Should be operated on drip rate Peristaltic finger pump method.
b. Should be compatible with most of the IV set (macro/micro drip sets).
c. Should have the following flow rates.
d. IV Set ml/hr. drops/min
   - 15 drops/ml 3~450ml/hr. 1~100drops/min
   - 20 drops/ml 3~450ml/hr. 1~100drops/min
   - 60 drops/ml 1~100ml/hr. 1~100drops/min
e. Should have a flow rate accuracy of ±10% and drip rate accuracy of ±2%.
f. Should have a volume infused display from 0 to 999.9ml.
g. Should have a purge and KVO facility.
h. Should have an audible and visual alarm for occlusion pressure, air alarm, door open, empty, low battery.
i. Should have a LCD display with backlight and graphical display of infusion.
j. Should have a minimum 2hr battery back up at highest delivery rate.
k. Should work with input 240Vac 50 Hz supply.
l. Should be CE and FDA marked
m. Copy of the certificate / test report shall be produced along with the technical

LOT 9-20: Feeding Pumps

Item Code No.	Department	Section	Item Description
LOT 9-20	Intensive Care Unit	Critical Care Unit	Feeding Pump

1.General Description

Enteral Feeding Pump

2.Composition

3.Description of the medical supply unit design type

Specification:

FLOW RATE CHANCE	1-100ml/h (1ml/h increments) 100-600ml/h (5ml/h increments)
FLOW RATE ACCURACY	±7% at 50ml/h
FEEDING VOLUME	1-100ml/h (1ml/h increments) 100-500ml/h (5ml/h increments)
FEEDING MODE	Continuous
PRIMING	Automatic & manual priming availability
COUNTER	Preferably cumulative feeding volume Counters from 0.001L to 99.999L
DATA EVENT LOG	Feeding history 24-72hrs or 250 Events (more will be preferable)
NIGHT MODE	Night mode decreases brightness of Screen & the power LED (preferable)
KEYPAD LOCK	Possibility to lock the keypad to prevent Unintentional key press
INTENDED USE	For external feeding use only compatible to hospital conventional feed.
INFORMATION	Target volume almost reached battery almost Discharge, start reminder, technical information
ALARMS	Target volume reached door open, wrong set Installation, downstream occlusion, occlusion, Empty bag/air in line, empty battery, technical Information
PUMPING MECHANISM	Linear peristaltic pumping system
DISPLAY	LCD with good visibility
BATTERY	Full battery charging time: 5-6 hrs. Battery life minimum of 12-15 hrs. Once fully charged
FLUSH	Programmable flushing capabilities
FREE FLOW PROTECTION	Preventing the risk of free flow when door is opened When the set is engaged to ensure the patient Safety and an adequate delivery of nutrition
SET LENGTH	Adjustable anti free flow clamp positioning

Item Code No.	Department	Section	Item Description
LOT 9-20	Intensive Care Unit	Critical Care Unit	Feeding Pump

- Device must be certified by recognized society for safe use like USFDA/ACE/EC
- Minimum of two years' warranty.

LOT 9-21: Endoscopy Machine

Item Code No.	Department	Section	Item Description
LOT 9-21	ICU	ICU	Endoscopy Machine

1. General Description

Full HD Endoscopy System

High Definition camera system for Endoscopic Diagnostic Surgery with advance recording and data management facility

4.Three Chip High definition Camera System

The system should be truly Digital HDTV endoscopic video camera. The system should have the maximum Resolution of 1920 X 1080 pixels, progressive scan and the consistent use of 16: 9 formats for Input & Output to guarantee genuine HDTV.

A. The system should have facility of Optical & Digital Zoom lens to enhance the quality of Image size & cross specialty usage of the camera system, regardless of the telescope used.

B. USB Port for Capturing HD Stills/ FULL HD Videos (desirable) in External USB drive and direct interface of USB Printer to facilitate direct printouts.

C. System should have facility of controlling additional equipments like light source and recording device from the camera head.

D. System should have facility to offer various visualization modes including optical color enhancement for surgery and diagnosis by shifting the color spectrum for recognition of the finest tissue Structures and their differentiation.

E. Parallel live display of visualization modes besides white light mode (picture-in-picture).

F. Camera Head should be light weight (<300 gms) for comfortable and long hours of continuous use from one hand.

Modular design: Digital FULL HD camera module should be compatible for use with video flexible endoscopes.

2. Technical Specifications:

Image sensor:	3X1/3'' CCD-Chip.	
Pixels	At least 1920 x 1080	
AGC:	Microprocessor controlled	
Lens:	Integrated Zoom Lens f = 15-31 mm (1.8x or above optical zoom)	
Minimum light sensitivity:	1.17 Lux (f = 1.4 mm)	
Control buttons:	3 (2 of them freely programmable).	
Video output:	Multiple DVI-D outputs, 3G/HD - SDI outputs, camera inputs for communication with compatible	

Item Code No.	Department	Section	Item Description
LOT 9-21	ICU	ICU	Endoscopy Machine

	camera modules, LAN connections, USB connections.	
Input:	Keyboard input for character generator. 5-pole DIN socket.	
Power Supply:-	100-240 VAC 50/60 Hz	
Certified to :	IEC 601-1, 601-2-18, FDA and/ or CE according to MDD, protection class1/CF	

3. **High Definition Medical Grade Monitor**

3.1.	a) The monito should have; b) HDTV display in original 16: 9 HDTV forma c) 1080 p/ 50 & 1080 p/60 displays possible. d) LED crystal display. e) Max. Resolution of 1920X1080. f) Screen diagonal – 26". g) Desk top with pedestal. h) Should have the facility of PIP mode.				

Specifications

a) HD TFT Flat Screen Monitor with stand size 26",
b) Aspect Ratio 16:9 HD format
c) Brightness : 450 cd/m2 or more
d) Maximum viewing angle : 178° vertical
e) Contrast ratio: 1400 : 1
f) Reaction Time – 8ms
g) Rated power : 115 watts
h) Power Supply 100-240 VAC
Video Inputs: 2* DVI-D, 2* 3G SDI, 1* S Video, Composite 1* RGB/VGA, 1* RS 232, 1* RJ 45 Interface.
Output: 1* DVI , 1* 3G SDI, 1* S-Video
Accessories External 24VDC Power Supply, Mains Cord, Pedestal
(Optional). Certified to: EN 60601-1, protection class IPX 1.
3. LED Light Source with Fiber optic cable

Lamp type: - Xenon 15V, 300 Watt
a) Color Temperatures 6000K
b) Light Outlets – 1
c) Light Intensity Adjustment :- Continuously adjustable either manually or
d) automatically by cameras video output signal.
e) Should be supplied with Diameter4.0- 4.8mm, Length 300cm.
f) Offer with one spare Xenon Lamp.

Item Code No.	Department	Section	Item Description
LOT 9-21	ICU	ICU	Endoscopy Machine

g) Certified To :- IEC 601-1 & UL 544 CE According to MDD , protection class 1/CF

4. Video Trolley:

1. Video trolley to be supplied for mounting equipments having preferably four or more shelf, desirably having one drawer, with antistatic wheel casters, front lockable, high grade of electrical insulation and earth protection. Multiple 5 Ampere sockets, inbuilt with trolley to connect all electronic devices. Multiple Potential equalization connections to be provided. Powder coated good quality rust free and should be able to take load minimum up to 70 Kg. Should be medical grade and from same manufacturer

5. Advance Audio Video Recording and Data Documentation

1. The Full High-Definition Documentation System (certified to be used in OT) should be based on latest Windows embedded platform with Integrated security software as a protection against malware, independent from security patches of the operating system and it should only be possible to run certified software (for security purposes) designed specifically for recording, managing, and archiving surgical images and video in native full HD resolution and 3D. The captured full high- definition, 3D images & videos can be accessed from the hard drive for printing or saving onto multiple forms of external media which includes CD-DVD and blue ray reader, USB Flash Drive (2.0 & 3.0) & Hospital network through FTP,

2. It should have Integrated customizable surgical checklist following the WHO standard or equivalent.

3. Desirably System should have SSD-technology (Separate SSD for boot up) in order to boot fast

4. System should have latest hardware configuration including latest high speed processor, adequate RAM for faster simultaneous processing of dual channel, HD & 3D recordings. System also preferably should be able to do real time audio recording along with endoscopic recording (Desirable). Should have multiple adequate numbers of input/output sockets for faster full HD/3D data transfer. Preferably should be able to do easy video editing and preferably should be network compatible.

5. System should have 2 DVI inputs for dual video recording.

6. The hardware of computer system should be latest technology.

7. Minimum 2 TB of storage to be provided with the system

6. Touch Screen for Data Documentation

1. Large touch screen certified to be used in Operating room. It should be appropriately placed on/attached to Video Trolley.
2. Note: All medical devices along with video trolley should be from same manufacturer for total system compatibility and to produce maximum efficiency and for economical & reliable after sales service.

Should be US FDA and European CE Approved.

LOT 9-22: Electrical Suction Units

Item Code No.	Department	Section	Item Description
LOT 9-22	**Intensive Care Unit**	**Critical Care Unit**	**Electrically operated Suction Unit**
1. General Description			
n machine suitable for use in theatre, for both adult and pediatric use. Should be constructed from coated non-corrosive, extreme heat resistance material and electrically insulated and mobile on antistatic castors φ 60 mm, 2 No. lockable, with high level push handle.			
2. Composition			
2.1.	Main unit		
3. Performance Specifications			
3.1.	Main Unit		
3.1.1.	High flow rate	40 litres per minute.	
3.1.2.	Suction vacuum	Maximum 700mmHg	
3.1.3.	Suction pump	oil free	
3.1.4.	Jars	2 X 2 liter polycarbonate autoclavable and unbreakable complete with overflow devices and valves.	
3.1.5.	Vacuum gauge	Graduated in mmHg and kPa.	
3.1.6.	Vacuum control	Adjustable at the front panel	
3.1.7.	Switch	Main on front panel and foot switch (water proof type)	
3.1.8.	Cable towage	On back with reversible cleats	
3.1.9.	Anti-bacterial filters	Available preferable autoclavable	
3.1.10.	Suction tubing connection	Antistatic neoprene or silicone	
3.1.11.	Safety	Overflow pump protection	
3.1.12.	Handle	High level push handle type	
3.1.13.	Movements	Mobile on four antistatic castors 2 No. lockable.	
4.	Physical characteristics		
4.1.	Main unit	Mobile on castors with push handle	
5.	Operating environment		
5.1.	Power Requirements	240V, A/c 50 Hz, Single phase, 3 Pin Plug BS standard, 3m long cord with PE	

Item Code No.	Department	Section	Item Description
LOT 9-22	**Intensive Care Unit**	**Critical Care Unit**	**Electrically operated Suction Unit**
5.2.	Ambient temperature	10º C to 40º C	
5.3.	Relative humidity	20% to 90%	
6.	Accessories	The following accessories will be provided as startup kits.	
6.1.	Sterilizable, silicone tubing	5 Set	
6.2.	Bacterial filters	1 Box	
6.3.	Foot switch	1 No.	
6.4.	Cannula with handle for general purpose	4 Sets	
7.	Quality standards		
7.1.	Manufacturing standards	EN 10079-1, IEC 60601-1, ISO 9001, ISO 13485	
7.2.	Conformity to standards	CE and FDA marked	
8.	Local back up service		
8.1.	Available	Should be available locally	
8.2.	Capacity to service equipment	Agent shall have adequate facilities, spare parts, and qualified and skilled technical staff	
9.	Delivery point		
9.1.	See Schedule	For inspection and testing	
9.2.	Nil		
10.	Pre installation requirements		
	Nil		
11.	Installation and testing		
	Complete installation and setup of the machine as per manufacturer's instructions		
12.	Training		
12.1.	User Training	On site user training on operation and daily up keep	
12.2.	Maintenance training	Onsite maintenance training on preventive maintenance	
13.	Technical documentations		

Item Code No.	Department	Section	Item Description		
LOT 9-22	**Intensive Care Unit**	**Critical Care Unit**	**Electrically operated Suction Unit**		
13.1.	User manuals	2 Sets			
13.2.	Service Manual	1 Set			
13.3.	Drawings	Nil			
14.	Commissioning				
14.1.	Testing and commissioning of the machine to the satisfaction of the user.				
15.	Warranty				
15.1.	Equipment	Minimum of one year after commissioning on all parts.			
15.2.	Equipment System	Nil			

LOT 9-23: Resuscitation /Emergency Trolley

Item Code No.	Department	Section	Item Description
LOT 9-23	**Intensive Care Unit**	**Critical Care Unit**	**Resuscitation/Emergency trolley**

1. General Description

Resuscitation trolley for use in ICU. Epoxy coated mild steel, with drawers, protection perimeter and defibrillator holder. The Unit should be mobile on four castors , 2 lockable

2. Composition

2.1.	Main unit,		

3. Performance Specifications

3.1. Main Unit

3.1.1. Should be durable with Ergonomic handle and should have easy grip

3.1.2. Height should be 40-45”

3.1.3. Should have 6-8 drawers of sizes 3x3”,2x6”,1x9”

3.1.4. Should have interchangeable 3”,6”,9” drawers which run smoothly on good quality channels

3.1.5. Should have provision of side storage which allows storage of variety accessories like can, storage bins, glove storage, sharp container set

3.1.6. An over bridge can with baskets, shelves and bins to keep important things

3.1.7. Should have AMS top surface & advance polymer material which is easy to clean. It should not dent, chip flake or corrode

3.1.8. Should be easily rolling and has toe brakes

3.1.9. Should have I.V. pole with clamps ach 3” drawer should have provision for 25-30 compartments

3.1.10. Should have twin swivel castors & central lock

3.1.11. Should be CE and ISO 9001/2000 and FDA approved

3.1.12. Should have CPR board & O2 cylinder holder

LOT 9-24: General Purpose Trolley

Item Code No.	Department	Section	Item Description
LOT 9-24	**Intensive Care Unit**	**Critical Care Unit**	**General Purpose Trolley**
1. General Description			
General purpose trolley constructed from epoxy coated mild steel frame, with shelves. The Unit should be mobile on four castors , 2 lockable			
2. Composition			
2.1.	Main unit,		
3. Performance Specifications			
3.1.	Main Unit	Mobile type	
3.1.1.	Material	Epoxy coated mild steel	
	Shelves	Two stainless Steel shelves with three guard rails on each	
3.1.2.	Top	Stainless steel tray with three guard rails	
3.1.3.	Castors	Provided, heavy duty, , 2 with brakes	
3.1.4.	Push/Pull handle	Provided	
4.	Quality standards		
4.1.	Manufacturing standards	ISO 9001	
4.2.	Conformity to standards	CE approved	
5.	Delivery point		
5.1.	See Schedule	For inspection, installation and testing	
5.2.	Nil		

LOT 9-25: Dressing Trolley

Item Code No.	Department	Section	Item Description
LOT 9-25	**Intensive Care Unit**	**Critical Care Unit**	**Dressing Trolley**

1. General Description			
Dressing trolley constructed from stainless steel frame, with shelves, bowl, and bucket. The Unit should be mobile on four castors 2 lockable			
2. Composition			
2.1.	Main unit		
3. Performance Specifications			
3.1.	Main Unit	Mobile type	
3.1.1.	Material	All Stainless Steel, High grade	
	Shelves	Two stainless Steel shelves with three guard rails on each	
3.1.2.	Top	Stainless steel tray with three guard rails	
3.1.3.	Bucket	Provided, Stainless steel	
	Bowl	Provided, Stainless steel	
3.1.4.	Castors	Provided, heavy duty, 2 with brakes	
	Push/Pull handle	Provided, Stainless Steel	
4.	Quality standards		
4.1.	Manufacturing standards	ISO 9001 or any other internationally recognized standards	
	Conformity to standards	CE approved	
5.	Delivery point		
5.1.	See Schedule	For inspection, installation and testing	
5.2.	Nil		

LOT 9-26: Patient Trolleys/ Strecher

Item Code No.	Department	Section	Item Description
LOT 9-26	Intensive Care Unit	Critical Care Unit	Patient Trolley/Stretcher
1. General Description			
General purpose trolley constructed from epoxy coated mild steel frame, with shelves. The Unit should be mobile on four castors , 2 lockable			
2. Composition			
2.1.	Main unit,		
3. Performance Specifications			
3.1.	Main Unit	Mobile type	
3.1.1.	Material	Epoxy coated mild steel	
	Shelves	Two stainless Steel shelves with three guard rails on each	
3.1.2.	Top	Stainless steel tray with three guard rails	
3.1.3.	Castors	Provided, heavy duty, , 2 with brakes	
3.1.4.	Push/Pull handle	Provided	
4.	Quality standards		
4.1.	Manufacturing standards	ISO 9001	
	Conformity to standards	CE approved	
5.	Delivery point		
5.1.	See Schedule	For inspection, installation and testing	
5.2.	Nil		

LOT 9-27: Baby Cots

Item Code No.	Department	Section	Item Description
LOT 9-27	**Intensive Care Unit**	**Critical Care Unit**	**Baby Cot**

1. General Description

Baby Cot for use in ICU.

- Dimensions L124.5 x W67.5 x H93cm
- Mattress Size Required L120 x W60cm
- Finish White
- one-handed drop side mechanism
- Designed with narrow bars on every side so baby can see out, while parents can easily see in.
- Distressed nickel handles
- Large under cot storage drawer
- 3 position mattress base height
- Sturdy all-stainless steel SS304 frame

2.	Quality standards		
2.1.	Manufacturing standards	ISO 9001 or any other internationally recognized standards	
	Conformity to standards	CE Approved	
3.	Delivery point		
3.1.	See Schedule	For inspection, installation and testing	
3.2.	Nil		

LOT 9-28: CPAP Machine

Item Code No.	Department	Section	Item Description		
LOT 9-28	**Intensive Care Unit**	**Critical Care Unit**	**CPAP Machine**		
1. General Description					
CPAP machine suitable for neonatal, mobile on castors					
2. Composition					
2.1.	Main unit				
3. Performance Specifications					
3.1.	Main Unit	Potable, mounted on stand with castors			
3.1.1.	Performance	Continuous supply of air blended with oxygen to new born			
3.1.2.	Generator	Provided, silent operation			
3.1.3.	Output pressure	Adjustable by user			
3.1.4.	Concentration	Adjustable by user			
3.1.5.	Display	large LCD display, of pressure, concentration and breathing			
3.1.6.	Control	microprocessor based			
3.1.7.	Alarm	Visible and audio apnea , adjustable by user			
3.1.8.	Power supply	Internal rechargeable battery charging on, 240V, 50 Hz ac			
3.2.	Mounting	On mobile stand with castors, two with brakes			
4.	Quality standards				
4.1.	Manufacturing standards	IEC 60601-1, ISO 9001 and ISO 13485			
	Conformity to standards	CE and FDA marked			
5.	Local back up service				
5.1.	Available	Should be available locally			
5.2.	Capacity to service equipment	Agent shall have adequate facilities, spare parts, and qualified and skilled technical staff			
6.	Delivery point				
6.1.	See Schedule	For inspection, installation and commissioning			
7.	Technical documentations				
7.1.	User manuals	2 Sets			
7.2.	Service Manual	1 Set			

Item Code No.	Department	Section	Item Description		
LOT 9-28	**Intensive Care Unit**	**Critical Care Unit**	**CPAP Machine**		
7.3.	Drawings	Nil			
8.	Commissioning				
8.1.	Testing and commissioning of the machine to the satisfaction of the user.				
9.	Warranty				
9.1.	Equipment	Minimum of one year after commissioning on all parts.			
9.2.	Equipment System	Nil			

LOT 9-29: Ripple Mattress (to be included in the bed)

Item Code No.	Department	Section	Item Description		
LOT 9-29	**Intensive Care Unit**	**Critical Care Unit**	**Ripple Mattress**		
1. General Description					
Ripple Mattresses					
2. Composition					
2.1.	Main unit				
3. Physical Specifications					
3.1.	Main Unit				
3.1.1.	Type	Electrical operated			
3.1.2.	Material	Water proof easily washable			
3.1.3.	Size	To fit ICU Bed			
4.	Quality Standards				
4.1.	Manufacturing standards	ISO 9001 and 60601, ISO 13485			
4.2.	Conformity to standards	Directive 2004 / 108 / ECCE, FDA marked and IP X4 electrical protection standard			

LOT 9-30: Transport resuscitation kit

Item Code No.	Department	Section	Item Description
LOT 9-30	Intensive Care Unit	Critical Care Unit	Transport Resuscitation Kit

1. General Description

2. Composition

2.1.	Main unit				

3. Transport Emergency Resuscitation Kit-Adult

3.1. To have7Retromolar Intubation fiberscope for unexpected difficult airways.
- a. Tip Distal Bending 40°.
- b. To be movable eyepiece
- c. To have a light source connection
- d. With length 40-42cms and dia 5-6 cms.
- e. ET tube holder should be provided
- f. Should take min. 5.5 size of ET tube

3.2. Portable LED light source should be provide
- a. with illumination not less than 50000 Lux
- b. should run on two 3v photo batteries
- c. burning life should be more than 100 minutes
- d. ergonomically designed and can be connected to both the fibre scopes
- e. life of LED should be close to 50000 hrs

3.3. One Laryngoscope with rechargeable battery pack and blade with fibre optic mechanism should be provided to be used on both adult and pediatric patients with charger.

3.4. Other accessories like, magill forceps should be provided.

3.5. Should have Emergency Cricothyroidotomy for pediatric and adult
- a. disposable blades
- b. dilator

3.6. Should have Combitube size 37Fr. i. with complete kit

3.7. Should have Intubating Laryngeal Mask Airways with Following Components:
- a. ILMA Sizes 3 & 4.
- a. ILMA Tubes ID 7mm & 7.5mm.
- b. Tube Stabilizing rod
- c. Cuff deflator

3.8. Should have Laryngeal Mask Airways
- a. sizes 1,2 and 4

3.9. Handy and strong brief case/bag should be provided to keep all the instruments safe.

3.10. Set of disposable percutaneous tracheotomy kit for adult and pediatric.

Item Code No.	Department	Section	Item Description
LOT 9-30	Intensive Care Unit	Critical Care Unit	Transport Resuscitation Kit

3.11. Should have standard AMBU bag for pediatric and adult.
3.12. Mechanical suction pump with suction catheter and stomach tubes.
3.13. Should have Aluminum Oxygen reservoir 2 Liter with oxygen tube and cather.
3.14. Oxygen pressure reducer, regulable 0-15 liter with coupler for respirator.
3.15. Ventilating bag
3.16. Lubricant
3.17. Blood pressure meter, boso K-II
3.18. Stethoscope
3.19. Rescue blanket gold/silver
3.20. Infusion system.

LOT 9-31: Blood Gas Analyzer

Item Code No.	Department	Section	Item Description		
LOT 9-31	**Intensive Care Unit**	**ICU Lab**	Blood Gas Analyzer		
B. Performance and safety requirement for the equipment to be placed					
1. General Description Blood gas analyzer, capable of measuring at minimum pCO2, pO2, pH, K+, Na+, Cl-, Ca++ and at least 15 calculated parameters in whole blood, serum and plasma. The unit should be automatic, with electronic digital read out, dilutor and in built printer.					
2. Composition					
2.1.	Main unit				
3. Performance Specifications					
3.1.	Main Unit				
3.1.1.	Measuring parameters	pCO2, pO2, pH, K+, Cl-, Ca++			
3.1.2.	Calculated parameters	At least 15 parameters			
3.1.3.	Sample volume	About 150ųl			
3.1.4.	Measuring time	about 2-5 seconds			
3.1.5.	Temperature correction	Automatic			
3.1.6.	Display	Large LCD display			
3.1.7.	Printer	In built			
3.1.8.	Key pad	Soft			
4.	Physical characteristics				
4.1.	Main unit	Bench top			
		Robust construction and easy to clean			
5.	Operating environment				
5.1.	Power Requirements	240V, A/c 50 Hz, Single phase			
	Ambient temperature	10^{o} C to 40^{o} C			
	Relative humidity	20% to 90%			
6.	Accessories				
6.1.	True online UPS (1.25 X the power rating of equipment)				

Item Code No.	Department	Section	Item Description
LOT 9-31	**Intensive Care Unit**	**ICU Lab**	Blood Gas Analyzer
7.	Quality standards		
7.1.	Manufacturing standards	IEC 60601-1, ISO 9001, ISO 13485 and UL 3101-1	
	Conformity to standards	IVD- Directive 98/79/EC (IEC 1010-1),CE and FDA marked	
8.	Delivery point		
8.1.	See Schedule		
9.	Installation, testing and commissioning		
	Complete installation and set-up of the machine as per manufacturer's instructions		
B**: Reagents and consumable supply** 10. Start-up Kits Controls & calibrates must be provided for all the Tests			
D:Training of user and maintenance staff			
11.	User Training	See Schedule on-site user training on operation and daily up keep for two years renewable	
11.1.	Maintenance training	Scheduled on-site maintenance training on preventive maintenance for two years renewable	

LOT 10: BIOMEDICAL CALIBRATION EQUIPMENT

LOT 10-1: Electronic Tool Box

Item Code No.	Department	Section	Item Description
LOT 10-1	Engineering	Biomedical Workshop	Electronic Tool Box

1. General Description			
2. Composition			
2.1.	Main unit		
3.			
3.1.	Utility component storage box	3.2.	Crimping tool (inch) or (metric)
3.3.	Long nose plier 135mm	3.4.	Desoldering pump
3.5.	Diagonal cutting plier 110mm	3.6.	5pcs needle file set
3.7.	Dual Color Lineman's plier	3.8.	Testing screwdriver
3.9.	Bent nose plier 130mm	3.10.	Alignment tool (200mm/2.0mm)
3.11.	Side cutting plier 150mm	3.12.	IC extractor
3.13.	Dual Color Long nose plier	3.14.	Oil can
3.15.	Reverse action tweezer	3.16.	Flash light
3.17.	3pcs soldering aid tools	3.18.	7pcs Folding type hex key set (inch) or (metric)
3.19.	Soldering iron stand with sponge	3.20.	3 Prong holder
3.21.	Adjustable wrench 6″	3.22.	6pcs open-end wrench set
3.23.	Ceramic soldering iron 110V or 220V	3.24.	Heavy Duty Curved-Claw Hammer
3.25.	Screw driver 3/16″(inch) or 5mm (metric)	3.26.	PVC insulated tape
3.27.	Screw driver 1/4″(inch) or 6mm (metric)	3.28.	Stainless scissors 6″
3.29.	Screw driver 3.2x75mm	3.30.	Solder core 63%, SN
3.31.	Screw driver #0x75mm	3.32.	Parts tube
3.33.	Screw driver 5.0x75mm	3.34.	Heat sink
3.35.	Screw driver #1x75mm	3.36.	Utility knife (3 blades self-loading)
3.37.	Screw driver 6.0x100mm	3.38.	Measuring tape 3M/10FT
3.39.	Screw driver #2x100mm	3.40.	Inspection mirror

Item Code No.	Department	Section	Item Description
LOT 10-1	Engineering	Biomedical Workshop	Electronic Tool Box

3.41.	Screw driver 6.0x40mm	3.42.	Slip-channel pump pliers 254mm
3.43.	Screw driver #2 x40mm	3.44.	Pallet for 1PK-1700N serios
3.45.	Desoldering wick	3.46.	Top Pallet for 1PK-1700N serios
3.47.	Brush	3.48.	Carrying tool case
3.49.	6pcs electronic screwdriver set	3.50.	Professional Multimeter

LOT 10-2: Variable Output Isolation Transformer

Item Code No.	Department	Section	Item Description
LOT 10-2	Engineering	Biomedical Workshop	Isolation Transformer

4. General Description

Digital Single phase Output isolation Transformer

5. Composition

5.1.	Main unit				

240VAC Single Phase 50/60 Hz Input;
0-280VAC Output;
At least 9.5 Amps Max, the higher the better.
Microprocessor Controlled system;
Includes case, cord, plug, receptacle, lighted switch and output fuse.
Digital Voltmeter (output)
Digital Ammeter (output)
True Sine Wave Output
Universal Output Receptacle to allow connection to most US, UK and EU plugs.
The Metered Bench Top VARIAC to provide a precise voltage output.
The output to be a true sine wave.
The output voltage to be digitally adjusted via a large front panel knob or digitral buttons.
Digital readouts to be provided for output voltage and load amperage.

Details
Voltmeter Accuracy: +/- 0.5% F.S. +/- 1LSD
Enclosure: Ventilated ecnclosure
Voltmeter Resolution: 1 VAC
Line Cord: at least 5 ft with plug
Ammeter Accuracy: +/- 1.0% F.S. +/-1 LSD
Receptacle: (2) Universal mounted on front
Ammeter Resolution: 0.01 AAC
Input/Output Isolation: None
Regulation: None
Protection: Input & output fuses

LOT 10-3: Patient Monitor Analyzer (Patient Simulator)

Item Code No.	Department	Section	Item Description
LOT 10-3	Engineering	Biomedical Workshop	Patient Monitor Analyzer (Patient Simulator)
1. General Description			
2. Composition			
2.1.	Main unit		
Temperature	Operating	10 °C to 40 °C (50 °F to 104 °F)	
	Storage	-20 °C to +60 °C (-4 °F to 140 °F)	
Humidity	10 % to 90 % non-condensing		
Altitude	3,000 meters (9,843 ft)		
Dimensions (L x W x H)	14.5 cm x 30.2 cm x 8.6 cm (5.7 in x 11.9 in x 3.4 in)		
Display	LCD color display		
Communication	USB device upstream port	Mini-B connector for control by a computer	
	USB host controller port	Type A, 5 V output, 0.5 A max load. Connector for keyboard, barcode reader, and printer	
	Wireless	IEEE 82.15.4 for control by a computer	
Power	Lithium-ion rechargeable battery		
Battery charger	100 V to 240 V input, 15 V/2.0 A output. For best performance, the battery charger should be connected to a properly-grounded ac receptacle		
Battery life	9 hours (minimum), 100 NIBP cycles typical		
Safety standards	IEC/EN 61010-1 3rd Edition; Pollution degree 2 CAT None		
Certifications	CE, CSA, C-TICK N10140 , RoHS		
Electromagnetic compatibility (EMC)	IEC 61326-1:2012		

Item Code No.	Department	Section	Item Description
LOT 10-3	Engineering	Biomedical Workshop	Patient Monitor Analyzer (Patient Simulator)
Normal-sinus-rhythm waveform			
ECG reference	The ECG amplitudes specified are for Lead II (calibration), from the baseline to the peak of the R wave. All other leads are proportional		
Normal sinus rhythm	12-lead configuration with independent outputs referenced to right leg (RL). Output to 10 universal ECG jacks, color-coded to AHA and IEC standards		
High-level output	0.5 V/mV ± 5 % of the ECG amplitude setting available on a BNC connector		
Amplitude	0.05 mV to 0.5 mV (0.05 mV steps); 0.5 mV to 5.0 mV (0.25 mV steps) Other leads are proportional to Lead II (reference lead) in percentage per: Lead I: 70 Lead II: 100 Lead III: 30 Lead V1: 24 Lead V2: 48 Lead V3: 100 Lead V4: 120 Lead V5: 112 Lead V6: 80		
Amplitude accuracy	± (2 % of setting + 0.05 mV)		
ECG rate	10 BPM to 360 BPM in 1 BPM steps		
Rate accuracy	± 1 % of setting		
ECG waveform selection	Adult (80 ms) or pediatric (40 ms) QRS duration		
ST-segment elevation	Adult mode only. -0.8 mV to +0.8 mV (0.1 mV steps). Additional steps: + 0.05 mV and - 0.05 mV		
Power-on default	60 BPM, 1.0 mV, adult QRS and ST-segment elevation of 0 mV		
Pacemaker waveform			
Pacer pulse	Amplitude	0 (off), ± 2, ± 4, ± 6, ± 8, ± 10, ± 12, ± 14, ± 16, ± 18, ± 20, ± 50, ± 100, ± 200, ± 500, and ± 700 mV for lead II (reference lead)	
	Accuracy	Reference lead II: ± (5 % setting + 0.2 mV)	
Pacer pulse width	0.1 ms, 0.2 ms, 0.5 ms, 1 ms, and 2 ms ± 5 %		

Item Code No.	Department	Section	Item Description
LOT 10-3	Engineering	Biomedical Workshop	Patient Monitor Analyzer (Patient Simulator)

Paced arrhythmias	Atrial 80 BPM	
	Asynchronous 75 BPM	
	Demand with frequent sinus beats	
	Demand with occasional sinus beats	
	Atrio-ventricular sequential	
	Noncapture (one time)	
	Nonfunction	
	Amplitude 5 mV, width 1 ms, atrial waveform	
Arrhythmia		
Baseline NSR	80 BPM	
PVC focus	Left focus, standard timing (except where specified)	
Supraventricular arrhythmia	Atrial fibrillation (coarse or fine); atrial flutter; sinus arrhythmia; missed beat (one time); atrial tachycardia; paroxysmal atrial tachcardia; nodal rhythm; and supraventricular tachycardia	
Premature arrhythmia	Premature atrial contraction (PAC); premature nodal contraction (PNC); PVC1 left ventricular; PVC1 left ventricular, early; PVC1 left ventricular, R on T; PVC2 right ventricular; PVC2 right ventricular, early; PVC2 right ventricular, R on T; and multifocal PVCs	
Ventricular arrhythmia	PVCs 6, 12, or 24 per minute; frequent multifocal PVCs; bigeminy; trigeminy; multiple PVCs (one-time run of 2, 5, or 11 PVCs); monoventricular tachycardia (120 to 300 BPM in 5 BPM steps); poly-ventricular tachycardia (5 types); ventricular fibrillation (coarse or fine); and asystole	
Conduction defect	First-, second-, or third-degree heart block; and right- or left-bundlebranch block	
Advanced cardiac life support	Shockable pulseless arrest rhythms	Ventricular fibrillation (coarse), ventricular fibrillation (fine), unstable polymorphic ventricular tachycardia
	Non-shockable pulseless arrest rhythms	Asystole
	Symptomatic bradycardia	Sinus bradycardia (< 60 BPM)
		2nd degree AV block, mobitz type I

Item Code No.	Department	Section	Item Description
LOT 10-3	Engineering	Biomedical Workshop	Patient Monitor Analyzer (Patient Simulator)
			2nd degree AV block, mobitz type II
			Complete/3rd degree AV block
			Right bundle branch block
			Left bundle branch block
Advanced cardiac life support cont.	Symptomatic tachycardia: regular narrow-complex tachycardia (QRS < 0.12 seconds)		Sinus tachycardia > 150 BPM
			Supraventricular Tachycardia
	Symptomatic tachycardia: regular wide-complex tachycardias (QRS ≥ 0.12 seconds)		Sinus tachycardia > 150 BPM
			Supraventricular tachycardia SVT with aberrancy
	Irregular tachycardia		Atrial fibrillation (coarse and fine), atrial flutter, unstable monomorphic ventricular tachycardia (120 BPM to 300 BPM), torsade de pointes/polymorphic ventricular tachycardia (long QT interval)
ECG Performance testing			
Amplitude	0.05 mV to 0.5 mV (0.05 mV steps); 0.5 mV to 5.0 mV (0.25 mV steps) Other leads are proportional to Lead II (reference lead) in percentage per:		
Lead I: 70			
Lead II: 100			
Lead III: 30			
Lead V1 through V6: 100			
Pulse wave	30 BPM, 60 BPM, with 60 ms pulse width		
Square wave	0.125 Hz, 2 Hz, 2.5 Hz		
Triangle wave	0.125 Hz, 2 Hz, 2.5 Hz		

Item Code No.	Department	Section	Item Description
LOT 10-3	Engineering	Biomedical Workshop	Patient Monitor Analyzer (Patient Simulator)
Sine wave	0.05 Hz, 0.5 Hz, 1, 2 Hz, 5 Hz, 10 Hz, 25 Hz, 30 Hz, 40 Hz, 50 Hz, 60 Hz, 100 Hz, and 150 Hz		
R-wave detection	Waveform		Triangular pulse
	Rate		30 BPM, 60 BPM, 80 BPM, 120 BPM, 200 BPM, and 250 BPM
	Width		8 ms to 20 ms in 2 ms steps, and 20 ms to 200 ms in 10 ms steps
	Width accuracy		± (1 % of setting + 1 ms)
QRS detection	Widths		8 ms to 20 ms in 2 ms steps, and 20 ms to 200 ms in 10 ms steps
	Width accuracy		± (1 % of setting + 1 ms)
	Rate		30 BPM, 60 BPM, 80 BPM, 120 BPM, 200 BPM, and 250 BPM
	R-Wave up slope		0.875 amplitude, 0.4375 x width
	R-Wave down slope		Full amplitude, 0.5 x width
	S-Wave up slope		0.125 amplitude, 0.0625 x width
Tall T-wave rejection	Waveform		QT Interval 350 ms
			T-Wave width 180 ms
			T-Wave shape ½ sinewave
	Amplitude		0 % to 150 % reference lead amplitude in 10 % steps
	Rate		80 BPM
Rate accuracy	± 1 % of setting		
Amplitute accuracy	± (2 % of setting + 0.05 mV)		

Amplitude

- 0 % to 150 % reference lead amplitude in 10 % steps

Rate

- 80 BPM

ECG Artifact
Type

Item Code No.	Department	Section	Item Description
LOT 10-3	Engineering	Biomedical Workshop	Patient Monitor Analyzer (Patient Simulator)

- 50 Hz, 60 Hz, muscular, baseline wander, respiration

Size

- 25 %, 50 %, 100 % of the normal sinus R-Wave for each lead

Lead Select

All, RA, LL, LA, V1, V2, V3, V4, V5, V6

- Fetal/Maternal ECG
- Fetal Heart Rate (fixed)
- 60 BPM to 240 BPM in 1 BPM steps
- Fetal Heart Rate (IUP)
- 140 BPM at beginning, then varies with pressure
- Intrauterine-Pressure Waveforms
- Variable deceleration, early deceleration, late deceleration, and uniform acceleration
- Wave Duration
- 90 seconds, bell-shaped pressure curve, from 0 mmHg to 90 mmHg and returning to 0
- IUP Period
- min, 3 min, or 5 minutes; and manual
- Default Settings
- FHR 120 BPM, uniform deceleration wave, manual

Invasive Blood Pressure

Channels

- 2, each independently settable with identical parameters and are individually electrically isolated from all other signals

Input/Output Impedance

- 300 Ω - or ± 10 %

Exciter Input Range

- to 16 V peak

Exciter-Input Frequency Range

- DC to 5000 Hz

Transducer Sensitivity

- 5 (default) or 40 μV/V/mmHg

Pressure Accuracy

- ± (1 % of setting + 1 mmHg) accuracy guaranteed for dc excitation only

Static Pressure

- - 10 to + 300 mmHg in 1 mmHg steps

Pressure Units

- mmHg or Kpa
- Cardiac Catheterization
- Chambers: Aortic, pulmonary valve, and mitral valve

Item Code No.	Department	Section	Item Description
LOT 10-3	Engineering	Biomedical Workshop	Patient Monitor Analyzer (Patient Simulator)

BP Output

- Circular DIN 5-Pin
- Power-On Default
- 0 mmHg
- Swan-Ganz Sequence
- Right atrium, right ventrical (RV), pulmonary artery (PA), pulmonary artery wedge (PAW)

Dynamic Waveforms

Types (default pressures)

- Arterial (120/80)
- Radial artery (120/80)
- Left ventricle (120/00)
- Right ventricle (25/00)
- Pulmonary artery (25/10)
- Pulmonary-artery wedge (10/2)
- Right atrium (central venous or CVP) (15/10)

Pressure variability

- Systolic and diastolic pressures are independently variable in 1 mmHg steps
- Respiration Artifact
- Arterial, radial artery, and left ventricle
- 5 % to 10 % multiplication

Other

- 5 mmHg or 10 mmHg

Respiration

Rate

- 0 (OFF), 10 BrPM to 150 BrPM in 1 BrPM steps

Waves

- Normal or ventilated

Ratio (inspiration:expiration)

- Normal 1:1, 1:2, 1:3, 1:4, 1:5
- Ventilated 1:1

Impedance Variations (? Ω)

- 0.00 Ω to 1.00 Ω iin 0.05 Ω steps and 1Ω to 5 Ω in 0.25 Ω steps
- Accuracy Delta
- ± (3 % of setting + 0.05 Ω)

Baseline

- 500 Ω, 1000 Ω (default), 1500 Ω, 2000 Ω, Leads I, II, III

Accuracy Baseline

- ±5 %

Item Code No.	Department	Section	Item Description
LOT 10-3	Engineering	Biomedical Workshop	Patient Monitor Analyzer (Patient Simulator)

Respiration Lead
- LA or LL (default)

Apnea Selection
- 12 sec, 22 sec, or 32 seconds (one-time events), or continuous (Apnea ON = respiration OFF)

Power-On Default
- 20 BrPM, delta 1.0 Ω

Temperature
- 30 °C to 42.0 °C in 0.5 °C steps

Accuracy
- ± 0.4 °C

Compatibility
- Yellow Springs, Inc. (YSI) Series 400 and 700

Output
- Circular DIN 4-Pin

Cardiac Output
- Catheter Type
- Baxter Edwards, 93a-131-7f

Calibration Coeffecient
- 0.542 (0 °C injectate), 0.595 (24 °C injectate)

Blood Temperature
- 36 °C (98.6 °F) to 38 °C (100.4 °F) ± 2 % in 1 °C steps

Injectate Volume
- 10 cc

Injectate Temperature
- 0 °C or 24 °C

Cardiac Output
- 2.5, 5, 10 liters per minute ± 7.5 %

Faulty-Injectate Curve
- Waveform for simulation available
- Left-To-Right-Shunt Curve
- Waveform for simulation available

Calibrated Pulse
- 1.5 ° for 1 second

Connector
- Circular DIN 7 pin

Power-On Default
- 5 liters per minute, 0 °C injectate, 37 °C blood temperature

Item Code No.	Department	Section	Item Description
LOT 10-3	Engineering	Biomedical Workshop	Patient Monitor Analyzer (Patient Simulator)

Non-Invasive Blood Pressure
Pressure Units
- mmHg or kPa

Pressure Relief Test Range
- 100 to 400 mmHg

Synchronization: Arrhythmias
- Premature atrial contraction (PAC), premature ventricular contraction (PVC), atrial fibrillation, and missed beat
- Manometer (Pressure Meter)

Range
- 10 mmHg to 400 mmHg

Resolution
- 0.1 mmHg

Accuracy
- ± (0.5 % reading + 0.5 mmHg)

Pressure Source
Target pressure range
- 20 mmHg to 400 mmHg

Resolution
- 1 mmHg

NIBP Simulations
Pulse
- 2 mmHg max into 500 ml NIBP system

Volume of air moved
- 1.25 ml max

Simulations (systolic/diastolic [MAP])
- Adult: 60/30 (40), 80/50 (60); 100/65 (77); 120/80 (93); 150/100 (117); and 200/150 (167) and 255/195 (215)
- Neonatal: 35/15 (22); 60/30 (40); 80/50 (60); 100/65 (77); 120/80 (93) and 150/100
- Pressure variability: systolic and diastolic pressures are variable by 1 mmHg

Repeatability
- Within ± 2 mmHg (at maximal pulse size independent of device under test)

Synchronization: normal Sinus heart rates: 30 BPM to 240 BPM
- Maximum rate at 1 ml: 240 BPM achievable with pulses up to 1 ml
- Maximum rate at 1.25 ml: 180 BPM
- Leak Test

Target pressure
- 20 to 400 mmHg

Elapse time

Item Code No.	Department	Section	Item Description
LOT 10-3	Engineering	Biomedical Workshop	Patient Monitor Analyzer (Patient Simulator)

- 0:30 to 5:00 minutes: seconds in 30 second steps

Leakage rate

- 0 mmHg/minute to 200 mmHg/minute

SpO2 Test (Optional)

Heart Rate

- 30 BPM to 300 BPM in 1 BPM steps. SpO2 test is synchronized with ECG rate delayed by 150 ms, accuracy ±1% of setting

Masimo Rainbow Technology

Test Masimo Rainbow technology with an optional adapter supplied by Masimo that allows the ProSim two wavelength to test the Rainbow multiple wavelength system

% O2

Range

- 30 % to 100 %

Resolution

- 1 %

% O2 Accuracy

With oximeter manufacturer's R-curve

Saturation within UUT specific range: ± (1 count + specified accuracy of the UUT)Saturation outside UUT specific range: monotonic with unspecified accuracy

With Fluke Biomedical R-curves

- 91 % to 100 % ± (3 counts + specified accuracy of the UUT)
- 81 % to 90 % ± (5 counts + specified accuracy of the UUT)
- 71 % to 80 % ± (7 counts + specified accuracy of the UUT)
- Below 7 % monotonic with unspecified accuracy

Transmission: ratio of detector current to LED current, expressed in parts per million (ppm)

Range

- 0 ppm to 300.00 ppm

Resolution

- 0.01 ppm

Accuracy

- + 50 %/- 30 % for compatible monitors, unspecified for others. Selected by finger size and color: dark, thick finger, medium finger, light, thin finger, neonatal foot. The full range and resolution are available in the engineering mode

Pulse Amplitude

Range

- 0 % to 20.00 %

Resolution

- 0.01 %

Artifact

Respiration

Item Code No.	Department	Section	Item Description
LOT 10-3	Engineering	Biomedical Workshop	Patient Monitor Analyzer (Patient Simulator)

Range:
- 0 % to 5 % of transmission

Resolution:
- 1 %

Rate:
- all ProSim or equivalent respiration simulation settings
- Ambient light

Range:
- 0 to 5X transmitted light

Resolution:
- 1X

Frequency:
- DC, 50 Hz, 60 Hz, and 1 kHz to 10 kHz in 1 kHz steps

Compatible Manufacturer Products
- With manufacturer R-curve
- Nellcor, Masimo, Nonin, and Nihon Kohden
- With Fluke R-curve
- Mindray, GE-Ohmeda, Philips/HP, and BCI

Pre-Defined Simulations
- Normal
- Hypertensive
- Hypotensive
- Tachycardic
- Bradycardic
- Ventricular Fibrillation
- Asystole

Autosequences
- Monitor Testing Sequence
- ECG Sequence
- Oximeter Testing Sequence
- Cardiac Failure Sequence
- Arrhythmia Sequence
- Exercise Sequence
- Respiration Sequence
- NIBP Testing Sequence
- IBP Testing Sequence
- Temperature Sequence

LOT 10-4: Defibrillator Analyzer

Item Code No.	Department	Section	Item Description
LOT 10-4	Engineering	Biomedical Workshop	Defibrillator analyzer
General Description			
Composition			
Defib - Energy Measurement			
Load Resistance		50Ω ± 1% non-inductive	
Range		0 - 199.9 Joules	
Accuracy		± 1% of reading ± 1 Joule	
Range (High)		200 - 600 Joules	
Resolution		0.1 Joules	
Voltage		0 - 5000 Volts	
Current		0 - 100 Amps	
Sampling Rate		250 kHz sampling frequency	
Maximum pulse width		5us – 120ms	
ECG Simulator			
ECG simulation with hi-level output.			
ECG Waveforms – Ventricular Arrhythmias			
Premature Ventricular Contraction - Intermittent 80 BPM, Amplitude 0.50 - 5.00mV(±2%)		Default Spec Value	
(PVCI)			
Bigeminy (BIG)		80 BPM, Amplitude 0.50 - 5.00mV(±2%)	
Trigeminy (TRIG)		80 BPM, Amplitude 0.50 - 5.00mV(±2%)	
Ventricular Flutter (VFLT)		240 BPM, Amplitude 0.50 - 5.00mV(±2%)	
Ventricular Fibrillation - Coarse (VFBC)		240 BPM, Amplitude 0.50 - 5.00mV(±2%)	
Ventricular Fibrillation - Fine (VFBF)		240 BPM, Amplitude 0.50 - 5.00mV(±2%)	

Item Code No.	Department	Section	Item Description
LOT 10-4	Engineering	Biomedical Workshop	Defibrillator analyzer
Monomorphic Ventricular Tachycardia (MVT)		210 BPM, Amplitude 0.50 - 5.00mV(±2%)	
Right-focal Premature Ventricular Contraction		80 BPM, Amplitude 0.50 - 5.00mV(±2%)	
ECG Waveforms – Atrial Arrhythmias			
Sinus Arrhythmia (SAR)		20 - 300 BPM, Amplitude 0.50 - 5.00mV(±2%)	
Missing Beat (MB)		20 - 300 BPM, Amplitude 0.50 - 5.00mV(±2%)	
Atrial Flutter (AFLT)		300 BPM, Amplitude 0.50 - 5.00mV(±2%)	
Atrial Fibrillation (AFB)		20 - 300 BPM, Amplitude 0.50 - 5.00mV(±2%)	
Paroxysmal Atrial Tachycardia (PAT)		180 BPM, Amplitude 0.50 - 5.00mV(±2%)	
Premature Junctional Contraction (PJC)		20 - 300 BPM, Amplitude 0.50 - 5.00mV(±2%)	
ECG Performance Waveforms			
Sine(SINE)		0.1 - 300Hz, 1.00 – 10.00mV	
Square (SQ)		0.1 - 300Hz, 1.00 – 10.00mV	
Triangle (TRI)		0.1 - 300Hz, 1.00 – 10.00mV	
Sawtooth (SAW)		0.1 - 300Hz, 1.00 – 10.00mV	
Sine Inverse Sawtooth (INVSAW)		0.1 - 300Hz, 1.00 – 10.00mV	
Pulse (PULSE)		0.1 - 300Hz, 0.50 – 5.00mV	
ECG Waveform Output			
Low Level		Low Level	
Hi Level		Output Jack	
Pacer Input			
Fix Load		50Ω	
Accuracy		+/- 4% + 10μJ	
Over voltage protection		5000V	

Item Code No.	Department	Section	Item Description
LOT 10-4	Engineering	Biomedical Workshop	Defibrillator analyzer
Variable Load		50 to 1600Ω in 50Ω steps	
Pulse Rate		5.0 to 800 ppm	
Heart rate selection		20 – 300 bpm	
Under & overdrive		85% (20 bpm min) and 115% (300 bpm max)	
Wave form selection		NSR, VFibC, VFibF, MVT, AFib, Missing Beat, R-Wave detection	
Pulse Current Amplitude		5.00 – 200mA	
Accuracy +/-		(1% rdg +0.02mA)	
Current Measurements		Average (RMS), Leading edge, Trailing edge, Peak (the highest during the pulse)	
Pulse Width		1.00 - 100ms	
Pulse Energy		1µJ – 2.00J	
Pacer Refractory Periods			
Refractory Period test		15 – 500mS (Paced and sensed)	
Accuracy		+/- 1ms	
Pacer Interference Test (Immunity)			
Heart rate		20-300 bpm	
Frequency		50 or 60 Hz	
Noise level in mV		0-15.0mV	
AED Pulse Mode Waveforms			
Normal Sinus Rhythm (NSR)		20 - 300 BPM, Amplitude 1.00mV(±2%)	
Asystole (ASYS)			
Ventricular Fibrillation - Coarse (VFBC)		240 BPM, Amplitude 1.00mV(±2%)	
Ventricular Fibrillation - Fine (VFBF)		240 BPM, Amplitude 1.00mV(±2%)	
Monomorphic Ventricular Tachycardia (MVT)		210 BPM, Amplitude 1.00mV(±2%)	
Atrial Fibrillation (AFB)		20 - 300 BPM, Amplitude 1.00mV(±2%)	

Item Code No.	Department	Section	Item Description
LOT 10-4	Engineering	Biomedical Workshop	Defibrillator analyzer
ECG Waveforms - Sinus			
Normal Sinus Rhythm (NSR)		20 - 300 BPM, Amplitude 0.50 - 5.00mV(±2%)	
ST Elevation (STE)		20 - 300 BPM, Amplitude 0.50 - 5.00mV(±2%)	
ST Depression (STD)		20 - 300 BPM, Amplitude 0.50 - 5.00mV(±2%)	
Myocardial Infarction (MI)		20 - 300 BPM, Amplitude 0.50 - 5.00mV(±2%)	
Tall T (TT)		20 - 300 BPM, Amplitude 0.50 - 5.00mV(±2%)	
Asystole (ASYS)			
ECG Waveforms – Atrial Conduction Arrhythmias			
First Degree AV Bock (FAVB)		80 BPM, Amplitude 0.50 - 5.00mV(±2%)	
Second Degree AV Block - Mobitz I (SAVB_MI)		80 BPM, Amplitude 0.50 - 5.00mV(±2%)	
Second Degree AV Block - Mobitz II (SAVB_MII)		80 BPM, Amplitude 0.50 - 5.00mV(±2%)	
Third Degree AV Block (TAVB)		50 BPM, Amplitude 0.50 - 5.00mV(±2%)	
ECG Pacer Waveforms			
Synchronous Atrial (AAI)		20 - 300 BPM, Pulse amplitude 0.50 – 5.00mV, Pulse width 0.1 – 2.0ms	
Asynchronous Atrial (AOO)		20 - 300 BPM, Pulse amplitude 0.50 – 5.00mV, Pulse width 0.1 – 2.0ms	
Pacer (PCR)		20 - 300 BPM, Pulse amplitude 0.50 – 5.00mV, Pulse width 0.1 – 2.0ms	
Ventricular Pacer (VVI)		20 - 300 BPM, Pulse amplitude 0.50 – 5.00mV, Pulse width 0.1 – 2.0ms	
Atrial & Ventricular Pacer (DDD)		20 - 300 BPM, Pulse amplitude 0.50 – 5.00mV, Pulse width 0.1 – 2.0ms	
R-Wave Detection (RWD)		20 - 300 BPM, Pulse amplitude 0.50 – 5.00mV	
ECG Noise Selection			
Amplitude		Default Spec Value0 – 10.00mV	

Item Code No.	Department	Section	Item Description
LOT 10-4	Engineering	Biomedical Workshop	Defibrillator analyzer
Frequency		50 - 60Hz	
ECG Accuracy			
Rate		Default Spec Value± 1%	
Amplitude		± 2% (LA-LL), ± 10% (Paddles)	
		Lead II : 1 – 10 mV (in steps of 0.5 mV).	
		Other leads are proportional to Lead II by the following percentages:	
		Lead I : 60 %	
		Lead II : 100 %	
		Lead III : 40 %	
		V1 : 63 % [Reference LA]	
		V2 : 71 % [Reference LA]	
		V3 : 68 % [Reference LA]	
		V4 : 80 % [Reference LA]	
		V5 : 55 % [Reference LA]	
		V6 : 49 % [Reference LA]	
Pacer Manufacturer Algorithms			
CU Medical, GE, HP, Laerdal, Mindray, Philips, PhysioControl, Schiller, WelchAllyn, Zoll			
Pacer Sensitivity Test			
Wave form, R Wave		Polarity Normal and Reversed, selectable	
Dynamic Sensitivity		0.05mV to 5.00mV in 50µV steps	
General Specifications			
approximate Weight(for ease of management)		1.5kg	

Item Code No.	Department	Section	Item Description
LOT 10-4	Engineering	Biomedical Workshop	Defibrillator analyzer
Operation		9.6V/2400mAh Nickel Metal Hydride battery pack	
Battery charge time		2.5 hours	
Battery capacity (fully charged)		12 hours	
Mains supply		110/230V AC; 48 to 66Hz, 35VA power supply	
Storage environment		-15°C to +60°C	
Operating conditions		0°C to +40°C	
Environmental protection		IP 40	
Communication		USB	
Display LCD colour graphic display (Min)		¼" VGA	
Memory (min)		500 test results including graphs	
Impact rating		5J	

LOT 10-5: Electrical Safety Analyzer

Item Code No.	Department	Section	Item Description
LOT 10-5	Engineering	Biomedical Workshop	Electrical Safety Analyzer
1. General Description			
2. Composition			
2.1.	Main unit		
Software automation capabilities		Yes	
ECG simulation		Yes	
GFCI protection		Yes	
DUT load current		Yes	
20 A test capabilities		Yes	
25 A test capabilities		Yes	
Test loads		AAMI, IEC60601-1, IEC61010	
Other available standards		NFPA-99, ANSI, IEC62353, AS/NZ 3551	
Mains voltage measurements		All lines	
PE test current		200mA ac , 25A ac	
Leakage result parameters		True – rms ac only, dc only	
Leakage range		0 µA to 10,000µA, 0µA to20mA (differential)	
Patient auxiliary leakage lead selection		Any 1 to all, RA-LL-LL-LA RA-LA	
MAP test voltage		110% or 100% of mains, pending standard selection	
Power supply (V ac)		120 or 230	
Applied part connections		10 insulated posts	
Language selection		English	
Communication options		wired	
Printer port		Available via software	
Dual lead testing		µA/mV, V and Ω	
connectivity		USB	
Power cord		Removable	

Item Code No.	Department	Section	Item Description
LOT 10-5	Engineering	Biomedical Workshop	Electrical Safety Analyzer
weight		4.7 kg	
Dimensions (L*W*H)		31 cm*23cm*10 cm(12.2” *9.1” *3.9”)	

LOT 10-6: Gas Flow Analyzer

Item Code No.	Department	Section	Item Description
LOT 10-6	Engineering	Biomedical Workshop	Gas Flow Analyzer
1. General Description			
2. Composition			

FEATURES		MINIMUM REQUIREMENTS
2.1.	Battery life	8 hours
2.2.	Charge time in hours	5 hours
2.3.	memory	Internal memory
2.4.	Connection type	USB, Micro – b device port
2.5.	Weight	1.6 kg
2.6.	Touch screen display	7” inch
2.7.	Single full range channel	yes
2.8.	**FLOW**	
2.9.	**Full range flow channel (both high and low)**	
2.10.	range	+/- 300 slpm
2.11.	Accuracy(air)	1.7% 0r 0.04 slpm
2.12.	**volume**	
2.13.	Range	+/- 1001
2.14.	Accuracy	+/- 1.75% 0r 0.02 L
2.15.	**PRESSURE**	
2.16.	**High pressure**	
2.17.	Range	-0.8 to 10 bar
2.18.	Accuracy	+/- 1% or +/- 0.0007 bar
2.19.	**Differential low pressure**	
2.20.	range	+/- 160mbar
2.21.	accuracy	+/- 0.5% or +/-0.1 mbar
2.22.	**Airway pressure**	
2.23.	range	+/- 160mbar

Item Code No.	Department	Section	Item Description
LOT 10-6	Engineering	Biomedical Workshop	Gas Flow Analyzer

2.24.	accuracy	+/- 0.5% or +/-0.1 mbar
2.25.	**Barometric pressure**	
2.26.	range	550 to 1240mbar
2.27.	accuracy	+/-1%
2.28.	**others**	
2.29.	**temperature**	
2.30.	range	0 – 50 degrees C
2.31.	accuracy	+/-0.5%
2.32.	resolution	0.1 degrees C
2.33.	**humidity**	
2.34.	range	0-100%RH
2.35.	accuracy	+/-3%RH (20-80%RH) +/-5%(-20-+80% RH
2.36.	**oxygen**	
2.37.	Range	0-100%
2.38.	accuracy	+/-2%
2.39.	**Breath parameters**	
2.40.	Inspiratory tidal volume range	0 to 60 l
2.41.	Inspiratory tidal volume accuracy	+/- 1.75%
2.42.	Expiratory tidal volume range	0 to 60 l
2.43.	Expiratory tidal volume accuracy	+/- 1.75%
2.44.	Minute volume range	0 to 100 l
2.45.	Minute volume accuracy	+/- 1.75%
2.46.	Breath rate range	1 to 1500 bpm
2.47.	Breath accuracy	+/-1%
2.48.	Inspiratory to expiratory time ratio (I;E) range	1:300 to 300:1
2.49.	Inspiratory to expiratory time ratio (I;E) accuracy	+/-2%
2.50.	Peak inspiratory pressure (PIP) range	+/- 160mbar
2.51.	Peak inspiratory pressure (PIP) accuracy	+/-0.75%

Item Code No.	Department	Section	Item Description
LOT 10-6	Engineering	Biomedical Workshop	Gas Flow Analyzer

2.52.	Inspiratory pause pressure range	+/- 160mbar
2.53.	Inspiratory pause pressure	+/-0.75%
2.54.	Mean airway pressure range	+/- 160mbar
2.55.	Mean airway pressure accuracy	+/-0.75%
2.56.	Positive end expiratory pressure (PEEP) range	+/- 160mbar
2.57.	Positive end expiratory pressure (PEEP) accuracy	+/-0.75%
2.58.	Lung compliance range	0-1000 ml/mbar
2.59.	Lung compliance accuracy	+/- 3%
2.60.	Inspiratory time range	0-60 s
2.61.	Inspiratory time accuracy	0.02 s
2.62.	Inspiratory holding time range	0-60 s
2.63.	Inspiratory holding time accuracy	1% or 0.1 s
2.64.	Expiratory time range	0 to 90 s
2.65.	Expiratory time accuracy	0.5% or 0.01 s
2.66.	Expiratory holding time range	0 to 90 s
2.67.	Expiratory holding time accuracy	0.02 s
2.68.	Peak expiratory flow range	+/- 300 lpm
2.69.	Peak expiratory flow accuracy	+/-1.7 %
2.70.	Peak inspiratory flow range	+/- 300 lpm
2.71.	Peak inspiratory flow accuracy	+/-1.7 %
2.72.	**Environmental**	
2.73.	Operating temp	10 – 40 degrees C
2.74.	Storage temp	-20 to 60 degrees C
2.75.	Operating humidity	10 to 90%
2.76.	Storage humidity	5 to 95%

LOT 10-7: Oxygen Analyzer

Item Code No.	Department	Section	Item Description
LOT 10-7	Engineering	Biomedical Workshop	**Oxygen Analyzer**

1. General Description

2. Composition

2.1.	Main unit				

3. Detailed requirements

3.1. Operational characteristics:

3.1.1. Handheld oxygen analyzer for spot check and/or continuous measurement of the oxygen concentration from a medical gas source and in an environment (depending on the configuration or version of the analyser).
3.1.2. Galvanic fuel cell (electro-chemical) oxygen sensing technology.
3.1.3. Supplied with connectors and/or adapters suitable for measurement of various medical gas supply sources, for example (but not limited to) oxygen concentrators, ventilators/anaesthesia machines and patient circuits (T-piece and/or in-line adapters), wall/column/cylinder supplies (compliance with ISO 7396-1).
3.1.4. Oxygen measurement to include the range: 15 - 99%.
3.1.5. Oxygen resolution: 0.1%.
3.1.6. Oxygen accuracy: within ± 3%.
3.1.7. Suitable for measuring gas supply with pressure up to 345 kPa (3.5 bar, 50 psi).
3.1.8. Performance and calibration requirements at different pressures to be stated.
3.1.9. Response time at most 20 s.
3.1.10. Warm-up time < 10 s.
3.1.11. Replaceable galvanic fuel cell (oxygen sensor), nominal operating life at least 1.5 years or 600 000 % O2 -hours, whichever is greater.
3.1.12. Calibration and self-test mode, two point calibration at ambient and 100% oxygen concentration.
3.1.13. Internal calibration timer, with reminder (alarm and/or display message).
3.1.14. Display visualizing oxygen concentration, system messages and battery status.
3.1.15. Low and high oxygen concentration audible and visual alarms required.
3.1.16. Automatic power-off when not in use.
3.1.17. Enclosure to have ingress protection level IPX1 or better.

3.2. Electrical characteristics:

3.2.1. Operated by battery power supply.
3.2.2. Internal replaceable batteries, either rechargeable or single use.
3.2.3. Battery life > 250 hours continuous use.

3.3. Accessories, consumables, spare parts, other components

3.3.1. Carry case.

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LOT 10-7	Engineering	Biomedical Workshop	**Oxygen Analyzer**

3.3.2. Adapters for measuring various medical gas supply sources/ambient air (if applicable, depending on the models).

3.3.3. Adapters for all available standards for fittings, including T-pieces and/or in-line adapters for various types and sizes of breathing circuits and adapters for central supply systems and cylinders.

3.3.4. Oxygen cell/sensor, sample line (if applicable), rechargeable and disposable batteries. Sample line (if applicable)

3.3.5. Set of spare fuses (if non-resettable fuses are used), display, connectors, battery holder, control panel, casing and battery charger.

3.4. Environmental requirements

3.4.1. Capable of being stored in ambient temperature of at least 5 - 50°C, relative humidity of at least 15 - 95% non-condensing.

3.4.2. Suitable for continuous operation in ambient temperature of at least 5 - 45°C, relative humidity of at least 15 - 90% non-condensing.

3.5. Training

3.5.1. Training of users in operation and basic maintenance shall be provided.

3.5.2. Training of technical staff in advanced maintenance tasks shall be provided.

3.6. Warranty and maintenance

3.6.1. At least 2 years warranty and the product shall be in production and fully supported when procured.

3.6.2. Proof to have the capacity to carry out preventive maintenance, functionality tests and calibration as per manufacturer's specifications.

3.6.3. Guarantee of supply of spare parts at least 8 years from date of installation.

3.7. Documentation

3.7.1. User and technical manuals both hard and soft copies in English language.

3.7.2. Certificate of calibration to be provided.

3.7.3. List of equipment and procedure required for calibration and preventive maintenance to be provided.

3.7.4. List for common spare parts and accessories with part numbers to be provided

3.7.5. Contact details of manufacturer, supplier and local service agent to be provided

3.8. SAFETY AND STANDARDS

3.8.1. Risk classification (46 Risk classification Class II (USA), Class IIa (EU), Class IIa or IIb (Australia).

3.8.2. Regulatory approval/certification (Proof of regulatory compliance (e.g. registration, clearance, approval) must be provided as appropriate per the product's risk classification (e.g. by a founding member of IMDRF-EU, USA, Canada, Australia, Japan).

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LOT 10-7	Engineering	Biomedical Workshop	**Oxygen Analyzer**

3.8.3. International standards (ISO 13485 Medical devices - Quality management systems - Requirements for regulatory purposes or ISO 9001 Quality management systems - Requirements.

3.8.4. ISO 14971 Medical devices - Application of risk management to medical devices.

3.8.5. ISO 15001 Anaesthetic and respiratory equipment - Compatibility with oxygen.

3.8.6. IEC 62133 - Secondary cells and batteries containing alkaline or other non-acid electrolytes - Safety requirements for portable sealed secondary cells. Part 1: Nickel, Part 2: Lithium.

LOT 10-8: Electrosurgical Analyzer

Item Code No.	Department	Section	Item Description
LOT 10-8	Engineering	Biomedical Workshop	Electrosurgical Analyzer

1. General Description

Electrosurgery Analyzer

2. Composition

2.1. Main unit

2.1.1. Approximate Size (HxWxL): (For ease of management) 14.5 cm x 35 cm x 47 cm (5.75 in x 13.75 in x 18.5 in)

2.1.2. Power Requirements:
100 V ac, 115 V ac, 230 V ac, 50 Hz / 60 Hz, universal input 100 V/115 V: 20VA
230V: 30 VA

2.1.3. User interface
LCD: Colour display

2.1.4. Environmental specifications

2.1.4.1. Operating temperature: - 10 °C to 40 °C (50 °F to 104 °F)

2.1.4.2. Storage temperature: - 20 °C to 60 °C (-4 °F to 140 °F)

2.1.4.3. Humidity: - 10 % to 90 % non-condensing

2.1.5. IP rating: - IEC60529:IP20

2.1.6. Electromagnetic Compatibility (EMC)
IEC 61326-1: Basic Emissions Classification:
IEC CISPR11: Group 1, Class A. Group 1 have intentionally generated and/or use conductively coupled radio-frequency energy which is necessary for the internal functioning of the equipment itself. Class A equipment is suitable for use in non-domestic locations and/or directly connected to a low-voltage power supply network
USA (FCC):

2.1.7. Intentional Radiators
Device should comply with part 15 of the FCC Rules. Operation is subject to the following two conditions:

- This device may not cause harmful interference, and
- This device must accept any interference received, including interference that may cause undesired operation.

2.1.8. Safety
IEC 61010-1: - Overvoltage category II, pollution degree 2
IEC 61010-2-030: Measurement 5,000 V

2.1.9. Wireless module listing
FCC (United States) compliant (Class A):
FCC ID: X3ZBTMOD3
IC (Industry Canada) compliant:
IC: 8828A-MOD3
CE (European) certified:
CE0051

2.1.10. Measurements and tests specifications
Measures:

- Cut and coag waveforms, monopolar and bipolar outputs
  Power and current measurements:
- True RMS

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LOT 10-8	Engineering	Biomedical Workshop	Electrosurgical Analyzer

2.1.11. Bandwidth:

- MHz at -3 dB including loads

2.1.12. Delay time for single measurements:

- 0.2 seconds to 4.0 seconds from Foot Switch activation to start of measurement

2.1.13. Duty cycle

2.1.13.1. Variable load:

- 10 seconds on, 30 seconds off, at 100 W, all loads

2.1.13.2. Fixed 200 Ω load:

- 10 seconds on, 30 seconds off, at 400 W

2.1.13.3. Generator output measurements
Oscilloscope Output

- 1 V per ampere of input current, typical

2.1.13.4. Footswitch simulations
Cut and Coag

2.1.13.5. Load resistance
Variable:

- 0 Ω, 10 Ω, 20 Ω, 25 Ω to 2500 Ω (by 25 Ω), 2500 Ω to 5200 Ω (by 100 Ω)
  DC Accuracy:± 2.5 %
  Power (0.0 W to 99.9 W ± 5 % + 1W), 100 W to 500 W ± 5 %
  Maximum: At 25% duty cycle (10 seconds on, 30 seconds off): 10 Ω: 300 W, 20 Ω to 2900 Ω: 400 W, 3000 Ω to 5200 Ω: 200 W
  At 10% duty cycle (5 seconds on, 45 seconds off): 10 Ω: 300 W, 20 Ω to 2400 Ω: 500 W, 2425 Ω to 2900 Ω: 400 W, 3000 Ω to 5200 Ω: 200 W

2.1.13.6. Current
RMS: 0 mA to 5,500 mA
Accuracy: ±(2.5 % of reading + 1 mA)

2.1.13.7. Voltage
Peak: 10 kV Peak to Peak
Accuracy: ±(10 % of reading + 50 V)

2.1.13.8. Crest factor:
1.4 to 16.0 Defined as the ratio of Peak voltage to RMS voltage (Vpk /Vrms), using the larger of the 2 peaks (positive or negative)
Vessel sealing measurement
Loop current, RMS: 0 mA to 5500 mA
Accuracy: ±(2.5 % of reading + 1mA)

2.1.13.9. HF leakage current
Fixed load: 200 Ω
Accuracy: ± 2.5 %
Power rating: 400 W
Additional fixed load: 200 Ω
Current, RMS: 0 mA to 5500 mA

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LOT 10-8	Engineering	Biomedical Workshop	Electrosurgical Analyzer

Accuracy: ±(2.5 % of reading + 1 mA)

2.1.13.10. CQM test (Contact Quality Monitor):
Resistances: 0 Ω to 475 Ω (by 1 Ω)
Accuracy: 0 Ω to 10 Ω 0.5 Ω, 11 Ω and above 5%

2.1.13.11. Power rating: at least 0.5 W

2.1.13.12. Auto time interval: 1 to 5 seconds

2.1.14. Communications:
USB device port: Micro B connector, full speed
Wireless port: 802.15, Speed: 115,200 baud

2.1.15. Memory:
Test records: at least 5,000
Non-volatile: retained through power cycling

2.1.16. Calibration:
Recommended cycle:
Traceable to the International System of Units (SI) through the appropriate National Metrology Institutes such as NIST or through intrinsic standards.

LOT 10-9: Radiation Analyzer

Item Code No.	Department	Section	Item Description
LOT 10-9	Engineering	Biomedical Workshop	**Radiation Analyzer**

1. General Description

1.1. This specification describes the requirements for a hand-held, high sensitivity, gamma and x-ray radiation detection and dose rate measurement tool with removable radioactive contamination measurement capability, hereinafter referred to as "The System". The System will be used by security forces, metal recycling industry, first responders, border crossing and radiation source regulatory control authorities.

1.2. Supplier may propose alternatives that differ from this Specification but are intended to produce the same or better results for this application. In such cases, these must be clearly stated and justified in the offer and sufficient technical information has to be provided for assurance of compliance with this Specification.

2. Applicable Documents

2.1.	Main unit				

ANSI N42.34 Performance Criteria for Hand Held Instruments

3. Functional and Performance Requirements

3.1. The System shall meet the following functional and performance requirements:
- 3.1.1. Menu-driven with an intuitive format
- 3.1.2. Automated self-checks
- 3.1.3. Clear graphic display
- 3.1.4. Audible and visible alarms
- 3.1.5. X-ray measurement capability (pulsed radiation)
- 3.1.6. Rubber protective cover
- 3.1.7. Alpha/beta contamination measurement capability

3.2. Technical Requirements
- 3.2.1. Units of dose rate measure: Sv/hr
- 3.2.2. Display: backlite LCD
- 3.2.3. Communication capability with a computer
- 3.2.4. Automatic calibration
- 3.2.5. Dose measuring range at least 0.05 µSv – 9.99 Sv
- 3.2.6. Dose rate measuring range at least 0.05 µSv/h – 100 mSv/h
- 3.2.7. Energy response range for gamma and x-ray photons at least 60 keV to 1.3 MeV (+/- 30%)
- 3.2.8. Powered by standard, commercial batteries (AA or AAA or equivalent)
- 3.2.9. Low battery warning
- 3.2.10. Weight not exceeding 300 g (including batteries)
- 3.2.11. Environmental conditions that shall be met
  - Operating temperature range at least: -20 to 50 °C
  - Operation at relative humidity exceeding 90% at 35oC
- 3.2.12. Accessories: carrying case, rubber cover, extension for measurements from a distance, PC connection cable, software

Item Code No.	Department	Section	Item Description
LOT 10-9	Engineering	Biomedical Workshop	**Radiation Analyzer**

4. Marking

4.1. The System shall have all safety markings in English language.

5. Packing

5.1. The system, for shipment by air to the end user shall be packed in accordance with international standards that are applicable for the shipment by air of this kind of equipment.

6. Quality Requirements

6.1. The system shall be manufactured, shipped, and installed in accordance with the contractors ISO Quality Assurance System or an equivalent quality assurance system. Compliant with ANSI 42.33/1 & 42.32, and IEC 62401

7. Testing of the System prior to Shipment

7.1. The System, prior to shipment, shall be tested for its conformance with manufacturer's performance specifications and the requirements specified herein.

7.2. The system shall be calibrated by the manufacturer with a certificate of calibration provided in English

8. Deliverable Data Items

8.1. Operating manuals
The Supplier shall provide 2 complete sets of operation and servicing manuals and technical drawings in the English language in hard copies and electronic version;

9. Support

9.1. The System shall be supplied with a comprehensive warranty, valid for one year from date of delivery;

9.2. Availability of on-line support is required. Supplier to identify any routine or preventative support and maintenance plan that is appropriate for this End- User, with full contact details. Note that regional support is preferred;

10. Technical requirements summary	
Description	**Values & Notes**
10.1. Detection	• Detector with x-ray measurement capability • Software with natural background detection
10.2. Minimum span of Energy Range	60 keV to 1.3 MeV
10.3. Minimum span of Measurement Range:	Dose: 0.05 µSv – 9.99 Sv Dose rate: 0.05 µSv/h – 100 mSv/h Contamination: 0-10 kcps
10.4. Units	cps, Sv/h
10.5. User Menu with:	Information necessary to operate and maintain the unit

Item Code No.	Department	Section	Item Description
LOT 10-9	Engineering	Biomedical Workshop	**Radiation Analyzer**
10.6. Weight		Not exceeding 300 g	
10.7. Alarms		Audible/visible alarms	
10.8. Pulsed radiation		x-ray measurement capability	
10.9. Contamination monitor		Alpha/beta contamination measurement capability	
10.10. Battery life		At least 500 h of operation	

LOT 10-10: Infusion and Syringe Pump Analyzer

Item Code No.	Department	Section	Item Description
LOT 10-10	Engineering	Biomedical Workshop	Infusion and Syringe Pump Analyzer

1. General Description					
Infusion and Syringe Pump Analyzer					
2. Composition					
2.1.	Main unit				
3. Technical specifications					
3.1. Flow rate measurement					
3.1.1.	Range	0.1 ml/h to 1500 ml/h (2500 ml/h is shown)			
3.1.2.	Accuracy	1 % of reading ±1 LSD for flows of 16 to 200 ml/h for volumes over 20 ml, otherwise 2 % of reading ±1 LSD for volumes over 10 ml under laboratory conditions. Degassed water at 15 °C to 30 °C (59 °F to 86 °F) is recommended for long tests.			
3.1.3.	Max test duration	100 hours			
3.2. Volume measurement					
3.2.1.	Range	0.06 ml to 9999 ml			
3.2.2.	Accuracy	1 % of reading ±1 LSD for flow rates of 16 ml/h to 200 ml/h for volumes over 20 ml. Otherwise 2 % of reading ±1 LSD for volumes over 10 ml under laboratory conditions.			
3.2.3.	Max test duration	100 hours			
3.3. PCA bolus/dual flow measurement					
3.3.1.	Min bolus volume	0.5 ml			
3.3.2.	Resolution	60 ul increments			
3.3.3.	Max test duration	100 hours			
3.4. Pressure measurement					
3.4.1.	Range	0 psi to 45 psi or equivalent in mmHg and kPa			
3.4.2.	Accuracy	1 % of full scale ±1 LSD under laboratory conditions			
3.4.3.	Max test duration	1 hour			
3.5. Other specification					

Item Code No.	Department	Section	Item Description
LOT 10-10	Engineering	Biomedical Workshop	Infusion and Syringe Pump Analyzer
3.5.1. Templates		Predetermined test sequences. Typical capacity 200.	
3.5.2. Storage of results		Test results stored for later viewing, printing or transfer to PC. Typical capacity 250 tests.	
3.6. General specifications			
3.6.1. Operating voltage range		100 V ac to 240 V ac	
3.6.2. Supply frequency		50/60 Hz	
3.6.3. Supply power		<50 VA	
3.6.4. Fuses		20 mm T1.6 A H 250 V x 2	
3.6.5. Size (HxWxD)		30 cm x 20 cm x 20 cm (12 in x 8 in x 8 in)	
3.6.6. Weight		3.4 kg (approx) (7.5 lbs.)	
3.6.7. Altitude		0 m to 3000 m (0 ft to 10000 ft)	
3.7. Temperature			
3.7.1. Operating		15 °C to 30 °C (59 °F to 86 °F)	
3.7.2. Storage		-20 °C to +40 °C (-4 °F to +104 °F) when drained of all liquid	
3.7.3. Humidity		10 % to 90 % non-condensing	

LOT 10-11: Ultrasound Wattmeter

Item Code No.	Department	Section	Item Description
LOT 10-11	Engineering	Biomedical Workshop	Ultrasound Wattmeter

1. General Description					
2. Composition					
2.1.	Main unit				
3. Specifications Details					

3.1. Measurement range	0.1 W to 30 W
3.2. Input power level	0 to 30 W
3.3. Test media	Deionized/distilled and degassed water
3.4. Resolution	0.1 W
3.5. Reading accuracy	Electrical accuracy: + 0.15 W (±0.01 g) full range System repeatability: + 3 % of reading, ± 0.2 W
3.6. Input measurements	Average pulsed or continuous power
3.7. Input frequency range	0.5 MHz to 10 MHz
3.8. Zeroing	Auto-zero button
3.9. Readout units	Watts or grams (output energy mode) Grams (cal mode)
3.10. Maximum Transducer Size	7.6 cm (3 in) diameter
3.11. Operating Temperature	10 ^{0}C to 45 ^{0}C
3.12. Data Output	Bidirectional RS-232/USB compatible with any serial communications software such as Windows® HyperterminalTM
3.13. Power	One 9 V battery
3.14. Battery Life	At least 10 hours (max) with automatic switch off when unit not in use.

LOT 10-12: Medical Oscilloscope

Item Code No.	Department	Section	Item Description
LOT 10-12	Engineering	Biomedical Workshop	Oscilloscope

1. General Description

2. Composition

2.1.	Main unit				

3. Technical Specification:

3.1. **Bandwidth** : 100 Megahertz Or Better
3.2. **Sampling Rate** : 1 Giga Samples/Second Or Better
3.3. **Number Of Channels :** 4 Isolated And Floating Channels
3.4. **Record Length :** 2.5 K Points Or Better
3.5. **Vertical Resolution :** 8 Bits (Normal Or With Averaging) Or Better
3.6. **Vertical Sensitivity :** 2 Millivolt To 5 V/Div(Or Better) With Calibrated Fine Adjustment
3.7. **Position Range :** 2 Millivolt To 200 Millivolt/Div ±1.8 V >200 Millivolt To 5 V/Div ±45 V
3.8. **Input Impedance** : 1 Mega Ohm ±2% In Parallel With 20 Picofarad
3.9. **Input Coupling** : Ac, Dc, Gnd
3.10. **Display Type** :1/4 Vga Active Tft Color Lcd Display
3.11. **Trigger Types:** Edge, Pulse (Width), Video
3.12. **Connectivity** : Rs-232 (Includes Rs-232-To-Usb Host Serial Cable), Centronics, Compact Flash
3.13. **Waveform Math And Analysis** : Automated Measurements, Arithmetic Waveform Math, Fft
3.14. **Data Storage** : Non-Volatile Storage – Compact Flash
3.15. **Power Source** : Ac Adapter With Power Cord
3.16. **Battery Operation** : Capacity To Have Two Hot-Swappable Battery Packs
Must Have Isolation Between Channels And Ground Complaince With Ec61010-1:2001, Iec60529:2001, As/Nzs 2064.1/2

ACCESSORIES

3.17. **Inclusions:**
- 3.17.1. 100 Megahertz,
- 3.17.2. 10x Passive Probe Front Protective Cover
- 3.17.3. Ac Adapter With Power Cord (Uk Plug)
- 3.17.4. Usb To Rs-232 Cable
- 3.17.5. Hard Case For Carrying Instrument

3.18. Technical features
- 3.18.1. How old is this technology & when is going to be discontinued?
- 3.18.2. When is the upgraded/Updated version likely to come
- 3.18.3. Additional features very particulate to the system.
- 3.18.4. If workstation or PC is quoted, its full configuration, brand, model No. etc.
- 3.18.5. Period of warranty as called for in the Tender.

Item Code No.	Department	Section	Item Description
LOT 10-12	Engineering	Biomedical Workshop	Oscilloscope

3.18.6. AMC coverage items
   a. Comprehensive (Spares & Labour)
   b. Labour alone

3.18.7. History of service and maintenance support locally

3.18.8. List of Installations in public sector/private sector with contact person Name, Designation & Telephone No.

3.18.9. List of essential spares

3.18.10. Certificate of quality like CE,ISO,FDA

LOT 11: CENTRAL STERILIZATION SUPPLIES DEPARTMEMT (CSSD)

LOT 11-1: Autoclave

Item Code No.	Department	Section	Item Description
LOT 11-1	CSSD	CSSD	Autoclave

1. General Description

High Speed Horizontal Autoclave 450L with double door

2. Composition

2.1.	Main unit				

3. Technical Specification

3.1. Should be a fully automatic microprocessor based High pressure, high vacuum autoclave for sterilizing material including agars, sterilization of solution in open & closed bottles, disinfection of materials and waste decontamination.

3.2. Should be front loading and rear offloading, have Rectangular, horizontal chamber with well insulated jacket, Chamber Volume minimum 450 liters or more.

3.3. Should have single vertical sliding door on either side to have a pass-through system. Doors should be electrically controlled having fully automatic function with multiple safety arrangements. Sealing system should be based on silicone seal.

3.4. Should have at least 50mm thick insulation materials on jacket and in doors to ensure low thermal losses. Working temp. of the door should be less than 45deg. C.

3.5. Should be high grade Stainless steel.

3.6. Should have a built in Color touch screen.

3.7. Should have audio visual alarms in case of undesired situations.

3.8. Should have programmable Operator's access level.

3.9. Should have at least 8 pre-programmed standard cycles plus 5 or more user programmable cycles and provision of chip card port for loading of new programs through chip cards or any other latest technology.

3.10. Should have temperature adjustable from 121Deg. to 135 Deg. C.

3.11. Safe Working pressure range should be from 15 to 32 PHI (1.1 bar – 2-2 bar)

3.12. Should have complete monitoring of cycle operation and provided with at least two pressure sensors and two Temp. Sensors (PT -100) in addition to analog for chamber pressure, jacket pressure and steam generator pressure indication.

3.13. The unit should be equipped with multiple safety mechanisms for Emergency Stop over pressure safety valves for chamber and jacket, over temp safety, steam traps and electrical safety.

3.14. The unit should include Non fade built in thermo-recorder for step progress values during the cycle with time and date and alarm condition if any.

3.15. Should have built in feature of Water Saving System for water conservation.

3.16. Should be supplied complete with high quality stainless steel trolleys and sterilization baskets:

a. External trolley = 02 nos.

Item Code No.	Department	Section	Item Description
LOT 11-1	CSSD	CSSD	Autoclave

b. Internal trolley with steel roller
c. Shelves = 02 nos. and
d. 2 sets of Sterilization baskets.

3.17. All accessories & electric fitting to be included

3.18. The unit should be equipped with both internal steam generator and external steam source connection from external boiler.

3.19. The steam Generator should also be made of AISI 316 Ti steel & the steam generator should be equipped with automatic cleaning facility.

3.20. Integrated wastewater cooling, integrated water saving device. Touch screen display, chipcard reader and RS 232 /USB interface.

3.21. Should be US FDA/European CE certified and should comply with EN 285 standard. The system should have pressure directives 97/23/EC.

LOT 11-2: Washer Disinfection

Item Code No.	Department	Section	Item Description
LOT 11-2	CSSD	CSSD	**Washer Disinfection**

1. General Description

Washer cum Disinfector Unit

2. Composition

2.1.	Main unit				

3. Detailed Specifications

3.1. The Washer Disinfection will be equipped with all accessories suitable for washing, disinfecting and drying of all kinds of surgical instruments, respiratory tubing, suction devices, bottles and other glassware

3.1.1. Double door Unit.
3.1.2. Chamber made of stainless-steel S.S.304
3.1.3. Microprocessor control for all services, programming and statistic functions-at least three pre-set programs.
3.1.4. Equipped with powerful water circulation pump (capacity).
3.1.5. Equipped with four spray arms for good penetration.
3.1.6. Dosage of detergent can be pre-set with dosing pump.
3.1.7. Sensor to detect level in soap tank and easy refilling system
3.1.8. Sensor for water in chamber to avoid dry run.
3.1.9. Double wall with insulation to run with minimum sound and heat emission.
3.1.10. Air particle filter to ensure the drying air is free from particles.
3.1.11. Size of chamber: Approx. 600mmx700mmx700mm.(Approx.)
3.1.12. Chamber volume: 250 - 275liters.
3.1.13. Overall dimension: Approx. 815mmW x730mmLx1890mmH.
3.1.14. Electrical Connected Load: 20Kw on 3phases, 400V, AC supply.
3.1.15. Frontloading and rear offloading
3.1.16. The warranty of equipment will be at least 2 years

LOT 11-3: Ultrasonic Washer

Item Code No.	Department	Section	Item Description
LOT 11-3	CSSD	CSSD	**Ultrasonic Washer**

1. General Description

2. Composition

2.1.	Main unit				

3. Detailed Specifications

3.1. The body made of stainless steel
3.2. All exterior panels should be of type 304 stainless steel with a polished finish
3.3. The sonic cleaning chamber should be constructed of type 316L mirror finish stainless steel for increased corrosion resistance.
3.4. Overall size of the cleaning chamber at least 29" L x 12" W x 8" (73cm X 36cm X 23cm)
3.5. Liquid volume of the ultrasonic tank: at least 45 litres.
3.6. Effective liquid depth of ultrasonic tank: at least 6.5" (16.5cm)
3.7. The ultrasonic tank should be covered by a well-fitting stainless-steel lid
3.8. Should be provided with a well-fitting tray with holes for immersing instruments in the above mentioned tank.
3.9. The inner tray should be of such dimension that it can accommodate and completely immerse the instruments.
3.10. Must have a cycle timer with automatic stop after washing cycle of the particular time is over.
3.11. Suitable stand to be provided if it is table top unit.
3.12. Electronic display that indicates set time, start of cycle and end of cycle
3.13. Ultrasonic generator output 1000Watts Average.
3.14. User selectable dual ultrasonic frequency (38±3) or greater
3.15. Should be provided with fill port and drain port
3.16. Power cord of at least 3 m with plug compatible with UK socket
3.17. Should be provided with essential spares and fuses
3.18. Should be FDA /CE certified

4. Standards and Safety

4.1. Manufacturer and supplier must have ISO certificate to Quality Standard
4.2. Must be compliant with IEC 61010-1(or any international equivalent e.g. EN/UL61010) covering safety requirements for electrical equipment for measurement control and laboratory use.
4.3. Comprehensive training of the users and support team will be provided till they are fully familiar with the system.

5. Warranty and Annual Maintenance Contracts.

5.1. Comprehensive warranty for at least 2 years. Guarantee of Comprehensive maintenance contract (CMC) to be provided with a quotation for CMC post warranty being provided with the tender,. The rates will only be used for evaluation purposes but not to be part of the quote.

Item Code No.	Department	Section	Item Description
LOT 11-3	CSSD	CSSD	**Ultrasonic Washer**

5.2. Back-to-back warranty should be taken buy the suppliers from the Principals if principals are not the suppliers and there must be a guarantee for supply of spare parts for at least 10 years from the date of installation.

6. Documentation

6.1. User/Technical manuals to be supplied in English n both hard and soft copies.
6.2. Certificate of calibration and inspection to be provided
6.3. List of equipment available with the service centre for providing calibration and routine maintenance support as per manufacturers' documentation in service/technical manual must be provided.
6.4. List of important spare parts and accessories with their part numbers and costing must be provided with the bid
6.5. Logbook with instructions for daily, weekly, monthly and quarterly maintenance checklist must be provided, the job description of the hospital technical team and company service engineer should be clearly spelt out.

LOT 11-4: Dissembling and sorting Table

Item Code No.	Department	Section	Item Description
LOT 11-4	CSSD	CSSD	Dissembling and sorting Table
1. General Description			
2. Composition			
2.1.	Main unit		
3. Detailed Specifications			
3.1. Complete stainless steel CSSD sterile packing table form machine pressed made of acid-proof stainless steel; grade - S.S.304 grade, 1.5mm thickness laser cut 3.2. Sturdy tubular framework 3.3. Lightened tabletop 3.4. Adjustable stumps. 3.5. Size: Approx. 1400mm x w 900mm x h 850mm			

LOT 11-5: Water Jet System

Item Code No.	Department	Section	Item Description
LOT 11-5	CSSD	CSSD	Water Jet System
1. General Description			
1.1. Water jet Sluicing table			
2. Composition			
2.1. Main unit			
3. Detailed specifications			
3.1. Complete stainless steel CSSD instrument sluicing table with hand water jet table form machine pressed made of acid-proof stainless steel.S.S.304; 1.5mm thickness laser cut with hot and cold water faucets. 3.2. Should have sturdy tubular framework 3.3. Should have twin bay sink with drain out water connection. 3.4. Adjustable stumps. 3.5. Size should be 1200mm x w 600mm x h 850mm			

LOT 11-6: Hydrogen Peroxide Low Temperature Plasma Sterilizer

Item Code No.	Department	Section	Item Description
LOT 11-6	CSSD	Sterilization Area	Gas Plasma Sterilizer

1. General Description

Low Temperature based H2O2 Gas plasma sterilizer,

2. Composition

2.1.	Main unit				

3. Description of the medical supply unit design type

3.1. Should provide simple & fast sterilization of surgical instruments at low temperature using H2O2 Gas Plasma technology for effective removal of H2O2 from sterilized items and to compliment the process.
3.2. Should be suitable for sterilization of medical items like rigid endoscopes, lumen & non lumen , metal , non-metal, heat & moisture sensitive instruments
3.3. Chamber should have usable volume of around 50 liters
3.4. The sterilization temperature inside the chamber should be less than 55°C
3.5. Cycle time should be 35 to 60 mins
3.6. The sterilant should be in a cassette/ bottle with H2O2 concentration more than 55%
3.7. Should be endorsed by leading instruments and scopes makers like Karl Storz, Olympus, Stryker, Medtronic and Johnson & Johnson
3.8. The system should use minimum quantity of sterilant which should be less than 6-8 ml per injection to deliver dry terminal sterilization to ensure safety of Instruments against corrosion.
3.9. The unit should be equipped with all the safety features
3.10. Sterilizer should have storage of cycle records data.
3.11. Should be environment friendly and have no toxic products or harmful residues in the sterilized items in the chamber.
3.12. Sterilizer should be approved by USFDA and CE
3.13. Please specify list and cost of consumables/ consumable spares (i.e spares need to be replaced at regular intervals, may be quarterly/half yearly/ yearly such as annual maintenance kit etc.) if any.
3.14. Please specify pre installation requirements (electrical, HVAC etc.)
3.15. Please specify footprint size & its weight.
3.16. Demo of the quoted model will be mandatory at the cost of bidder if so desired by the user, after the opening of the technical bid and prior to opening of financial bid. This is for technical evaluation.

LOT 11-7: Stainless steel working table

Item Code No.	Department	Section	Item Description
LOT 11-7	CSSD	CSSD	Working Table
1. General Description			
2. Composition			
2.1. Main unit			
Complete stainless steel CSSD sterile packing table form machine pressed made of acid-proof stainless steel; grade - S.S.304 grade, 1.5mm thickness laser cut Sturdy tubular framework Lightened tabletop Adjustable stumps. Size: Approx. 1400mm x w 900mm x h 850mm			

LOT 11-8: Packing and sorting Table

Item Code No.	Department	Section	Item Description
LOT 11-8	CSSD	CSSD	Parking and sorting Table
1. General Description			
2. Composition			
2.1. Main unit			
Complete stainless steel CSSD sterile packing table form machine pressed made of acid-proof stainless steel; grade - S.S.304 grade, 1.5mm thickness laser cut Sturdy tubular framework Lightened tabletop Adjustable stumps. Size: Approx. 1400mm x w 900mm x h 850mm			

LOT 11-9: Cart Cabinet for storage and execrating sets

Item Code No.	Department	Section	Item Description
LOT 11-9	CSSD	CSSD	Cart Cabinet for storage and execrating sets

1. General Description					
2. Composition					
2.1.	Main unit				
3. Detailed Specs					
3.1. Complete S.S Sterile Storage Mesh Units With Tubular Frame 3.2. Should Have Mono Steered, Antistatic 5" Castors 3.3. Should Have 5 Shelves App. 2~3" Depth 3.4. Size Of The Mesh Basket App. 2'X 3' Overall Size: App 6'					

LOT 11-10: Package sealing Machine

Item Code No.	Department	Section	Item Description
LOT 11-10	CSSD	CSSD	Package sealing Machine

1. General Description

CSSD Package Heat Sealing Machine

2. Composition

2.1.	Main unit				

3. Detailed Specifications

3.1. The continuous band heat-sealing machine with conveyer is suitable for hospital sterile packing.
3.2. It adapts electronic constant temp control system (temp control).
3.3. It has speed adjusting transmission mechanism. (Speed control)
3.4. It can emboss upto 15 interchangeable characters for batch recording, date etc. (embossing mechanism)
3.5. It can seal plastic film of various materials such as PE, PP, Aluminium foil etc.
3.6. It has height adjustments as well as sealing width adjustments.

Specifications

- Temperature Range: 0-250deg.
- Current Supply: 220-240 „Volts, 50 Hz, Single Phase
- Current Consumption: 500 watts
- Sealing speed: 1-12m/min
- Cutting size: 200 mm (8”)
- Sealing width: 6 – 15 mm
- Sealing film thickness: 0.02 –0.80mm
- Conveyor loading: up to 5 kgs
- System should be FDA/CE certified

LOT 11-11: Pressure Steam Gun/ Water for cart washing

Item Code No.	Department	Section	Item Description
LOT 11-11	CSSD	CSSD	Pressure Steam Gun/ Water for cart washing

1. General Description					
2. Composition					
2.1.	Main unit				
3. Detailed Specifications					
3.1. Complete stainless steel CSSD instrument sluicing table with hand water jet table form machine pressed made of acid-proof stainless steel.S.S.304; 1.5mm thickness laser cut with hot and cold water faucets. 3.2. Should have sturdy tubular framework 3.3. Should have twin bay sink with drain out water connection. 3.4. Adjustable stumps. 3.5. Size should be 1200mm x w 600mm x h 850mm					

LOT 11-12: Carrying Carts and Shelves (Stainless Steel)

Item Code No.	Department	Section	Item Description
LOT 11-12	CSSD	CSSD	Carrying Carts and Shelve
1. General Description			
2. Composition			
2.1.	Main unit		
3. Detailed Specifications			
3.1. Complete S.S Sterile Storage Mesh Units With Tubular Frame 3.2. Should Have Mono Steered, Antistatic 5” Castors 3.3. Should Have 5 Shelves App. 2~3” Depth 3.4. Size Of The Mesh Basket App. 2’X 3’ Overall Size: App 6’			

LOT 11-13: Table flash Autoclave

Item Code No.	Department	Section	Item Description
LOT 11-13	Operation Theatre	General Surgery	Flash Autoclave

1. General Description

RAPID STERILIZER (FLASH AUTOCLAVE)TABLE TOP STERILIZER WITH ACCESSORIES

2. Composition

2.1.	Main unit				

3. Specification Details

3.1. Table-Top, Rapid, Front Loading Autoclave

- Fully automatic microprocessor controls
- The control system should have Digital input/output controls, analog measuring inputs & COM ports for printer & PC connectivity, also with Alpha numeric Wide Graphic Display to indicate process status & to set the protocol with soft keypad. It should have Visual indicator provided by the same Wide Graphic Display to indicate process status.
- Accurate pressure control switch (1.2Kg/121 0C & 2Kg/1340C)
- Digital timer for Wet & Dry heat
- Alarm for completion of total command
- Auto drain out of water and condensation of steam; with external Wastewater tank
- Sterilization chamber made of strong deep drawn stainless steel S.S-304
- Sheet to stand high Pressure

3.2. Should meet European Medical Device Directive 93/42EEC and Pressure Equipment directive 97/23EEC

3.3. Should be CE/FDA Approved

LOT 11-14: Gas Plasma sterilizer

Item Code No.	Department	Section	Item Description
LOT 11-14	Operations Theatre	Sterilization Area	Gas Plasma Sterilizer

4. General Description

Low Temperature based H2O2 Gas plasma sterilizer,

5. Composition

5.1.	Main unit				

6. Description of the medical supply unit design type

6.1. Should provide simple & fast sterilization of surgical instruments at low temperature using H2O2 Gas Plasma technology for effective removal of H2O2 from sterilized items and to compliment the process.

6.2. Should be suitable for sterilization of medical items like rigid endoscopes, lumen & non lumen , metal , non-metal, heat & moisture sensitive instruments

6.3. Chamber should have usable volume of around 50 liters

6.4. The sterilization temperature inside the chamber should be less than 55°C

6.5. Cycle time should be 35 to 60 mins

6.6. The sterilant should be in a cassette/ bottle with H2O2 concentration more than 55%

6.7. Should be endorsed by leading instruments and scopes makers like Karl Storz, Olympus, Stryker, Medtronic and Johnson & Johnson

6.8. The system should use minimum quantity of sterilant which should be less than 6-8 ml per injection to deliver dry terminal sterilization to ensure safety of Instruments against corrosion.

6.9. The unit should be equipped with all the safety features

6.10. Sterilizer should have storage of cycle records data.

6.11. Should be environment friendly and have no toxic products or harmful residues in the sterilized items in the chamber.

6.12. Sterilizer should be approved by USFDA and CE

6.13. Please specify list and cost of consumables/ consumable spares (i.e spares need to be replaced at regular intervals, may be quarterly/half yearly/ yearly such as annual maintenance kit etc.) if any.

6.14. Please specify pre installation requirements (electrical, HVAC etc.)

6.15. Please specify footprint size & its weight.

6.16. Demo of the quoted model will be mandatory at the cost of bidder if so desired by the user, after the opening of the technical bid and prior to opening of financial bid. This is for technical evaluation.

LOT 12: INSTRUMENT SETS, CATHETER AND NEEDLE SIZES

S/No.	DESCRIPTION
1	**Basic Surgery set / Minor tray**
	4 x Clamp, towel, Backhaus, 130 mm
	2 x Forceps, tissue seizing, Allis, 150 mm
	6 x Forceps, artery, Halsted-Mosquito, 125 mm, curved
	1 x Forceps, artery, Kocher, 140 mm, straight
	1 x Forceps, dressing, standard, 155 mm, straight
	1 x Forceps, tissue holding, Collin, 160 mm
	1 x Forceps, tissue, standard, 145 mm, straight
	1 x Forceps, dressing & polypus, Cheron, 250 mm
	1 x Needle holder, Mayo-Hegar, 180 mm, straight
	1 x Probe, double-ended, 145 mm
	1 x Retractor, Farabeuf, double-ended, 120 mm, pair
	2 x Scalpel handles: number 3 and 4, one each
	1 x Scissors, Metzenbaum, 140 mm, curved, blunt/blunt
	1 x Scissors, Mayo, 140 mm, curved, blunt/blunt
	1 x Bowl, stainless steel, 180 ml
	2 x Dishes, kidney type
	1 x Forceps Rampleys, sponge holding
	1 X Surgical Trolley
2	**Dressing set**
	1 x Forceps, artery, Kocher, 140 mm, str
	1 x Forceps, dressing, standard, 155 mm, str
	1 x Scissors, Deaver, 140 mm, str, s/b
	2 x Dishes, kidney type
	1 x Surgical Trolley
3	**Laparotomy set**
	4 x Forceps, Ring c and r
	2 x Babcock clamps
	1 x Needle holder, Mayo-Hegar, straight, small, medium and large

S/No.	DESCRIPTION
	1 x Forceps, dressing, standard, 155 mm, straight
	1 x Forceps, dressing, standard, 250 mm, straight
	1 x Dissecting Forceps, teeth, fenestrated, long and short
	1 x Dissecting Forceps, large non teeth
	1 x Retractor, Farabeuf, double-ended, 180 mm, pair
	1 x Retractor, abdominal, Balfour, 3 blades
	1 x Forceps, artery, Kelly, 140 mm, curved (long and short)
	2 x Forceps, tissue seizing, Allis, 150 mm (short and long)
	6 x Forceps, artery, Halsted-Mosquito, 125 mm, curved
	1 x Tube suction, Yankauer, 270 mm
	2 x Bowl, stainless steel, 600 ml
	2 x Dishes, kidney type
	1 x Forceps Rampley's, sponge holding
	Coucher Forceps
	Richardson retractor
	Allis clamps, extra large
	Diverse scissors
	Snaider clamps long
	Cistic clamp long
	2 x Spatula, abdominal, malleable, 270 mm
	1 x Retractor, abdominal, Collin, 3 blades
	Deavers Abdominal Retractors
	Doyen Abdominal Retractor
	4 x Clamp, towel, Backhaus, 130 mm
	1 x Scalpel handle, no.4
	1 x Surgical Trolley
4	**Suture set**
	1 x Scissors, Deaver, 140 mm, curved, sharp/blunt
	1 x Needle holder, Mayo-Hegar, 180 mm, straight
	1 x Forceps, artery, Kocher, 140 mm, straight

S/No.	DESCRIPTION
	1 x Scalpel handle, no. 4
	1 x Forceps, tissue, standard, 145 mm, straight
	1 x Probe, double-ended, 145 mm
	2 x Dishes, kidney type
	1 x Forceps, dissecting w tooth
	1 x Forceps, dissecting , non tooth
	1 x Surgical Trolley
5	**Examination/suturing, vaginal/cervical set**
	1 x Scissors, Mayo, 170 mm, curved, blunt/blunt
	1 x Needle holder, Mayo-Hegar, 180 mm, straight
	2 x Retractor, vaginal, Doyen, 45x85 mm
	1 x Speculum, vaginal, Graves, 75x20 mm
	1 x Speculum, vaginal, Graves, 95x35 mm
	1 x Speculum, vaginal, Graves, 115x35 mm
	2 x Forceps, dressing & polypus, Cheron, 250 mm
	2 x Dishes, kidney type
	1 x Forceps Vulselum
	2 x Forceps Rampley's
	1 x Surgical Trolley
6	**Catheter placement set**
	2 x Forceps, Halsted Mosquito, 120 to 130 mm, curved, no teeth
	1 x Needle holder, Mayo-Hegar, 150 to 160 mm, straight
	2 x Basin, kidney, approx. 1000 ml
	2 x Bowl, stainless steel, 180 ml
	1 x Forceps Foerster or Foerster-Ballenger, 240 to 250 mm, straight, blunt
	1 x Scissors, straight
	2 x Forceps, Rampley's
	1 x Surgical Trolley
7	**Basic Rectal Surgery set**
	1 x Anuscope, Bensaude or Hirschmann or Newman, small

S/No.	DESCRIPTION
	1 x Anuscope, Bensaude or Hirschmann or Newman, medium
	1 x Scalpel large handle, no.7,
	2 x Scalpel handle, no.3,
	1 x Anuscope Fansler, 340 to 570 mm
	1 x Anuscope Pratt, screw graduation, 150 mm
	6 x Forceps, Backhaus, 150 to 155 mm
	6 x Forceps, Crille or Crille-Rankin, 155 to 160 mm, curved
	1 x Forceps, Standard, 130 to 140 mm, straight, 1 x 2 teeth
	1 x Forceps, Standard, 130 to 140 mm, straight, 1 x 2 teeth
	1 x Forceps, Foerster or Foerster-Ballanger, 240 to 250 mm, curved, grasping
	6 x Forceps, artery, Halsted-Mosquito, 120 to 130 mm, curved
	1 x Forceps, artery, Pean/Rochester, 220 mm, straight, grasping
	1 x Forceps, Yeoman grasping, rectal biopsy, curved, 330 mm
	1 x Forceps, Yeoman grasping, rectal biopsy, 280 mm
	1 x Needle holder, Mayo-Hegar, 200 to 210 mm, straight
	1 x Scissors, Mayo, 170 mm, straight
	1 x Scissors, Metzenbaum, 180 mm, curve
	1 x Bowl, stainless steel, 100 ml
	1 x Dissecting Forceps, Russ Model, 200 mm, teeth, fenestrated
	1 x Tube, corrugated, 140 mm to 145 mm
	1 x Rectal specula, Pratt or Crypt
	1 x Exploration blunt
	1 x Rectal specula, Stewart, handheld 150 mm, 29 mm
	2 x Dishes, kidney type
	1 x Forceps Rampley's
	1 x Surgical Trolley
8	**Cervix Conization set**
	1 x Table, instruments, Mayo type, stainless steel,
	6 x Forceps, Allis, 155 to 160 mm
	1 x Forceps, Bozemann, S Shaped, Uterine Scissors, 240 to 260 mm,

S/No.	DESCRIPTION
	2 x Tower Clamp, curved, blunt
	1 x Forceps, Standard, 250 to 260 mm, straight, grasping
	1 x Forceps, Standard, 130 to 140 mm, straight 1 x 2 teeth
	1 x Forceps, Standard, 200 to 205 mm, straight, 1 x 2 teeth
	6 x Forceps, Crille or Crille-Rankin, 155 to 160 mm, curved
	2 x Needle holder, Mayo-Hegar, 180 mm, straight
	2 x Retractor, Farabeuf, 150 to 155 mm
	1 x Scissors, Mayo-Stille, 170 mm, curved
	1 x Scissors, Mayo, 170 mm, straight
	1 x Scissors, Metzenbaum, 150 to 160 mm, straight
	2 x Dishes, kidney type
	2 x Forceps Rampleyâ□™s
	2 x Bowls stainless steel
	1 x Surgical Trolley
9	**Vaginal Hysterectomy set**
	1 x Tube suction, Yankauer, 300 mm
	1 x Table, instruments, Mayo type, stainless steel,
	10 x Forceps, Crille, 140 mm, curved, grasping
	10 x Forceps, Allis, 180 to 190 mm, 5 or 6 teeth
	1 x Forceps, Bozemann, S Shaped, Uterine Scissors, 240 to 260 mm, grasping
	1 x Forceps, Standard, 100 to 110 mm, straight, 1 x 2 teeth
	1 x Forceps, Standard, 240 to 250 mm, straight, grasping
	2 x Forceps Foerster or Foerster-Ballenger, 240 to 250 mm, curved, grasping
	6 x Forceps, Heaney, 205 to 210 mm, 2 teeth
	6 x Forceps, artery, Pean/Rochester, 180 to 185 mm, curved, grasping
	1 x Needle holder, Heaney, 200 to 210 mm, curved
	1 x Needle holder, Hegar or Mayo-Hegar, 160 mm, straight
	1 x Needle holder, Hegar or Mayo-Hegar, 200 to 210 mm, straight
	1 x Retractor, vaginal, Doyen, 45x85 mm, length 240 mm
	1 x Retractor, vaginal, Doyen, 45x85 mm, length 240 mm

S/No.	DESCRIPTION
	1 x Scissors, Mayo, 170 mm, curved, blunt/blunt
	1 x Scissors, Metzenbaum, 200 to 205 mm, curved
	1 x Scissors, Metzenbaum, 150 to 160 mm, straight
	1 x Bowl, stainless steel, 30 ml
	1 x Dissecting forceps, Standard, 130 to 140 mm, grasping
	1 x Scissors, Mayo, 170 mm, straight, blunt/blunt
	2 x Basin, kidney, approx. 500 ml
	2 x Scalpel handle, no. 4
	6 x Forceps, Backhaus, 150 mm to 155 mm
	2 x Forceps, Pozzi, 240 mm
	2 x Forceps Rampley's
	1 x Forceps Vulselum
	1 x Surgical Trolley
10	**Abdominal Hysterectomy set**
	2 x Scalpel handle, no. 4
	1 x Tube suction, Yankauer, 300 mm
	1 x Tube suction, Yankauer, 22.8 mm, screw off button
	1 x Table, instruments, Mayo type, stainless steel,
	1 x Forceps, Aldlerkreutz, 200 mm, straight,
	8 x Forceps, Allis, 250 to 260 mm, 5 or 6 teeth
	6 x Forceps, Backhaus, 150 to 155 mm
	1 x Forceps, Bozemann, S Shaped, grasping
	10 x Forceps, Crille or Crille-Rankin, 155 to 160 mm, curved
	1 x Forceps, Dartigues or Hiterolabo, 255 to 270 mm, curved
	1 x Dissecting Forceps, Standard, 130 to 140 mm, teethless, graves
	1 x Forceps, Standard, 250 to 260 mm, straight, grasping
	1 x Forceps, Standard, 130 to 140 mm, straight, 1 x 2 teeth
	2 x Forceps, Standard, 250 to 260 mm, straight, grasping
	2 x Forceps Foerster or Foerster-Ballenger, 240 to 250 mm, curved, grasping

S/No.	DESCRIPTION
	2 x Forceps Foerster or Foerster-Ballenger, 240 to 250 mm, straight, grasping
	6 x Forceps, Heaney, 220 mm, 2 teeth, curved, grasping
	6 x Forceps, artery, Pean/Rochester, 220 to 225 mm, curved, grasping
	2 x Forceps, artery, Rochester Ochsner or Kocher-Ochsner, 240 to 225 mm, curved, teeth
	1 x Needle holder, Mayo-Hegar, 180 mm, straight
	1 x Needle holder, Hegar or Mayo-Hegar, 240 mm, straight
	1 x Deaver Bladder, valve 25 x 300 mm
	1 x Deaver Bladder, valve 75 x 300 to 310 mm
	1 x Farabeuf Bladder, 2 x 150 to 155 mm
	1 x O´Sullivan O´Connor, 3 sleves
	1 x Scissors, Mayo, 170 mm, curved, blunt/blunt
	1 x Scissors, Mayo, 170 mm, straight, blunt/blunt
	1 x Scissors, Mayo, 170 mm, straight, blunt/blunt
	1 x Scissors, Mayo, 230 mm, straight, blunt/blunt
	1 x Scissors, Mayo-Harrington, 225 to 230 mm, curved, blunt/blunt
	1 x Scissors, Metzenbaum, 180 mm, curved
	1 x Scissors, Metzenbaum, 230 mm, curved, blunt
	2 x Basin, kidney, approx. 1000 ml
	1 x Bowl, stainless steel, 250 ml
	1 x Surgical Trolley
11	**Prostatectomy set**
	2 x Tube suction, Yankauer, 22.8 mm, screw off button
	1 x Table, instruments, Mayo type, stainless steel,
	2 x Scalpel handle, one no.3 and one no.4
	10 x Forceps, Allis, 180 to 190 mm, 5 or 6 teeth
	10 x Forceps, Crille, 140 mm, curved, grasping
	2 x Forceps, Bakey, dissection, straight, branches 2mm, 190 to 200 mm length
	1 x Forceps, Standard, 130 to 140 mm, straight, 1 x 2 teeth
	2 x Standard, 250 to 260 mm, straight, grasping
	2 x Forceps Foerster or Foerster-Ballenger, 180 mm to 200 mm, curved, grasping

S/No.	DESCRIPTION
	2x Forceps, Mixter, 230 mm, grasping
	4 x Forceps, artery, Pean/Rochester, 200 to 205 mm, curved, grasping
	2 x Forceps, Potts Smith, 230 mm, grasping
	2 x Forceps, Satinsky, 255 to 265 mm, double angulation
	1 x Needle holder, Mayo-Hegar, 180 mm, straight
	1 x Needle holder, Hegar or Mayo-Hegar, 180 to 185 mm, straight
	1 x Needle holder, Hegar or Mayo-Hegar, 300 mm, straight
	1 x Balfour Bladder, central valve of 65 to 80 mm x 80 to 85 mm, lateral valves, fenestrated, maximum 250 to 255 mm
	1 x Deaver Bladder, valve 19 x 180 mm
	1 x Deaver Bladder, valve 25 x 300 mm
	1 x Desmarres Bladder, valve 13 x 14 mm, 130 to 140 mm length
	1 x Richardson Bladder, valve 38 x 44 x 30â□“38 mm, length 240 to 245 mm
	1 x Basin, kidney, approx. 1000 ml
	1 x Basin, kidney, approx. 500 ml
	1 x Farabeuf Bladder, 2, 150 to 155 mm length
	2 x Scissors, Bakey, angulated 60°, 230 to 240 mm length
	2 x Scissors, Mayo, 150 to 155 mm, straight, blunt/blunt
	4 x Standard, 250 to 260 mm, straight, grasping
	4 x Forceps Foerster or Foerster-Ballenger, 180 to 200 mm, curved, grasping
	4 x Forceps, Mixter, 230 mm, grasping
	4 x Forceps, artery, Pean/Rochester, 200 to 205 mm, curved, grasping
	4 x Forceps, Potts Smith, 180 to 240 mm length
	Diverse retractors Babcock forceps Curved needle holder Bull dog clamps Hoitgrewe malleable blade
	McDougal clamp
	Right angle clamp
	2 x Forceps Rampley's
	1 x Surgical Trolley
12	**Tracheostomy set**
	5 x Forceps, Field
	2 x Forceps, Mosco, curved

S/No.	DESCRIPTION
	2 x Forceps, artery, Kelly, short
	1 x Forceps, Allis, large
	2 x Farabeu Bladder
	2 x hook
	2 x Dissecting forceps, small
	1 x Needle holder
	1 x Scalpel handle, no.7
	1 x Dishes, kidney type
	2 x Forceps Rampley
	2 x Bowl, stainless steel
	Gynecological and Kidney set
	1 x Forceps, uterine
	1 x Speculum, vaginal,
	1 x Basin, kidney, approx. 500 ml
	1 x Surgical Trolley
13	**Urology set**
	Sterilization container for the set of instruments, with cover, perforation and filter
	1 x Urethral sounds metal Otis-Clutton curved with olive ends (Sizes 4, 6, 8, 10, 12 FG)
	1 x Bougies neoplex filiform (smaller sizes olive tipped)
	1 x Sounds metal large Powellâ□™s straight blunt plain end
	1 x Cystoscope fibre-lit 30 deg telescope with sheath and obturator, operated by standard Heine battery handle
	Tiemann brown rubber catheters Ch. 12-24
	1 x Foley-Tiemann urinary catheters Ch. 12-24
	1 x Introducer for catheterisation 460 mm
	1 x kidney dishes assorted 6", 8", 10"□™
	3 x Gallipots stainless steel 70 mm diameter
	2 Lotion bowls stainless steel 105 mm diameter x 40mm
	1 x Surgical Trolley
14	**Lumbar Puncture set, Adult**
	1 x Instrument tray

S/No.	DESCRIPTION
	1 x Kidney dish, 20 cm
	1 x Galipot, 3 oz
	1 x Sponge holder, 17 cm
	1 x Lumbar puncture needles with stilettoes, different sizes for adult
	1 x Spinal manometer
	1 x 3-way Stopcock, Luer Lock
	1 x Adapter
	1 x Syringe Luer Lock
	1 x Bijou sterile bottle
	1 x Hypodermic needles, lock, 22 G
	1 x Spinal needle (trocar & cannula), 22G
	1 x Spinal needle (trocar & cannula), 20G
	1 x Spinal needle (trocar & cannula), 23G
	1 x Spinal needle (trocar & cannula), 18G
	1 x Surgical Trolley
15	**Lumbar Puncture set, Paediatrics**
	1 x Instrument tray
	1 x Kidney dish, 20 cm
	1 x Galipot, 3 oz
	1 x Sponge Holder, 17 cm
	1 x Lumbar puncture needles with stilettoes, different sizes for child
	1 x Spinal manometer
	3-way Stopcock, Luer Lock
	1 x Adapter
	1 x Syringe Luer Lock
	1 x Bijou sterile bottle
	1 x Hypodermic needles, Lock, 25 G
	1 x Spinal needle (trocar & cannula), 25 G
	1 x Surgical Trolley
16	**Pleural Biopsy set**

S/No.	DESCRIPTION
	1 x Sterilization container for the set of instruments, with cover, perforation and filter
	2 x Kidney dish, 20 cm
	2 x Galipot, 6 oz
	4 x Sponge holder, 17 cm
	2 x Dissecting forceps, plain, 15 cm
	2 x Scalpel handle, no. 3
	8 x Towel clips, Backhaus, 8 cm
	2 x Set Abramâ™s pleural biopsy needles (8 G x 3")
	5 x Two way adaptor
	2 x Syringe, with metal tip, Luer lock
	10 x Hypodermic needle, Luer lock, 23 G
	10 x Hypodermic needle, Luer lock, 21 G
	2 x Galipot, 3 oz
	1 x Surgical Trolley
17	**Mastectomy set**
	2 x Needle holder, Mayo-Hegar, 180 mm, straight
	1 x Retractor, Farabeuf, double-ended, 120 mm, pair
	1 x Tube suction, Yankauer, 270 mm
	10 x Forceps, artery, Kelly, 140 mm, curved
	5 x Forceps, tissue seizing, Allis, 150 mm
	4 x Richardson Bladder, valve 38x44x30-38 mm, length 240 to 245 mm
	10 x Forceps, artery, Halsted-Mosquito, 125 mm, curved
	2 x Forceps, dressing, ring
	2 x Forceps grasper short, 5 mm
	1 x Volkman retractor
	1 x Scalpel No 4 and 7 with blade
	1 x Gerald Dressing Forceps, 18 cm, straight
	2 x Dishes, kidney type
	1 x Instrument tray, 24 x 5 cm
	1 x Kidney dish, 20 cm

S/No.	DESCRIPTION
	1 x Galipot, 6 oz
	1 x Sponge holder, 17 cm
	1 x Marting Aspiration Needles, 17 G
	1 x Trocar and Cannulae, size 11 G and 14 G
	1 x Two way Adaptor
	1 x Doz. Hypodermic Needles, Luer Lock, 21 G x 1
	1 x Doz. Hypodermic Needles, Luer Lock, 23 G x 1
	1 x Galipot, 3 oz
	1 x Surgical Trolley
18	**Gynecologic biopsy set**
	1 x Forceps, uterine, ovum, Bierer, large
	1 x Forceps, uterine, ovum, Bierer, small
	1 x Forceps, uterine, ovum, Sopher, small
	1 x Posi-Locking Instrument Holder
	1 x Speculum, vaginal, Graves, wide mouth
	1 x Fixed-diameter cervical dilator, reusable
	1 x Disposable self-retaining retraction system ring
	2 x Dishes, kidney type
	Excisional breast biopsy set
	1 x Retractor, Farabeuf, double-ended, 120 mm, pair
	2 x Needle holder, Mayo-Hegar, 180 mm, straight
	2 x Forceps, tissue seizing, Allis, 150 mm
	1 x Forceps, artery, Kelly, 140 mm, curved (long and short)
	2 x Forceps, Halsted Mosquito, 120 to 130 mm, curved, no teeth
	2 x Forceps, Ring c and r
	1 x Forceps, dressing, standard, 155 mm, straight
	1 x Forceps, tissue holding, Collin, 160 mm
	2 x Forceps, tissue, standard, 145 mm, straight
	2 x Dissecting Forceps, teeth and non-teeth,
	fenestrated, long and short

S/No.	DESCRIPTION
	2 x Dishes, kidney type
	1 x Surgical Trolley
19	**Lobectomy and segmental lung set**
	Chest retractor of surgeon election (Volkman retractors, Harrington, Richardson, Malleable ribbon, Kelly vaginal)
	Long medium and large clip appliers
	Bronchus clamps
	Duval lung clamps
	Allison lung retractor (whisk) Scapular retractor
	Doyen periosteal elevator (doyen raspatory right and left)
	Elevators (Cameron, alexander, periosteal or others)
	Box cutter, Bethune (stille-giertz) rib shears, Guillotine
	Bailey rib approximator
	Yankauer or Baron suction tube
	Finochietto rib spreader or Burford (short or long blades)
	Soft tissue retractor (eg. Sauerbruch) DeBakey Clamps long and short Volkman retractors
	Rib Elevator
	Freer Elevator, with blunt sharp blade
	Martin Tissue Forceps 7 1/2
	Potts-Smith Tissue Forceps
	Forceps (eg, Kelly, Pean, Coller, Mixter)
	Towel Clamp Needle Holder Bone Rongeur
	Mixter Thoracic Forceps
	Nelson Metzenbaum dissecting Lobectomy Scissors
	Sarot Intra-Thoracic Artery Forceps and Bronchus clamp (optional)
	2 x Dishes, kidney type
	1 x Surgical Trolley
20	**Thoracotomy set**
	1 x Forceps, artery, Halstead
	2 x Forceps, Sponge, Rampley
	2 x Forceps, tissue, Allis

S/No.	DESCRIPTION
	5 x Forceps, towel, Mayo
	2 x Instrument Pin
	2 x Knife handle, Surgical, No. 3
	2 x Knife handle, Surgical, No. 4
	1 x Needle Holder,
	2 x Retractor, Double, blunt hook
	1 x Scissors, Mcindoe
	1 x Scissors, suture
	2 x trocar & canula for chest puncture
	2 x Dishes, kidney type
	1 x Surgical Trolley

LOT 13: MONITORING EQUIPMENT

S/No.	Section	Equipment	Qty
1.	Consulting Rooms	Patient monitor	4
2.	Out Patient Services	Defibrillator	1
3.	Triage	Vital Signs Monitor	2
4.	Radiotherapy	Patient Monitor	1
5.	Imaging Dept.	MRI Compatible Monitor	1
6.	Imaging	Patient Monitor	1
7.	Chemotherapy	Vital Signs Monitor	3
8.	Chemotherapy	Defibrillator	1
9.	Inpatient Services	Vital Signs Monitors	5
10.	Inpatient Services	Defibrillator	2
11.	Operation Theatres	OR Patient Monitor	2
12.	Theatre Recovery	Patient Monitor	4
13.	Operation Theatre	Transport Patient Monitor	2
14.	Operation Theatre	Defibrillator	2
15.	ICU	Patient Monitor	4
16.	ICU	Central Monitoring System	1
17.	ICU	Defibrillator	1
18.	ICU	Transport Patient Monitor	1
19.	ICU	12 lead ECG Machine	1
SUMMARY			
1.	LOT 13-1	Patient Monitors	10
2.	LOT 13-2	Defibrillator	5
3.	LOT 13-3	Vital Signs Monitor	10
4.	LOT 13-4	OR Patient Monitor	2
5.	LOT 13-5	Transport Patient Monitors	3
6.	LOT 13-6	ICU Patient Monitor	4
7.	LOT 13-7	12 Lead ECG Machine	1
8.	LOT 13-8	Central Monitoring System	1

LOT 13-1: PATIENT MONITORS

Item Code No.	Department	Section	Item Description
LOT 13-1	Various as per table LOT 14	Various as per table LOT 14	Patient Monitor

1. General Description

Portable Bedside monitor suitable for use in ICU. Should be capable of continuous measuring/ monitoring of the following parameters in adults, neonatal and pediatric.

- SpO_2
- Temperature
- Blood pressure
- ECG
- Respiration
- CO_2
- Pulse Rate

2. Composition

2.1.	Main unit				

3. Performance Specifications

3.1. Main Unit

able Bed side monitors	
e	Roll stand Mounted type, complete with internal rechargeable battery
lication	Can be used as a both bedside monitor and a transport monitor
meter & waveforms	SpO2, Pulse rate, ECG, NIBP, IBP, Respiration, CO2 and temperature
2, with reusable sensor	0 - 100% ± 3%
Pulse Rate	30-300 bpm ± 1%
Temperature	0-50^{0}C ± 0.1%
NIBP	Mean 10- 300mmHg ± 5 mmHg
IBP X2	Mean 00 – 300mm Hg ± 1 mmHg
ECG	5 lead, standard configuration
CO_2	0 to 99 mmHg ± 4 mmHg
Display	Minimum 12.0 inches color touch screen/scroll type
	6 to 8 waveforms with large font
Networking	Wireless and wired connection to the central work station
Storage	Capable of storing patient data and transferring to the central workstation for viewing or printing.
Audio and visual alarm Printer	For all parameter. Inbuilt Thermal Printer
Alarm setting limits	Adjustable by user
Low battery indicator	Audio and visual alarm
Power Requirement	Rechargeable internal battery, that can last at least 3 hours when fully charged
Wireless networking	Latest technology.

4.	Accessories	The following accessories will be provided as startup kits.

Item Code No.	Department	Section	Item Description
LOT 13-1	Various as per table LOT 14	Various as per table LOT 14	Patient Monitor

4.1.	ECG connection lead and reusable electrodes	2 Set
4.2.	SpO_2 connection cable and sensor (finger probe), reusable	2 Sets
4.3.	Adult cuff	3 Sets
4.4.	Peadiatric cuff	2 Sets
	Temperature connection cable and probe (reusable)	2 Sets
4.5.	Recording paper	20 Boxes
5.	Quality standards	
5.1.	Manufacturing standards	IEC 60601-1, ISO 9001, ISO 13485
5.2.	Conformity to standards	Directive 2004 / 108 / EC, CE and FDA marked
6.	Local back up service	
6.1.	Available	Should be available locally
6.2.	Capacity to service equipment	Agent shall have adequate facilities, spare parts, consumables and qualified and skilled technical staff
7.	Delivery point	
7.1.	See Schedule	For inspection and testing
7.2.	Nil	
8.	Pre installation requirements	
	Nil	
9.	Installation and testing	
	Complete installation and setup of the machine as per manufacturer's instructions	
10.	Training	
10.1.	User Training	On site user training on operation and daily up keep
10.2.	Maintenance training	Onsite maintenance training on preventive maintenance
11.	Technical documentations	

Item Code No.		Department	Section	Item Description		
LOT 13-1		Various as per table LOT 14	Various as per table LOT 14	Patient Monitor		
11.1.	User manuals		2 Sets			
11.2.	Service Manual		1 Set			
11.3.	Drawings		Nil			
12.	Commissioning					
12.1.	Testing and commissioning of the machine to the satisfaction of the user.					
13.	Warranty					
13.1.	Equipment		Minimum of one year after commissioning on all parts.			
13.2.	Equipment System		Nil			

LOT 13-2: DEFIBRILLATOR

Item Code No.	Department	Section	Item Description
LOT 13-2	Various as per table LOT 14	As per table LOT 14	Defibrillator

1. General Description

Defibrillator suitable for cardiac care complete with ECG monitoring, SPO_2 monitoring and NIBP

2. Composition

2.1.	Main unit				

3. Performance Specifications

3.1. Main Unit

3.1.1. The defibrillator should have biphasic technology having energy selection of maximum 200 joules.

3.1.2. The machine should have facility for ECG monitoring, defibrillation, external pacing & recorder.

3.1.3. Machine should have more than 8" TFT Screen.

3.1.4. Machine must be with sweep rate 25mm/sec, 50mm/sec.

3.1.5. Machine should have 24 hour trend storage facility.

3.1.6. Should have 5 leads and capable of monitoring 12 lead configuration ECG through ECG Cables, electrodes & paddles.

3.1.7. The machine should have defibrillation facility for adult & pediatric patients.

3.1.8. The machine should have ECG waveform display on bright screen along with other vital numeric information.

3.1.9. The machine should be compact, portable with built in rechargeable battery & light weight.

3.1.10. The machine should have inbuilt auto & manual recorder for printing ECG trace & stored information.

3.1.11. The machine should have user selectable alarm setting.

3.1.12. The machine should work on mains (without battery) and on battery as well.

3.1.13. The machine should have AED feature as inbuilt with manual override for manual operations.

3.1.14. Machine must be with carry bag & Accessory bag.

3.1.15. The machine must be supplied with all the essential accessories in 2 set & moveable trolley.

3.1.16. The Defibrillator should have an ECG display and a three lead ECG cable.

3.1.17. The Defibrillator should have SPO2 and must have Non Invasive Pacing.

LOT 13-3: VITAL SIGNS MONITOR

Item Code No.	Department	Section	Item Description
LOT 13-3	As Per Table LOT 14	As per table LOT 14	Vital Signs Monitor

13. General Description

l signs Monitor suitable for use in operating theaters. Should be capable of continuous measuring/ monitoring of the following parameters in adults, neonatal and pediatric.

- SpO_2
- Temperature
- Blood pressure
- Pulse Rate
- ECG

14. Composition

14.1.	Main unit				

15. Performance Specifications

15.1.	Main Unit	
15.1.1.	The unit should be a model or type on current production capable of measuring/monitoring the following parameters	
15.1.2.	2, with reusable sensor	0 - 100% ± 3%
15.1.3.	Pulse Rate	30-300 bpm ± 1%
15.1.4.	Temperature	0-50^{0}C ± 0.1%
15.1.5.	NIBP	Mean 10- 300mmHg ± 5 mmHg
15.1.6.	IBP	Mean 50 – 300mm Hg ± 1 mmHg
15.2.	Display	At least 12 inches color touch screen type/rotary knob
15.2.1.		6 to 8 waveforms mode with large font
15.3.	Printer	Inbuilt, thermal array or equivalent
15.3.1.		Two speed, selectable
15.3.2.		Port for external printer
15.4.	Networking	Port for networking with Ethernet or equivalent Or Serial Port RS 232
15.5.	Input	
15.6.	Storage	Capable of storing patient data
16.	Safety requirements	
16.1.	Audio and visual alarm	For all parameter.
16.2.	Alarm setting limits	Adjustable by user

Item Code No.	Department	Section	Item Description
LOT 13-3	As Per Table LOT 14	As per table LOT 14	Vital Signs Monitor
16.3.	Low battery indicator	Audio and visual alarm	
16.4.	Internal battery	Provided, rechargeable, can operate for at least 3 hours	
17.	Physical characteristics		
17.1.	Main unit		
17.2.	Dimensions	Portable with a recharge dock or equivalent recharging un it	
18.	Operating environment		
18.1.	Power Requirements	240V, A/c 50 Hz, Single phase, 3 Pin Plug, 3m long cord BS type with PE	
18.2.	Ambient temperature	10^{o} C to 40^{o} C	
18.3.	Relative humidity	20% to 90%	
19.	Accessories	The following accessories will be provided as startup kits.	
19.1.	SpO_2 connection cable and sensor (finger probe), reusable	2 Sets	
19.2.	Adult cuff	2 Sets	
19.3.	Peadiatric cuff	2 Sets	
19.4.	Temperature connection cable and probe (reusable)	2 Sets	
19.5.	Recording paper	2 sets of 5 rolls	
19.6.	ECG Cable	1 No.	
19.7.	Grounding lead	1 No.	
20.	Quality standards		
20.1.	Manufacturing standards	IEC 60601-1, ISO 9001, ISO 13485	
20.2.	Conformity to standards	Directive 2004 / 108 / EC, CE and FDA approved	
21.	Local back up service		
21.1.	Available	Should be available locally	
21.2.	Capacity to service equipment	Agent shall have adequate facilities, spare parts, consumables and qualified and skilled technical staff	
22.	Delivery point		
22.1.	See Schedule	For inspection and testing	
22.2.	Nil		

Item Code No.	Department	Section	Item Description
LOT 13-3	As Per Table LOT 14	As per table LOT 14	Vital Signs Monitor
23.	Installation and testing		
	Complete installation and setup of the machine as per manufacturer's instructions		
24.	Training		
24.1.	User Training	On site user training on operation and daily up keep	
24.2.	Maintenance training	Onsite maintenance training on preventive maintenance	

LOT 13-4: OR PATIENT MONITOR

Item Code No.	Department	Section	Item Description
LOT 13-4	Intensive Care Unit	Critical Care	Patient Monitor

1. General Description

able Bedside monitor suitable for use in ICU. Should be capable of continuous measuring/ monitoring of the following parameters in adults, neonatal and pediatric.

- SpO_2
- Temperature
- Blood pressure
- ECG
- Respiration
- CO_2
- Pulse Rate

2. Composition

2.1.	Main unit				

3. Performance Specifications

3.1. Main Unit

able Bed side monitors	
e	Roll stand Mounted type, complete with internal rechargeable battery
lication	Can be used as a both bedside monitor and a transport monitor
meter & waveforms	SpO2, Pulse rate, ECG, NIBP, IBP, Respiration, CO2 and temperature
2, with reusable sensor	0 - 100% ± 3%
Pulse Rate	30-300 bpm ± 1%
Temperature	$0\text{-}50^0C$ ± 0.1%
NIBP	Mean 10- 300mmHg ± 5 mmHg
IBP X2	Mean 00 – 300mm Hg ± 1 mmHg
ECG	5 lead, standard configuration
CO_2	0 to 99 mmHg ± 4 mmHg
Display	Minimum 12.0 inches color touch screen/scroll type
	6 to 8 waveforms with large font

Item Code No.	Department	Section	Item Description
LOT 13-4	Intensive Care Unit	Critical Care	Patient Monitor

Networking	Wireless and wired connection to the central work station	
Storage	Capable of storing patient data and transferring to the central workstation for viewing or printing.	
Audio and visual alarm Printer	For all parameter. Inbuilt Thermal Printer	
Alarm setting limits	Adjustable by user	
Low battery indicator	Audio and visual alarm	
Power Requirement	Rechargeable internal battery, that can last at least 3 hours when fully charged	
Wireless networking	Latest technology.	

4.	Accessories	The following accessories will be provided as startup kits.	
4.1.	ECG connection lead and reusable electrodes	2 Set	
4.2.	SpO_2 connection cable and sensor (finger probe), reusable	2 Sets	
4.3.	Adult cuff	3 Sets	
4.4.	Peadiatric cuff	2 Sets	
	Temperature connection cable and probe (reusable)	2 Sets	
4.5.	Recording paper	20 Boxes	
5.	Quality standards		
5.1.	Manufacturing standards	IEC 60601-1, ISO 9001, ISO 13485	
5.2.	Conformity to standards	Directive 2004 / 108 / EC, CE and FDA marked	
6.	Local back up service		
6.1.	Available	Should be available locally	
6.2.	Capacity to service equipment	Agent shall have adequate facilities, spare parts, consumables and qualified and skilled technical staff	
7.	Delivery point		
7.1.	See Schedule	For inspection and testing	

Item Code No.	Department	Section	Item Description		
LOT 13-4	Intensive Care Unit	Critical Care	Patient Monitor		
7.2.	Nil				
8.	Pre installation requirements				
	Nil				
9.	Installation and testing				
	Complete installation and setup of the machine as per manufacturer's instructions				
10.	Training				
10.1.	User Training	On site user training on operation and daily up keep			
10.2.	Maintenance training	Onsite maintenance training on preventive maintenance			
11.	Technical documentations				
11.1.	User manuals	2 Sets			
11.2.	Service Manual	1 Set			
11.3.	Drawings	Nil			
12.	Commissioning				
12.1.	Testing and commissioning of the machine to the satisfaction of the user.				
13.	Warranty				
13.1.	Equipment	Minimum of one year after commissioning on all parts.			
13.2.	Equipment System	Nil			

LOT 13-5: TRANSPORT PATIENT MONITOR

Item Code No.	Department	Section	Item Description
LOT 13-5	**As per Table LOT 14**	**As per table LOT 14**	**Portable Bedside Monitor**

1. General Description

able Bedside monitor suitable for use in ICU. Should be capable of continuous measuring/ monitoring of the following parameters in adults, neonatal and pediatric.

- SpO_2
- Temperature
- Blood pressure
- ECG
- Respiration
- CO_2
- Pulse Rate

2. Composition

2.1.	Main unit				

3. Performance Specifications

3.1. Main Unit

able Bed side monitors	
e	Roll stand Mounted type, complete with internal rechargeable battery
lication	Can be used as a both bedside monitor and a transport monitor
meter & waveforms	SpO2, Pulse rate, ECG, NIBP, IBP, Respiration, CO2 and temperature
2, with reusable sensor	0 - 100% ± 3%
Pulse Rate	30-300 bpm ± 1%
Temperature	$0\text{-}50^0C$ ± 0.1%
NIBP	Mean 10- 300mmHg ± 5 mmHg
IBP X2	Mean 00 – 300mm Hg ± 1 mmHg
ECG	5 lead, standard configuration
CO_2	0 to 99 mmHg ± 4 mmHg
Display	Minimum 12.0 inches color touch screen/scroll type
	6 to 8 waveforms with large font
Networking	Wireless and wired connection to the central work station

Item Code No.	Department	Section	Item Description
LOT 13-5	**As per Table LOT 14**	**As per table LOT 14**	**Portable Bedside Monitor**

Storage	Capable of storing patient data and transferring to the central workstation for viewing or printing.
Audio and visual alarm Printer	For all parameter. Inbuilt Thermal Printer
Alarm setting limits	Adjustable by user
Low battery indicator	Audio and visual alarm
Power Requirement	Rechargeable internal battery, that can last at least 3 hours when fully charged
Wireless networking	Latest technology.

4.	Accessories	The following accessories will be provided as startup kits.	
4.1.	ECG connection lead and reusable electrodes	2 Set	
4.2.	SpO_2 connection cable and sensor (finger probe), reusable	2 Sets	
4.3.	Adult cuff	3 Sets	
4.4.	Peadiatric cuff	2 Sets	
4.5.	Temperature connection cable and probe (reusable)	2 Sets	
4.6.	Recording paper	20 Boxes	
5.	Quality standards		
5.1.	Manufacturing standards	IEC 60601-1, ISO 9001, ISO 13485	
5.2.	Conformity to standards	Directive 2004 / 108 / EC, CE and FDA marked	
6.	Local back up service		
6.1.	Available	Should be available locally	
6.2.	Capacity to service equipment	Agent shall have adequate facilities, spare parts, consumables and qualified and skilled technical staff	
7.	Delivery point		
7.1.	See Schedule	For inspection and testing	

Item Code No.	Department	Section	Item Description		
LOT 13-5	**As per Table LOT 14**	**As per table LOT 14**	**Portable Bedside Monitor**		
7.2.	Nil				
8.	Pre installation requirements				
	Nil				
9.	Installation and testing				
	Complete installation and setup of the machine as per manufacturer's instructions				
10.	Training				
10.1.	User Training	On site user training on operation and daily up keep			
10.2.	Maintenance training	Onsite maintenance training on preventive maintenance			
11.	Technical documentations				
11.1.	User manuals	2 Sets			
11.2.	Service Manual	1 Set			
11.3.	Drawings	Nil			
12.	Commissioning				
12.1.	Testing and commissioning of the machine to the satisfaction of the user.				
13.	Warranty				
13.1.	Equipment	Minimum of one year after commissioning on all parts.			
13.2.	Equipment System	Nil			

LOT 13-6: ICU PATIENT MONITOR

Item Code No.	Department	Section	Item Description
LOT 13.6	Intensive Care Unit	Critical Care	Patient Monitor

1. General Description

able Bedside monitor suitable for use in ICU. Should be capable of continuous measuring/ monitoring of the following parameters in adults, neonatal and pediatric.

- SpO_2
- Temperature
- Blood pressure
- ECG
- Respiration
- CO_2
- Pulse Rate

2. Composition

2.1.	Main unit				

3. Performance Specifications

3.1. Main Unit

able Bed side monitors	
e	Roll stand Mounted type, complete with internal rechargeable battery
lication	Can be used as a both bedside monitor and a transport monitor
meter & waveforms	SpO2, Pulse rate, ECG, NIBP, IBP, Respiration, CO2 and temperature
2, with reusable sensor	0 - 100% ± 3%
Pulse Rate	30-300 bpm ± 1%
Temperature	$0\text{-}50^0C$ ± 0.1%
NIBP	Mean 10- 300mmHg ± 5 mmHg
IBP X2	Mean 00 – 300mm Hg ± 1 mmHg
ECG	5 lead, standard configuration
CO_2	0 to 99 mmHg ± 4 mmHg
Display	Minimum 12.0 inches color touch screen/scroll type
	6 to 8 waveforms with large font

Item Code No.	Department	Section	Item Description
LOT 13.6	Intensive Care Unit	Critical Care	Patient Monitor

Networking	Wireless and wired connection to the central work station	
Storage	Capable of storing patient data and transferring to the central workstation for viewing or printing.	
Audio and visual alarm Printer	For all parameter. Inbuilt Thermal Printer	
Alarm setting limits	Adjustable by user	
Low battery indicator	Audio and visual alarm	
Power Requirement	Rechargeable internal battery, that can last at least 3 hours when fully charged	
Wireless networking	Latest technology.	

4.	Accessories	The following accessories will be provided as startup kits.	
4.1.	ECG connection lead and reusable electrodes	2 Set	
4.2.	SpO_2 connection cable and sensor (finger probe), reusable	2 Sets	
4.3.	Adult cuff	3 Sets	
4.4.	Peadiatric cuff	2 Sets	
	Temperature connection cable and probe (reusable)	2 Sets	
4.5.	Recording paper	20 Boxes	
5.	Quality standards		
5.1.	Manufacturing standards	IEC 60601-1, ISO 9001, ISO 13485	
5.2.	Conformity to standards	Directive 2004 / 108 / EC, CE and FDA marked	
6.	Local back up service		
6.1.	Available	Should be available locally	
6.2.	Capacity to service equipment	Agent shall have adequate facilities, spare parts, consumables and qualified and skilled technical staff	
7.	Delivery point		
7.1.	See Schedule	For inspection and testing	

Item Code No.	Department	Section	Item Description		
LOT 13.6	Intensive Care Unit	Critical Care	Patient Monitor		
7.2.	Nil				
8.	Pre installation requirements				
	Nil				
9.	Installation and testing				
	Complete installation and setup of the machine as per manufacturer's instructions				
10.	Training				
10.1.	User Training	On site user training on operation and daily up keep			
10.2.	Maintenance training	Onsite maintenance training on preventive maintenance			
11.	Technical documentations				
11.1.	User manuals	2 Sets			
11.2.	Service Manual	1 Set			
11.3.	Drawings	Nil			
12.	Commissioning				
12.1.	Testing and commissioning of the machine to the satisfaction of the user.				
13.	Warranty				
13.1.	Equipment	Minimum of one year after commissioning on all parts.			
13.2.	Equipment System	Nil			

LOT 13-7: 12 LEAD ECG MACHINE

Item Code No.	Department	Section	Item Description
LOT 13-7	**Intensive Care Unit**	**Critical Care Unit**	**ECG Machine**
1. General Description			
Description: should be able to record ECG signal in various configurations, 12 channels with interpretation software for recording and analyzing waveforms. Should have an external laser printer. Should have side arm ECG cable holder and dedicated trolley. The machine should meet the following			
2. Composition			
2.1.	Main unit		
2.1.1.	Be ergonomically designed with user friendly features		
2.1.2.	Have a standard 12 leads. With display for 6/3 channels		
2.1.3.	Have an inbuilt thermal printer with sweep speeds of 5, 10, 20 and 25mm/sec.		
2.1.4.	Have operating mode selection facility		
2.1.5.	Have a frequency response of upto150Hz		
2.1.6.	Have automatic adjustment of baseline for optimal recording		
2.1.7.	Have facility to enter patient information (name, age, sex height weight and BP)		
2.1.8.	Have facility to enter hospital and doctor's name		
2.1.9.	Have QRS and key beep ON/OFF facility		
2.1.10.	Have audible alarm and information for leads off, lack of paper, ECG signal overload and low battery.		
2.1.11.	Operate from mains 240V 50 Hz and rechargeable battery		
2.1.12.	The recorder to operate for a minimum of 5 hours on a fully charged battery.		
2.1.13.	Nave a memory for patient data storage of up to 100 patients.		
2.1.14.	Have external input/output interface, RS232, Ethernet connection and USB port.		
2.1.15.	Have interpretation software		
2.1.16.	Be mounted on a particular trolley.		
2.1.17.	Comply with IEC 61010 (equipment electrical policy) safety standards and have a CE mark.		

Item Code No.	Department	Section	Item Description
LOT 13-7	**Intensive Care Unit**	**Critical Care Unit**	**ECG Machine**
2.1.18.	The supplier to provide training to the user staff to a level that they can use the equipment effectively.		
2.1.19.	The supplier to provide training to the in-house maintenance staff. The training to be adequate that allows the in-house maintenance to service the equipment with minimal technical support.		
2.1.20.	The equipment to be supplied with complete set off accessories and user and service manuals.		
2.1.21.	The supplier to provide a warranty of 2 years from the date of successful installation and commissioning.		
2.1.22.	The supplier to provide manufacturer's letter of authorization to sell their product.		
2.1.23.	Quality standards: IEC 60601-1, ISO 9001 and ISO 13485		
2.1.24.	Conformity standards: ANSI/AAMI EC11: 1991/(R)2001/(R)2007, CE and FDA marked		

LOT 13-8: CENTRAL MONITORING SYSTEM (Set based on the total number of beds to be installed)

Item Code No.	Department	Section	Item Description		
LOT 13-8	**Intensive Care Unit**	**Critical Care Unit**	**Central Monitoring System**		
1. General Description					
ral monitoring system complete with 10 bedside monitors for ICU. Should be capable of monitoring the following parameters in adults, neonatal and pediatric.at both bedside and centrally • SpO_2 • Temperature • Blood pressure both NIBP and IBP • cardiac output • ECG • Respiration • CO_2 • Pulse Rate					
2. Composition					
2.1.	Central workstation with CPU and software	1 pc			
2.2.	Bedside monitor with docking station	10 pcs			
2.3.	Printer	1 pc			
2.4.	UPS (1.25 times POWER rating of the equipment)	1pc			
3. Performance Specifications					
3.1.	Central work station				
3.1.1.	The unit should be a model or type on current production composed of a CPU and display screen. Medical grade products				
3.1.2.	lay Screen				
3.1.3.		Minimum 22” touch screen (2 No.)			
3.1.4.	e	LCD, colour, with navigation rotary knob			
3.1.5.	meters	Capable of displaying all vital sign in graphic waveform and parameters emanating from at least Six remote bed side monitors,			
3.1.6.	time	Displays real time vital sign parameters			

Item Code No.	Department	Section	Item Description
LOT 13-8	**Intensive Care Unit**	**Critical Care Unit**	**Central Monitoring System**
3.1.7.	m limit	Can be set on the screen	
3.2.			
3.2.1.		Minimum 2TB	
3.2.2.	ormance	Complete with hardware and window based software for networking and displaying vital sign from all the six monitors to the central monitor, by both wireless and wired technology	
3.2.3.	ware	Pre-installed in the CPU	
		Capable of analysis and displaying waveform and parameters from all the monitors connected	
		Capable of monitoring bedside monitors parameters through wired and wireless technology	
		Capable of displaying MRI, CT,, and X-Ray images in DICOM format	
		DICOM compatible, Can also access internet	
3.3.	**side monitors** No.)		
3.3.1.	e	Wall Mounted type, complete with internal rechargeable battery	
3.3.2.	meter & waveforms	SpO2, Pulse rate, ECG, NIBP, IBP, cardiac output, Respiration, CO2 and temperature	
3.3.3.	2, with reusable sensor	0 - 100% ± 3%	
3.3.4.	Pulse Rate	30-300 bpm ± 1%	
3.3.5.	Temperature	0-50^{0}C ± 0.1%	
3.3.6.	NIBP	Mean 10- 300mmHg ± 5 mmHg	
3.3.7.	IBP X2	Mean 0 – 300mm Hg ± 1 mmHg	
3.3.8.	ECG	With standard lead and Derived 12 lead	
3.3.9.	CO_2	0 to 99 mmHg ± 4 mmHg	
3.3.10.	Display	Minimum 12.0 inches /colour touch screen / scroll type	
3.3.11.		6 to 8 waveforms with large font	
3.3.12.	Networking	Wireless and wired connection to the central work station	
3.3.13.	Storage	Capable of storing patient data and transferring to the central workstation for viewing or printing.	
3.3.14.	Audio and visual alarm	For all parameter.	

Item Code No.	Department	Section	Item Description
LOT 13-8	**Intensive Care Unit**	**Critical Care Unit**	**Central Monitoring System**
3.3.15.	Alarm setting limits	Adjustable by user	
3.3.16.	Low battery indicator	Audio and visual alarm	
3.3.17.	Power Requirement	Rechargeable internal battery, that can last at least 3 hours when fully charged	
3.4.	Wireless networking	Latest technology.	
4.	Physical characteristics		
4.1.	Main unit		
4.2.	Central workstation	To be installed in the Nursing station	
4.3.	Bed side monitors	To be wall mounted. Should be capable of rotating.	
4.4.	Printer	Central printer, laser type, to print when necessary	
5.	Operating environment		
5.1.	Power Requirements	240V, A/c 50 Hz, Single phase, 3 Pin Plug, 3m long cord BS type with PE	
5.2.	Internal rechargeable battery	Maintenance free type, Up to 3 hours operating time	
5.3.	Ambient temperature	10^{o} C to 40^{o} C	
5.4.	Relative humidity	20% to 90%	
5.5.	UPS	True-On-Line Double conversion	
6.	Accessories	The following accessories will be provided as startup kits.	
6.1.	ECG connection lead and reusable electrodes	1 Set	
6.2.	SpO_2 connection cable and sensor (finger probe), reusable	2 Sets	
6.3.	Adult cuff	3 Sets	
6.4.	Peadiatric cuff	2 Sets	
6.5.	Temperature connection cable and probe (reusable)	2 Sets	

Item Code No.	Department	Section	Item Description		
LOT 13-8	**Intensive Care Unit**	**Critical Care Unit**	**Central Monitoring System**		
6.6.	Grounding lead	1 No.			
7.	Quality standards				
7.1.	Manufacturing standards	IEC 60601-1, ISO 9001, ISO 13485			
7.2.	Conformity to standards	Directive 2004 / 108 / EC, CE and FDA marked			
8.	Technical documentations				
8.1.	User manuals	2 Sets			
8.2.	Service Manual	1 Set			

PART VIII – BILLS OF QUANTITIES

PREAMBLE TO BILLS OF QUANTITIES

1. The Bill of Quantities shall be read in conjunction with the Instructions to Bidders, General and SpecialConditions of Contract, Technical Specifications, and Drawings.

2. The quantities given in the Bill of Quantities are estimated and provisional, and are given to providea common basis for bidding. The basis of payment will be the actual quantities of work ordered and carried out, as measured by the Contractor and verified by the Engineer and valued at the rates and prices bid in the priced Bill of Quantities, where applicable, and otherwise at such rates and prices as the Engineer may fix within the terms of the Contract.

3. The rates and prices bid in the priced Bill of Quantities shall, except insofar as it is otherwise provided under the Contract, include all Constructional Plant, labour, supervision, materials, erection, maintenance, insurance, profit, together with all general risks, liabilities, and obligations set out or implied in the Contract.

4. The rates and prices in the priced Bill of Quantities shall, be exempt of applicable local duties and taxes as the project is tax exempt.

5. A rate or price shall be entered against each item in the priced Bill of Quantities, whether quantities are stated or not. The cost of Items against which the Contractor has failed to enter a rate or price shallbe deemed to be covered by other rates and prices entered in the Bill of Quantities.

6. The whole cost of complying with the provisions of the Contract shall be included in the Items provided in the priced Bill of Quantities, and where no Items are provided, the cost shall be deemed to be distributed among the rates and prices entered for the related Items of Work.

7. General directions and descriptions of work and materials are not necessarily repeated nor summarizedin the Bill of Quantities. References to the relevant sections of the Contract documentation shall be made before entering prices against each item in the priced Bill of Quantities.

8. Provisional Sums included and so designated in the Bill of Quantities shall be expended in whole or in part at the direction and discretion of the Engineer in accordance with the General Conditions of Contract.

9. The method of measurement of completed work for payment shall be in accordance with ***the Standard Specifications and Special Specifications***.

10. Any arithmetic errors in computation or summation will be corrected by the Employer as follows:

    (a) where there is a discrepancy between amounts in figures and in words, the amount in words will govern; and

    (b) where there is a discrepancy between the unit rate and the total amount derived from the multiplication of the unit price and the quantity, the unit rate as quoted

will govern, unless in the opinion of the Employer, there is an obviously gross misplacement of the decimal point in the unit price, in which event the total amount as quoted will govern and the unit rate will be corrected.

11. Bidders shall price the Bill of Quantities in United States Dollars.

LOT 1: OUTPATIENT EQUIPMENT

	CONSULTING ROOMS			
S/NO.	**EXPECTED EQUIPMENT**	**QTY**	**UNIT PRICE (USD)**	**TOTAL (USD)**
1	Examination couch	4		
2	Emergency Trolley	2		
3	Diagnostic set (Wall mounted)	4		
4	Blood pressure Machine (Wall Mounted)	4		
5	Electrical suction machines	3		
6	Wall mounted Examination lights	4		
7	Oxygen flow meters	2		
8	Stethescopes	8		
9	Wall suction units	2		
10	X-ray viewer	4		
	DRESSING AND TREATMENT ROOM			
11	Procedure trolley	2		
12	Portable electrical suction units	2		
13	Examination couch	2		
	TRIAGE (2No.)			
14	Weighing Scale	2		
15	Blood pressure Machine	2		
16	Thermometer	5		
			SUB-TOTAL	

LOT 2: ONCOLOGY (RADIOTHERAPY) EQUIPMENT

S/NO.	EXPECTED EQUIPMENT	QTY	UNIT PRICE (USD)	TOTAL (USD)
	CT-SIMULATOR			
1	CT-Simulator	1		
	CANCER TREATMENT			
2	Digital Linear Accelerator	1		
3	Brachytherapy Unit	1		
4	Anaesthetic machines	1		
5	Brachytherapy Table	1		
6	General Purpose Suction Unit	1		
7	Operation Light (LED)	1		
8	Patient Trolley	2		
9	Emergency Trolley	1		
10	Patient Monitor	1		
11	Infusion Pump	2		
12	Oxygen Flow meters	1		
			SUB-TOTAL	

LOT 3: IMAGING EQUIPMENT

S/NO.	EXPECTED EQUIPMENT	QTY	UNIT PRICE (USD)	TOTAL (USD)
	CT-SCANNER ROOMS			
1	1.5T MRI	1		
2	Patient Monitor (MRI Compartible)	1		
	GENERAL X-RAY ROOMS			
3	Digital general system with fluoroscopy x-ray	1		
4	LEAD APRONS with hangers	15		
	ULTRASOUND ROOMS			
5	Premium Ultrasound system (With Cardiac Echo)	1		
6	High-end ultrasound systems	1		
7	Portable ultrasound	1		
8	Ultrasound examination couches	2		
9	Biopsy systems for prostates	5		
	MAMMOGRAPHY			
10	Mammography Unit	1		
11	Emergency Trolley	1		
12	Wheelchairs	2		
13	Patient stretchers	2		
14	Portable Electric suction units	1		
15	Mobile X-ray System	1		
			SUB-TOTAL	

LOT 4: ONCOLOGY (CHEMOTHERAPY) EQUIPMENT

S/NO.	EXPECTED EQUIPMENT	QTY	UNIT PRICE (USD)	TOTAL (USD)
	CHEMOTHERAPY			
1	Examination light	10		
2	Oxygen Flow meters	5		
3	Wall suction Units	4		
4	Portable Electrical Suction Units	2		
5	Patient Lifting Hoist	1		
6	Patient Trolley with side rails	3		
7	Patient Weighing scale	2		
8	Aneroid Sphygmomanometer	4		
9	Stethoscope	4		
10	Thermometer	5		
11	Emergency/ Resuscitation Trolley	1		
12	Biosafety cabinet + accessories	1		
13	Infusion pumps	5		
14	Syringe Pumps	10		
15	Patient Beds	5		
16	Reclining Chairs	15		
			SUB-TOTAL	

LOT 5: INPATIENT SERVICES EQUIPMENT

S/NO.	EXPECTED EQUIPMENT	QTY	UNIT PRICE (USD)	TOTAL (USD)
	GENERAL WARD BED REQUIREMENTS			
1	Oxygen flow meters	20		
2	Wall Suction Units	15		
3	Ward bed complete with drip stand, Bedside locker and over-bed table	42		
4	Drip stand (Portable)	8		
5	Thermometers (Digital)	15		
6	Blood pressure Machine (Aneroid)	10		
	GENERAL WARD REQUIREMENTS			
7	Wheelchairs	5		
8	Diagnostic sets	5		
9	Portable Electric suction units	5		
10	Nebulizers	2		
11	Macerators	1		
12	Commode chairs	3		
13	X-ray viewer	2		
14	Resuscitation/Emergency Trolley	2		
15	Procedure trolley	3		
16	Fluid warmer	3		
17	Patient Trolleys	3		
	PAEDIATRICS WARD REQUIREMENTS			
18	Baby cots	4		
19	Reclining chairs	4		
20	Radiant heaters	4		
21	Portable Examination lamp	4		
22	Weighing Scale	2		
			SUB-TOTAL	

LOT 6: DIAGNOSTIC LABORATORIES EQUIPMENT

S/NO.	EXPECTED EQUIPMENT	QTY	UNIT PRICE (USD)	TOTAL (USD)
	ROUTINE LABORATORY			
1	Binocular Microscope	3		
2	Incubator/Oven	2		
3	Laminar Flow Hood	2		
4	Fridge (2 to 8 deg)	2		
5	Freezer (-20 deg)	2		
6	Centrifuge refrigerated	1		
7	Water bath	2		
8	Block heaters	2		
9	Microtomes	1		
10	Tissue Embedding Station	1		
11	Tissue Processors	1		
12	Paraffin Dispenser	1		
13	Thermometer, glass, min/max -20°C/100°C	4		
14	Thermometer, min/max -30°C/60°C	4		
15	Timer, 60 min, mechanical	2		
16	Timer, digital	2		
17	Stainer	1		
18	Coagulometer	1		
19	Balance electronic	2		
20	Hematology Analyzer	1		
21	Biochemistry analyzer	1		
22	Immune analyzer	1		
23	Electrophoresis unit	1		
24	Blood gas analyzer	1		
25	Centrifuge	3		
26	Vortex mixer	4		
27	Digital weighing scale	1		

S/NO.	EXPECTED EQUIPMENT	QTY	UNIT PRICE (USD)	TOTAL (USD)
28	pH meter	2		
29	Flow cytometer	0		
30	Roller/shaker mixer	2		
31	Blood donor chairs	10		
32	Water Distillation Unit	1		
33	Lab deionizer	1		
34	Slide Scanner	1		
			SUB-TOTAL	

LOT 7: PHARMACY EQUIPMENT

S/No.	EXPECTED EQUIPMENT	QTY	UNIT PRICE (USD)	TOTAL (USD)
	PHARMACY			
1	Pharmaceutical refrigerators	3		
2	Balance, Precision	4		
3	Balance, Heavy duty	2		
4	Tablet Counter	2		
5	DDA cupboards	2		
6	Magnetic Stirrer with Hot plate	1		
7	Laminar flow system	1		
8	Electronic weighing scale	2		
9	Pestle & Motor	2		
			SUB-TOTAL	

LOT 8: OPERATION THEATRES EQUIPMENT

S/NO.	EXPECTED EQUIPMENT	QTY	UNIT PRICE (USD)	TOTAL (USD)
	2 GENERAL SURGERY			
1	Anaesthetic machines	4		
2	Operation tables (with kidney Bridge)	3		
3	Operation theatre LED lights with inbuilt IP Camera & voice capability	2		
4	Electrosurgical units (with bipolar resection capability)	4		
5	Digital X-ray viewer	4		
6	Electrocautery LEEP Machine	1		
7	Thermo-Ablation Device	1		
8	Cryotherapy Unit	1		
	THEATRE RECOVERY			
9	Fluid warmer	2		
10	Patient Trolleys	8		
11	Refrigerators	2		
12	Instrument Trolleys	4		
13	Resuscitaire	2		
14	C-Arm	1		
15	Syringe pumps	5		
16	Infusion pumps	5		
17	Operation Microscope (Transplant Procedures)	1		
18	Endoscopy tower	1		
19	Complete Laparoscopic towers with 4K image quality (Either on pendant or trolley)	1		
			SUB-TOTAL	

LOT 9: INTENSIVE CARE UNIT (CRITICAL CARE) EQUIPMENT

S/NO.	EXPECTED EQUIPMENT	QTY	UNIT PRICE (USD)	TOTAL (USD)
	CRITICAL CARE UNIT (BED REQUIREMENT)			
1	Ventilators	5		
2	Neonatal Ventilators	2		
3	Patient ICU bed	4		
4	Stethoscope	4		
5	Autoclavable laryngoscopes	3		
6	Bair Hugger	4		
7	Blood Sugar Machines	1		
8	Blood warmers	2		
9	Pacemakers	2		
10	Drug Fridges	1		
11	Food Fridge	1		
12	Endoscopic laryngoscope	1		
13	Non-Invasive ventilators	2		
14	Diagnostic set	4		
15	Pneumatic Pumps	3		
16	Portable Examination lamp	2		
17	Transport ventilators	2		
18	Syringe pumps	6		
19	Infusion pumps	6		
20	Feeding pumps	4		
21	Endoscopy Machine	1		
22	Electrical suction units	2		
23	Emergency Trolley	1		
24	General purpose Trolley	4		
25	Dressing Trolley	4		
26	Patient Trolleys	2		
27	Baby Cots	2		

S/NO.	EXPECTED EQUIPMENT	QTY	UNIT PRICE (USD)	TOTAL (USD)
28	CPAP machine	2		
29	Ripple mattress (to be included in Beds)	0		
30	Transport resuscitation kit	2		
	ICU LAB			
31	Blood Gas Analyzer	1		
			SUB-TOTAL	

LOT 10: BIOMEDICAL CALIBRATION EQUIPMENT

S/NO	EXPECTED EQUIPMENT	QTY	UNIT PRICE (USD)	TOTAL (USD)
	BIOMEDICAL WORKSHOP			
1.	Electronic Tool Box	5		
2.	Variable output isolation transformer	1		
3.	Patient Monitor Analyzer (Patient Simulator)	1		
4.	Defibrillator Analyzer	1		
5.	Electrical Safety Analyzer	1		
6.	Gas Flow Analyzer	2		
7.	Oxygen Analyzer	1		
8.	Electro Surgical Analyzer	1		
9.	Radiation Analyzer	1		
10.	Infusion and Syringe Pump Analyzer	1		
11.	Ultrasound Wattmeter	1		
12.	Medical Scope Meter Oscilloscope	1		
			SUB-TOTAL	

LOT 11: CENTRAL STERILIZATION SUPPLIES DEPARTMEMT (CSSD)

S/NO.	EXPECTED EQUIPMENT	QTY	UNIT PRICE (USD)	TOTAL (USD)
	STERILIZATION UNIT			
1	Autoclave	2		
2	Washer Disinfection	1		
3	Ultrasonic washer unit	1		
4	Dissembling and sorting Table	1		
5	Water Jet System	1		
6	Hydrogen Peroxide Low Temperature Plasma Sterilizer	1		
7	Working table (stainless steel)	1		
8	Packaging and sorting Table	2		
9	Cart/ Cabinet for storage and execrating sets	1		
10	Package sealing machine	2		
11	Pressure steam gun/ Water for cart washing	1		
12	Carrying Carts and shelves (stainless steel) for storage.	4		
13	Table flash Autoclave	1		
14	Gas Plasma sterilizer	1		
			SUB-TOTAL	

LOT 12: INSTRUMENTS

S/NO.	DESCRIPTION	QTY	UNIT PRICE (USD)	TOTAL (USD)
1.	Basic Surgery set / Minor tray	2		
2.	Dressing set	2		
3.	Laparotomy set	2		
4.	Suture set	2		
5.	Examination/suturing, vaginal/cervical set	2		
6.	Catheter placement set	2		
7.	Basic Rectal Surgery set	2		
8.	Cervix Conization set	2		
9.	Vaginal Hysterectomy set	2		
10.	Abdominal Hysterectomy set	2		
11.	Prostatectomy set	2		
12.	Tracheostomy set	2		
13.	Urology set	2		
14.	Lumbar Puncture set, Adult	2		
15.	Lumbar Puncture set, Paediatrics	2		
16.	Pleural Biopsy set	2		
17.	Mastectomy set	2		
18.	Gynecologic biopsy set	2		
19.	Lobectomy and segmental lung set	2		
20.	Thoracotomy set	2		
			SUB-TOTAL	

LOT 13: MONITORING EQUIPMENT

S/No.	Section	Equipment	Qty	Unit Price (USD)	Total (USD)
1.	Consulting Rooms	Patient monitor	4		
2.	Out Patient Services	Defibrillator	1		
3.	Triage	Vital Signs Monitor	2		
4.	Radiotherapy	Patient Monitor	1		
5.	Imaging Dept.	MRI Compatible Monitor	1		
6.	Imaging	Patient Monitor	1		
7.	Chemotherapy	Vital Signs Monitor	3		
8.	Chemotherapy	Defibrillator	1		
9.	Inpatient Services	Vital Signs Monitors	5		
10.	Inpatient Services	Defibrillator	2		
11.	Operation Theatres	OR Patient Monitor	2		
12.	Theatre Recovery	Patient Monitor	4		
13.	Operation Theatre	Transport Patient Monitor	2		
14.	Operation Theatre	Defibrillator	2		
15.	ICU	Patient Monitor	4		
16.	ICU	Central Monitoring System	1		
17.	ICU	Defibrillator	1		
18.	ICU	Transport Monitor	1		
19.	ICU	12 lead ECG Machine	1		
				SUB-TOTAL	

HOSPITAL EQUIPMENT – COST SUMMARY

ITEM	DESCRIPTION	AMOUNT (US$)
1.	Lot 1- OUTPATIENT EQUIPMENT	
2.	Lot 2- ONCOLOGY (RADIOTHERAPY) EQUIPMENT	
3.	Lot 3- IMAGING EQUIPMENT	
4.	Lot 4- ONCOLOGY (CHEMOTHERAPY) EQUIPMENT	
5.	Lot 5- INPATIENT SERVICES EQUIPMENT	
6.	Lot 6- DIAGNOSTIC LABORATORIES EQUIPMENT	
7.	Lot 7- PHARMACY EQUIPMENT	
8.	Lot 8- OPERATION THEATRES EQUIPMENT	
9.	Lot 9- INTENSIVE CARE UNIT (CRITICAL CARE) EQUIPMENT	
10.	Lot 10- BIOMEDICAL CALIBRATION EQUIPMENT	
11.	Lot 11- CENTRAL STERILIZATION SUPPLIES DEPARTMEMT (CSSD)	
12.	Lot 12- INSTRUMENTS	
13.	Lot 13 - MONITORING EQUIPMENT	
14.	**GRAND TOTAL CARRIED TO FORM OF TENDER**	