GOVERNMENT OF GOA
Medical Store Depot (MSD),
Directorate of Health Services, Campal, Panaji, Goa 403 001
Email:msddhsgoa@yahoo.in **Ph. Nos. 2225646/5540/5668**

No. 108/PT/DHS/MSD/2025-26/1341 **Dated: 06/11/2025**

TENDER NOTICE

(E-Tendering Mode Only)

1. E-tenders are invited by the Director, Directorate of Health Services Campal, Panaji Goa on behalf of the Governor of Goa up to **19/01/2026 till 5.00 p.m.**, for supply of Machinery, Equipment and Instruments as listed in the Annexures attached.

2. The tender forms with terms and conditions and list of the items, can be viewed and downloaded online on the website https://eprocure.goa.gov.in.

3. The tender "Quotation for Tender no. 108/PT/DHS/MSD/2025-26/1341 dated 06/11/2025 should be submitted online. **Last date and time for submission of quotation online is 19/01/2026 at 5.00 p.m.**

4. The following payments to be made online through e-payment mode via NEFT/ RTGS/ Net banking (Axis Bank) with pre-printed challans available on e-tendering website and directly credit the amount to ITG account as generated by challan and the copy of NEFT/RTGS/Net Banking (Axis Bank) challan is to be scanned and uploaded along with the bid on the website prior to submitting the hard copies before 19/01/2026 by 5.00 pm.

   Note: For any query please contact NIC help desk available on "Contact Us" Section on the portal https://eprocure.goa.gov.in

Cost of tender document in Rs.	* Earnest Money Deposit (EMD) in Rs.	Tender processing fee in Rs.
Rs. 2,500.00	3 % of the cost of items quoted	Rs. 6,000.00

   *** Earnest Money deposit to be submitted @ 3% of the cost of the items quoted. Bidders submitting EMD @ 3% of the cost of the items quoted should select EMD exemption and upload Self -declared letter/ certificate mentioning the amount of EMD submitted. Same will be checked/scrutinized after the opening of Financial bid. Non-submission of correct amount of EMD will lead to disqualification of the bidder from the tender.**

5. **The technical bids will be opened online on 21/01/2026 at 10.30 a.m. in the presence of the Purchase Committee members.**

6. Hard copies of technical bids and financial bids of all the uploaded documents in two separate envelopes should also be submitted to this office separately along with the copy of NEFT/RTGS/ Net banking (Axis bank) challans of cost of tender document, EMD and tender processing fees **on or before 19/01/2026 by 5.00 p.m.** Catalogues of all machinery/equipments should be submitted along with the technical bid.

7. The quotation should be submitted online as per the annexure attached, along with the required documents/certificates. Hard copies of the same to be submitted to this department before the stipulated date and time.

8. The offer should be firm. Conditional offer will not be considered.

9. The rate should be quoted F.O.R. Destination. Taxes to be mentioned separately. Additional taxes if any can be mentioned in the remarks column of Financial Bid.

10. The rates quoted should be valid for a minimum period of 36 months from the date of placement of first order.

11. The delivery of the goods should be made within a period of one month or earlier from the receipt of the firm order, failing which the order will be treated as cancelled without further notice and Earnest Money Deposit will be forfeited in favor of the Government.

12. The supplier may insure the goods at his own cost to safeguard the delivery of such goods dispatched by him to the consignee, as this Department will not be responsible for the damage or pilferage of goods during transit.

13. The Director of Health Services reserves the right to accept the supply made by the supplier after the expiry of the stipulated delivery period in genuine cases.

14. The Director of Health Services is free to find the market rate of the product that it intends to procure. Final order will be placed to the successful bidder only after a thorough study and comparison of market rate of the product vis a vis the rate quoted by the lowest bidder is done.

15. All applications for the Refund of Earnest Money and the Security Deposits furnished with the tender should be made only to The Director of Health Services with all the details of the e-payments made along with date and tender number for which it was submitted.

16. The quantities of the items listed in the Annexures are likely to increase or decrease. Orders will be placed depending on the need/requirements of the department, at that point of time. The Directors decision in this regard will be taken as final.

17. Tenderers who do not agree with the Terms and Conditions mentioned herein may not submit their bids.

18. If the Tenderer requires interpretation of any clause, the decision of the Director of Health Services should be taken as final.

19. The nationality of the Tenderer should be specifically mentioned in the Tender.

20. Hands on working demonstration/Samples may be required before opening of the financial bid. Unsatisfactory performance at demonstration will disqualify the Tenderer. In exceptional cases the technical committee will have the power to waive the demonstration.

21. The Tenderer should deliver and install the equipment in the concerned department of the Hospital/health centre, give the demonstration, and train the staff of the department free of cost. Delivery should be made as per the requirement anywhere in the state of Goa as mentioned in the order.

22. Price: The Tenderer shall note the scope of work viz. Supply, Installation & Commissioning of Machinery & Equipment, with delivery at site and shall furnish detailed price for machines and accessories as per Schedules attached. (I to VI) in the financial bid.

23. The tenderer should note that the scope of the work comprises of Supply, Installation and Commissioning of the mentioned Machinery & Equipment, Electrification. Safety equipments if required may be quoted separately. However, decision of the committee to purchase the same will be final.

24. The Director of Health Services reserves the right to reject any or all tenders without assigning any reasons.

25. The Director of Health Services will not entertain any correspondence with regards to the tender once the lowest bidder is selected.

26. **Completion Period**
The entire work of supply, Installation and Commissioning of the machine ordered including Mechanical & Electrical Works shall be completed in all respects within one month or earlier from the date of placement of the Order, failing which the successful tenderer will be liable for penalty of one fourth percent of the total value of the Order for each day of delay, subject to the maximum of 10% of the total value of the Order. The Director reserves the right to make risk purchase from the next highest Tenderer in case the successful Tenderer fails to execute the order to the satisfaction of the Director within the time limit specified in the order, in which case the first successful tenderer shall be liable to liquidate damages, to compensate for the losses including price difference. The Director however reserves the right to waive the penalty/risk purchase in genuine and deserving cases.

27. The Tenderer should state whether the machine and its accessories offered is
    a. Manufactured by them in India.
    b. Machine parts imported and assembled by them in India.
    c. In either case the tenderer should furnish the following details.
        i. Full address of the factory where the machine is manufactured or assembled.
        ii. The description of the machinery installed for the purpose.
        iii. Name, Age & Qualifications and experience of the person employed for the purpose.
        iv. The documentary evidence by the way of License, Registration Certificate or Any other document issued by a Competent Authority in state Government or Government of India authorizing the Tenderer or the principal to manufacture the machine or assemble the machine as the case may be.
        v. Name & Address of the Hospital / Diagnostic Centre where the quoted machine has been supplied.

28. The Tenderer shall indicate whether they have got facility for undertaking major repairs of the machines and if so the following details may be furnished.
    i. Full address of the place where repairs would be undertaken.
    ii. Description of the machinery installed for the purpose.
    iii. Name, Age, Qualifications and experience of the persons employed for the purpose along with their contact number.

29. The Tenderer shall ensure that the machine remains in working condition throughout 24 hours and accordingly quote their down time. They should indicate in details duly supported by facts and figures in what way and how they are going to keep the down time to the minimum. If the breakdown time exceeds 72 hrs then the tenderer will be liable for penalty @ Rs. 500/- per day, for each day of delay till the machine is put in working condition.

30. **GUARANTEE/ WARRANTY PERIOD**.

I. The successful Tenderer shall guarantee the entire system which they will install such as Machine, proper accessories, Electrical gadgets etc; for trouble free performance for a period of two Years from the date of commissioning of entire work satisfactorily. Any defects noticed during the guarantee/ warranty period shall be rectified free of cost including free replacement of parts having manufacturing defects and or faulty workmanship.

II. The Tenderer shall clearly indicate the number of visits both "Demand" – (Emergency) and "Routine" for servicing/ Check-up which they will undertake for replacement of spares etc. free of cost during guarantee/ warranty period.

III. The Tenderer shall certify that they will undertake/ enter into a 5 years Annual Maintenance Service Contract for a periodical check up/ servicing and Repairs of the Machine supplied, installed and commissioned by them for its full life span.(For Annexure I items only)

IV. The Annual Maintenance contract should include minimum 3 visits i.e. one visit in every 4 months, in addition all break down calls to be attended on top priority.

V. The tenderer should indicate the value of 5 (Five) years maintenance contract (after sales Service), individually for each year as a figure (INR) for unit machine and not as a percentage for a period commencing from the date of the expiry of the guarantee/ warranty period of TWO years. The same is mandatory and will be considered for gradation (For Annexure I items only)

31. **UPDATING OF THE MACHINE**:

The Tenderer shall specify life span of the machine which they quote and undertake to incorporate future development to update the machine as and when required. The difference in price of the replaced parts will be paid by the Directorate at manufacturer's price.

32. **UNDERTAKING FROM MANUFACTURERS/ PRINCIPALS:**

The Tenderer shall furnish along with the tender, an undertaking from their Principal/manufacturer of the machine, that in the event their association/relations with their Principals/manufacturers of the machine either by the way of sole agency/exclusive distributorship or their representative is terminated or discontinued for one reason or the other by the manufacturers/principals or the tenderer themselves during the life span of the machine, then they would take over/assume or make arrangement to take over/assume to the full satisfaction of the Director of Health Services, the commitments and other obligations which the tenderers have made to the Director of Health Services.

33. **TAX, EXCISE DUTY, AND OTHER LEVIES:** Taxes as applicable and as amended by Government from time to time should be specifically mentioned, failing which no claim for taxes etc. will be entertained at a future date.

34. **INSURANCE:** This being Government institution equipment will not be insured by us. They have to be insured by the successful tenderer at their own cost to ensure reaching of the equipment dispatched by them at the destination.

35. **TERMS OF PAYMENT:** In Indian rupees vide ECS.

36. In the event of any dispute or difference between the parties hereto in relation to with this tender, the court in Goa shall have exclusive jurisdiction to adjudicate such dispute or difference.

37. Incase tenderer want to submit any additional information, the same may be furnished along with supportive documents in technical bid.

38. Annual maintenance rates to be quoted for Annexure I only. The same will be considered for gradation during selection of the lowest bidder.

39. **A prebid meeting is scheduled on 28/11/2025 at 10.30 a.m. in the Seminar Hall of Directorate of Health Services, Campal, Panaji-Goa. Bidders are requested to be present with the hard copies of the clarifications needed for the pre bid meeting. No suggestions/ queries will be entertained after this prebid meeting.**

(Dr. Rupa Naik)
Director of Health Services

TECHNICAL BID

The quotations should be clearly marked with Tender No.108/PT/DHS/MSD/2025-26/1341 dated: 06/11/2025 (Technical Bid) uploading the following documents:-

1. An Earnest Money Deposit to be submitted @ 3% of the cost of the items quoted and is to be paid online through e-payment mode via NEFT/RTGS/Net banking (Axis Bank) with pre-printed challans available on e-tendering website and directly credit the amount of ITG account as generated by challan. Any deposit sent earlier for another tender will not be considered, even if the supplies in respect of the said deposit are completed. Earnest money deposit sent in any other form will not be accepted. The firms which are registered with DGS & D should also send Earnest Money Deposit. If any exemption on this behalf is required, they should produce an attested certificate from DGS & D that they are registered for supply of the category of the items covered under the above tender opening and still continue to be registered with them till date. Bidders submitting EMD @ 3% of the cost of the items quoted should upload Self -declared letter/ certificate mentioning the amount of EMD submitted. Same will be checked after opening of Financial bid and non-submission of correct amount of EMD will be disqualified.

2. The successful Tenderer will have to submit Security Deposit of 5% of the items being ordered in the form of bank guarantee with a validity of two years from the date of installation/supply for due performance of the supply order. This security deposit will be returned only after the completion of warranty period and after the receipt of security deposit of 2% for AMC period wherever needed. Earnest money deposit will be returned fully after the receipt of security deposit in case of successful tenderers. If the successful tenderer does not pay the security deposit, the invoices for the same will not be settled for payment and the order will be treated as cancelled. Also the EMD will be forfeited in favor of Government.

3. The successful Tenderer will have to submit an additional security deposit/Bank Guarantee valid for 5 years to the tune of 2 % of the cost of the equipment after completion of warranty period which will cover the entire maintenance period. If regular servicing is not carried out during the maintenance period the security deposit will be forfeited in the favour of the Government. The earlier bank guarantee of 5% will be returned after the submission of fresh bank Guarantee of 2% of the cost of the equipment, valid for 5 years.

4. As per notification no. 3/40/2003-IND(Part) dated 8th September 2011 issued by Industries Department, Government of Goa, Secretariat, Porvorim Goa, only those Micro and small Enterprises having turnover not exceeding Rs. 10.00 crore per annum for the preceeding 3 financial years and acknowledged with Entrepreneurs Memorandum Part II by Director of Industries, Trade and Commerce shall be eligible for the benefit under this scheme. A copy of the certificate may be furnished. All other SSI units will be treated on par with other firms. Micro and Small-scale enterprise registered with NSIC in order to claim benefits of scheme will have to be registered with Directorate of Industries Trade and Commerce Goa.

5. The Stockist/ Distributor who supplies the machinery on behalf of the Manufacturer should furnish/upload Authority letter for this particular Tender, to quote the items on their behalf wherever required.

6. After Sales Service: - The details of network of service centers in the state of Goa with complete address, phone no, fax no, e-mail ID, to be attached/uploaded.

7. The Director of Health Services reserves the right to reject any or all tenders without assigning any reasons.

8. ISO Certificate of the manufacturer/ Company are mandatory and should be uploaded/attached.

9. CE certificate of the manufacturer/ Company is to be furnished and should be uploaded/attached for all the equipments.

10. ISI certified equipments/instruments will be accepted only if CE certificate is not available, at the discretion of the Purchase Committee. However the decision of the Director will be final.

11. Information in the following format should be submitted for items quoted:-

Sr. no	Name of the item	Manufacturer and Model quoted	Equivalent specifications quoted by the Tenderer, with the name and address of the manufacturer with model	Whether the item quoted by the Supplier is as per the specifications asked for. Indicate against each item clearly – Yes/No	If the tender quoted is not as per specification then variation/deviation should be clearly indicated against each item asked for.	Authorization Letter Yes/No	ISI Yes /No	CE Yes /No	ISO Yes /No	NSIC /SSI	Remark

12. Name & Addresses of the Government or Private Institutions to whom such equipment's have been supplied especially in Goa, Karnataka & Maharashtra State may be indicated.

13. **AMC Rates to be quoted for Annexure I only.**

(Dr. Rupa Naik)
Director of Health Services

FINANCIAL BID

The quotation should be clearly marked as Envelope no 2 along with Tender No 108/PT/DHS/MSD/2025-26/1341 dated 06/11/2025 and should be quoted for as per the Schedules I to VI attached.

1. Should contain any/all documents including any price.

2. The Price should be quoted in Indian Rupees on turnkey basis which should also indicate all taxes FOR destination separately.

3. While filling the respective annexure, if any cell is left blank the same shall be treated as "0". Therefore, if any cell is left blank and no rate is quoted by the bidder in the assigned column rate of such item shall be treated as "0" (ZERO) & will be treated as incomplete tender & will be rejected outright. Kindly enter the name of the bidder in the respective cell.

4. Safety equipments if required for machinery & equipment, to be quoted separately. However Director reserves the right to reject the purchase of the safety equipment. Director's decision in the matter will be deemed final.

5. Taxes as applicable and as amended by Government from time to time should be specifically mentioned, failing which no claim for taxes etc. will be entertained at a future date.

6. The rate quoted should be valid for minimum period of 36 months from the date of placement of first order.

7. Rates of AMC after the stated warranty period along with the number of visits, to be quoted showing **yearly prices of unit machine separately up to 5 years (Year wise) for Annexure I only**. Rates to be quoted in Indian Rupees as a figure and not as a percentage. The 5 years AMC rates only for **Annexure I only** will be considered while computing cost of the equipment.

8. Prices of spare parts / consumables required for the machine should be quoted separately.

9. The Financial bid of all the tenderers, whether technically selected or rejected can be viewed online. However, the technically rejected items/bids will not be taken into consideration for gradation.

10. The Director of Health Services reserves the right to reject any or all tenders without assigning any reasons.

(Dr. Rupa Naik)
Director of Health Services

ANNEXURE – I

ADDITIONAL QUESTIONS FOR IMPORTED EQUIPMENT MACHINERY

1. Please indicate here prices on the following basis:
   i. F.O.R.
   ii. F.A.S. Port of Shipment of your Principals/ Manufacturers.
   iii. C.I.F. Indian Port.
   iv. F.O.R. Station of dispatch. (also indicate the Station of dispatch)

2. For F.O.B./ F.A.S. quotation please indicate here separately :
   i. Net ex-factory price.
   ii. Net F.O.B. /F.A.S Prices exclusive of profit/ commission.

3. In case you are a foreign firm quoting direct please indicate:-
   i. The name and address of your Indian Agents/Associates/Representative for servicing in India.
   ii. Net F.O.R./F.A.S. price inclusive of the amount or remuneration or commission for the Indian Agents/ Associates.
   iii. Commission/remuneration payable to the Indian agents/ associates in Rupees.

4. Please indicate the following particulars:-
   i. The precise relationship between the foreign manufacturers/Principals and their Indian Agents/Associates.
   ii. The mutual interest which the Manufacturer/principals and the Indian Agents/Associates have in the business of each other.
   iii. Any payment which the Agents/Associates receive in India or abroad from the manufacturer/principals whether commission for the contract or as a general retainer fee.
   iv. Indian Agents Income Tax Permanent Account Number.
   v. The foreign suppliers Income Tax Permanent Account Number.

(SIGNATURE OF TENDERER)

ANNEXURE – II

(TENDERER SHOULD FURNISH SPECIFIC ANSWERS TO ALL THE QUESTIONS GIVEN BELOW: TENDERERS MAY PLEASE NOTE THAT IF THE ANSWERS FURNISHED ARE NOT CLEAR AND/OR EVASIVE, THE TENDER QUOTED WILL BE LIABLE TO BE IGNORED)

1) Tender No.---------- Due Opening on ----------

2) Offer is open for acceptance for 3 years from the placement of the first order.

3) whether the stores offered fully confirm to the technical particulars and specification/ drawings, specified by the purchaser in the schedule to tender, if not mention here details of deviations.

4) Brand of Stores offered.

5) Name and address of the manufacturer:

6) Station of manufacturer:

7) Please confirm that you have offered packing :

8) What is your permanent Income Tax Account Number & TIN No.

9) a) Are you registered with DGS & D for the item quoted, if so, indicate whether there is any monitory limit of registration.

   b) In case you are registered with NSIC under Single point Registration Scheme for the item quoted, confirm whether you have attached a photocopy of the registration certificate indicating the items for which you are registered.

1. If you are not registered either with NSIC or with DGS & D, Please state whether you are registered with Directorate of Industries of State Government Concerned.

2. Please furnish your performance statement.

3. Business name and constitution of the firm . Is the firm registered under:
   i. The Indian Companies Act, 1956.

ii. The Indian Partnership Act 1932
(please give full names and address).
iii. Any Act, if not, who are the owners
(Please give full names and address).

4. Whether the tendering firm is /are:
   i. Manufacturer
   ii. Manufacturer's authorized agents.
   iii. Manufacturer's stock of the stores tendered for.

N.B: If manufacturers, agents, please upload with Tender the copy of the Manufacturers authorization.

5. For partnership firms state whether they are registered or not registered under Indian Partnership Act, 1932. Should the answer to this question by a partnership firm be in the affirmative, please state further:-
   a) Whether by the partnership agreement, authority to refer disputes concerning the business of the partnership to arbitration has been conferred on the partner who has signed the tender.
   b) If the answer to (a) is in the negative, whether there is any general power of attorney executed by all the partners of the firm authorizing the partner who has signed the tender to refer dispute concerning business of the partnership to arbitration.
   c) If the answer to either (a) or (b) is in the affirmative copy of the partnership agreement and the general power of attorney may be furnished along with the tender, where authority to refer disputes to arbitration has not been given to the partner signing the tender, the tenders must be signed by every partner of the firm.

(Signature of the Tenderer)

SCHEDULE II

PRICE BID FORMAT FOR ACCESSORIES BOTH ESSENTIAL AND OPTIONAL (ITEMWISE)

SR. NO.	ITS SPECIFICATION (ESSENTIAL & OPTIONAL)	QUANTITY	UNIT PRICE	TOTAL
1	2	3	4	5

SIGNATURE OF THE TENDERER

SCHEDULE III

PRICE BID FORMAT FOR ESSENTIAL SPARES AND CONSUMABLES FOR 2 YEARS (ITEM WISE)

SR. NO.	NAME OF THE SPARES AND CONSUMABLES ALONG WITH SPECIFICATION	QUANTITY	UNIT PRICE	TOTAL
1	2	3	4	5

SIGNATURE OF THE TENDERER

SCHEDULE IV

PRICE BID FORMAT FOR RECOMMENDED SPARES AND CONSUMABLES FOR TWO YEARS (ITEM WISE)

SR. NO.	NAME OF THE RECOMMENDED SPARE AND CONSUMABLES WITH ITS SPECIFICATION	QUANTITY	UNIT PRICE	TOTAL
1	2	3	4	5

SIGNATURE OF THE TENDERER

SCHEDULE V

INSTALLATION AND COMMISSIONING CHARGES IF ANY (ITEM WISE)

SR. NO.	NAME OF THE EQUIPMENT/MACHINE INSTALLATION AND COMMISSIONING CHARGES IF ANY	QUANTITY	UNIT PRICE	TOTAL
1	2	3	4	5

SIGNATURE OF THE TENDERER

SCHEDULE VI
ELECTRICAL, MECHANICAL WORKS ETC.

SR.NO.	DESCRIPTION OF WORK	AMOUNT
1	2	3

N.B. For civil works the tenderer should quote lump sum. Works other than Civil the Tenderer shall quote item wise.

SIGNATUREOF THE TENDERER

Annexure I

(AMC *to be quoted*)

Sr. no.	Items	Qty.
1.	**Multi Parameter Monitor** • Should have facility to display ECG, RR, HR, Spo2, NIBP, single Temperature as standard parameters and with inbuilt rechargeable battery back up of at least 4 hrs. Operation. • Display: Color TFT display of size 10" or more • Should display at least 7 waveforms of selected parameters simultaneously. • Should display 7 waveforms at a time when selected for ECG view option. • Should be able to analyze arrhythmia (15 types) & ST segments for all leads. • Should have facility for displaying 8 different screen configurations. • SpO2 measured should have pitch variation with increment or decrement of SpO2 values. • Should be able to display at least 1500 hrs. of graphical trends of all parameters. • Should have drug dose calculation & OXYCRG. • Should have Early Warning Score (EWS) • Should have GSC (Glasgow Coma Scale) which is a neurological scale that aims to provide a reliable & objective way of recording the state of a persons consciousness. • Should be suitable for monitoring adult, pediatric & neonatal patients. • Should be able to give visual & audible alarms with three levels of volume adjustment on violation of any monitored parameter. • Should have connectivity to Central station. • Should have inbuilt rechargeable Li ion battery with backup of 4 hours or more. • The scope of supply should be: SpO2 reusable probe Adult – 1 each NIBP cuff for adult, children – 1 each ECG Cable – 5 Lead – 1 Temperature probe – 1 Wall mount – 1 Operating manual English - 1	15
2.	**POCT Analyzer** Technical Specification POC Diagnostic System for Analysis of Blood Gas, Chemistry, Cardiac & Coagulation Markers with Wireless Printer, Electronic Calibrator. **Item No-1 (POCT Analyser)** • Analyzer should measure PH, PCO2, PO2, TCO2, Na+, K+, Cl, Ionized Calcium, Lactate, Hematocrit, Glucose, Urea, Creatinine, Troponin-i, CK-MB, BNP, PT/INR, ACT on a single device with options to choose different cartridges. • Analyzer must display calculated parameters including HCO3, Base Excess, SO2, Anion Gap & Hemoglobin.	01

- Analyzer should be small, handheld, light weight (below 1 Kg), and portable – suitable for use at Point of care/patient bedside
- System must be capable of using blood samples typically less than 100ul depending on cartridge type.
- System should be battery operated using power source rechargeable batteries, A lithium battery inside the analyzer maintains the clock/calendar and customization profile.
- The certifications and copies of reports should be furnished to buyer on demand at time of supplies
- Cartridge / reagent before use can be stored mostly at room temperature between 2-30 Degree C and should have Automatic calibration.
- Type of technology should be Single use cartridges
- System should have Dot matrix supertwist liquid crystal to display the results.
- System should communicate through link through Infrared light-emitting diode (LED).
- Equipment can be transported between 10°C -45°C
- System can work under barometric pressure range from 300mmHg to 850 mmHg
- The analyzer should display "Low Battery" when rechargeable battery are low and should not allow to process the test.
- System Should have patient Bar Code facility and ability to run a wide range of patient panels on one system.
- The analyzer should contain a solid-state barometric pressure sensor, which determines the ambient atmospheric pressure used for the PO2 sensor calibration.
- The analyzer should have capability to stores up to 1,000 test records.
- Shelf life of the reagent / cartridges should be 4 months, On-board shelf life of reagent should be minimum 24 weeks.
- User/Technical/Maintenance manuals should be supplied in original in English in hard and soft copy

Item No. 2: Wireless Thermal Printer

- Wireless printer should be compatible for printing wirelessly through item 1 POCT analyzer.
- One Power Cord & One AC adapter
- Rechargeable Battery.
- Should come with One roll of printer paper and The Printer should come with 4.8V NiMH rechargeable battery pack and a power adaptor for AC outlet.
- The printer should receive data directly from the analyzer via IR transmission or through a data cable
- The Printer should use thermal paper 5.7 CM for printing reports.
- The Printing method should be Thermal line printing.
- The Printer should have power LED indicators showing ready to use, paper feeding indicator or Error.
- The Printing speed should be Up to 10 lines.
- The Operating temperature of the printer should be 15C to 40 C.
- The Weight of the printer should be less than 500 Gram.

	Item, No. 3: Electronic Simulator • The external electronic simulator should be a stable electronic device. • The test cycle time for the external electronic simulator should be between 1-2 minutes. • The electronic simulator should be able to check the analyser's cartridge signal reading function. • It should detection function of the analyser both below and above the measuring ranges of tests. • It should check performance of the analyser to take accurate and sensitive measurements of voltage, current and resistance from the cartridge. • The Simulator should effectively evaluate the analyser and give results on the screening of the analyser as pass /fail confirming whether the analyser will measure the results within limits specified in the range set in the analyser software. • The Weight of the device should not be more that 100 gm and operating temperature 16 to 30 C. **Item No. 4: Disposable test cartridge** • The disposable cartridge should contain microfabricated thin film of electrodes for testing. • The disposable cartridge should have sample handling system and a waste chamber • The disposable cartridge should have conductive pads to make electrical contact with the analyzer. • The disposable cartridge should be used in conjunction with analyser for the simultaneous quantitative determination of specific analytes in whole blood as specified. • **Rates of disposable cartridges and consumables required, are to be quoted in the schedules attached and should be valid for minimum 3 years, failing which the bid will be rejected.**	
3.	**Endovenous Radiofrequency Ablation (RFA) with Segmental Ablation Technology for the treatment of Varicose veins with all accessories** **Endovenous Radiofrequency Generator specifications:** The RF Generator should deliver radiofrequency energy to the catheter, providing consistent and controlled treatment of Varicose Veins. • RF Generator should be Compatible with 7F Catheter with bipolar electrodes, and it should not require foot pedal • RF Generator should operate on set temperature of 105° -120° with maximum power of 40W with average delivery of 60-70J/cm per treatment cycle • Catheter compatible to RF Generator should have a heating Element Length of 6-8cm, providing Insertable Length of 60 cm/100 cm with in-built thermocouple and non sticky outer coating. • The Heating Element Diameter should be 2-2.5 mm with Guidewire Compatibility of 0.025" • The RF Generator should be compatible with bipolar catheters and should have a hand switch for energy delivery • RF Generator should use a segmental ablation technique for treatment purpose, hence there should not be any energy delivery while repositioning of	01

catheter

- RF Generator procedure should offer convenient usage without the need of measuring pull back time, should have a auto-set for 20 seconds, should deliver105 - 115 degrees Vein wall contact temperature without causing tissue impedance and interruptions
- Should Offer Temp accuracy of ± 5° with RMS Output voltage of 110V
- The RF Generator should be compatible with 6F Bipolar stylet to treat perforator veins
- Stylet compatible to RF Generator should have a heating element length of 1.5-2.5mm, providing insertable length of 11-14CM with removable needle
- Stylet Distal electrode maximum diameter should be 1-1.5mm with guide wire compatibility of 0.035"
- RF Generator should have default maximum power setting of 6W and default target temperature setting of 85°C after connecting the stylet.
- While treating the perforator veins with Stylet, RF Generator should display an impedance value of approximately in between 200 Ω to 400 Ω and the impedance value should immediately display less than 200 Ω if the heating element enters the deep vein. If the heating element is close to the Skin, then the RF Generator should immediately display the impedance value above 400 Ω.
- Voltage pf RF Generator should be 100 – 240V
- Weight of RF Generator should be 6.5 -7kg
- Height of RF Generator should be 25-28cm
- Width of RF Generator should be 32-36cm

RF Generator Should Give a Continuous feedback on:

- Real time temperature feedback control
- Display of power delivered to achieve set temperature
- Alert tones indicate functions of the device

RF Generator Should have a built with an Intuitive user interface on the following parameters:

- Large LCD touch screen for simplified user interaction
- Simple, quick viewing of treatment parameters
- Color gauges indicate treatment parameter range

RF Generator Should have a Ergonomic console on the below parameters:

- Reduced weight and volume for easy portability
- Built-in handles for easy lifting and carrying
- Convenient holder for power cord

Radiofrequency Catheter Should have:

- The Catheter should have a thermocouple that monitors treatment temperature and provides feedback to control energy deliver
- The Catheter should be 7F and 6-8 cm-long heating element that heats segments of the vein sequentially along the leg
- There should be a non-stick outer surface in the Catheter that keeps the heating element clean during multiple treatments
- The catheter should accommodate a 0.025" guidewire, if needed, for

	placement within the vessel • The catheter should be available in 60cm and 100cm lengths, and a 7F ,11cm sheath should be used • 'Segmental Ablation' technique should allow complete ablation of Vein without leaving any segment • Patient connection should be of bipolar catheter and there should be no tissue impedance or interruptions • Catheters should have hand switch for better control and 7 cm should be treated in 20 seconds • No saline drip or functional test is to be carried out during procedure **Radiofrequency stylet Should have:** • The RF stylet should be 6F with 1.5-2.5mm Heating on the tip of the stylet • RF stylet should have bipolar electrodes and in-built thermocouple • RF stylet should have a insertable length of 11-14CM with 1-2CM Spacing markers and removable needle • RF stylet distal electrode maximum diameter should be 1-1.5mm with guide wire compatibility of 0.035"	
4.	**Ultrasound Machine with Linear probe for peripheral nerve blocks** 1. Portable Ultrasound Machine with weight around 6 kg (To ensure easy portability) 2. The system must be state of the art Ultrasonography machine for Cardiology, Abdomen, Obstetrics, Gynecology, Small parts, Urology, Vascular, Pediatrics, Emergency Medicine, Anesthesia applications. 3. It should have at least 35 user selectable presets and should have facility to add many more. 4. System should function with the following modes - B Mode, M Mode, Tissue Harmonic Imaging, Anatomic M Mode , Color Doppler, Power Doppler, PW, CW, TDI , 1 touch Image optimization for B Mode, Color and Pulse Wave Doppler, Read/ write zoom 5. The machine must be DICOM 3 compliant and ready(DICOM® is the international standard to transmit, store, retrieve, print, process, and display medical imaging information) 6. The machine should be fully digital with at least 2,50,000 processing channels or equivalent technology 7. Color compare, Color / Power and normal grayscale mode - Should be available (side-by-side or equivalent) 8. The machine must be supplied with one 12 inch high resolution non interlaced color monitor with resolution 1024 x 768 9. The unit must be supplied with standard and advanced Cardiology, radiology, obstetrical, Gynecological, vascular measurement packages 10. Machine should have minimum 1000 2D frame rate. 11. Auto tracing Doppler packages and tracing for S/d, RI, PI, Acc Time, HR and other standard values 12. High Dynamic Range - 220 dB 13. Auto optimization of B mode, color mode and Doppler parameters 14. Maximum depth of 35 cm should be there. 15. Advanced image processing algorithms - For Improved image quality to analyze between targets & artifacts, sharpen target anatomy and reduce	01

	speckle & artifacts 16. Real time compound imaging Should be available for achieving excellent image quality 17. Image storage capacity should be of at least 256 GB or equivalent 18. Image Archival facility on medium other than HDD, USB port or network storage with facility for image transfer 19. System must have battery back of at least 30 minutes 20. The unit must have cineloop facility for black and white and color images. The cine storage must be in .avi format 21. Frequency processing of the transducer from 1-16 MHz 22. The unit must have a tissue harmonic imaging as a standard feature and on all transducers. 23. The machine must have simultaneous real time triplex mode facility (B mode/ color Doppler/ Doppler tracing) 24. System should have full screen zoom facility. 25. Linear probe should have 2D beam steer facility for better needle visualization during procedures. 26. Special feature for needle enhancement to be available for procedures. 27. System should have Extended FOV option available for all convex, linear and TVS probes. 28. System should have boot up time less than 55 seconds. 29. **System should be supplied with following Probes:** Convex Probe with frequency 2-6 MHz with Tissue Harmonic Imaging. Linear Probe with frequency 4-12 MHz with Tissue Harmonic Imaging. 30. **Optional: probes should be compatible for future upgrade** i. Transesophageal echocardiogram Probe with Frequency 2-8 MHz ii. Intraoperative probe with frequency range 4-16 MHz iii. Adult Cardiac Probe with frequency 2-4 MHz with Tissue Harmonic Imaging.	
5.	**Advanced Ventillator** 1. Time cycled volume constant pressure controlled Suitable for Adult and Paediatric patients (20 – 3000 ml) – settings based on ideal body weight input 2. Minimum 15 inch glass touchscreen with rotary knob as below: o Freely configurable with 3 curves from pressure, volume, flow, and at least two loops from PV,FV,PF and 4-6 preconfigured views o Outputs for – 3 external RS232 (9-pin) connectors, 4 USB ports, 1 Lan connector,1 HDMI o Compatible for future standards of connectivity with other equipment for data viewing, cyber security protocols and standards. 3. The ventilator should have the following ventilation modes : o Volume – Control, Assist, SIMV (with and without pressure support) o Pressure Control - BIPAP, PC-AC,APRV o CPAP with Pressure Support, Volume Support o Dual control modes such as PRVC/ AutoFlow for automatic adjustment of pressure and flow within a set PIP ; possible to combine in all volume control and pressure controlled modes with unrestricted spontaneous breathing o High Flow Oxygen Therapy o Lung recruitment tool including constant driving pressure, pressure sigh and with recruitment trends	10

- Apnoea backup ventilation mode with adjustable settings for rate and tidal volume
- NIV / mask ventilation-Should be possible to be used in all modes from control to spontaneous

4. Context dependant onscreen help / guide should be available with explanations of onscreen controls and actions.
5. Should have settings for:
   Tidal Volume: 20 ml to 3000 ml
   Inspiratory Rate: Adult 0.5 to 98/min, Paediatric 0 – 150
   Inspiratory flow: 0 - 120 lpm
   Peak Inspiratory Pressure: 1 – 95 cmH2O
   CPAP/PEEP: 0 – 50 cmH2O
   Pressure support: 0 – 95 cm H2O above PEEP
   Rise time/ slope: 0 - 2 sec manual or automatic
   Flow Trigger: 0.2 - 15 lpm
   FiO2: 21 – 100%
   Manual Inspiratory/ expiratory hold: 0 – 15 sec
   Sigh: Volume or pressure; Pressure Sigh preferred for safety reasons
   Inspiratory Termination Criteria: 1 to 80%
   O2 therapy: Continuous flow of 2 to 50 lpm with varying FiO2 from 21 – 100%
   Bias Flow: Manual / preset/ automatic bias flow should be available in all modes
6. Should have BTPS Compensated real time monitoring of:
   - Pressure - Peak, Plateau, Mean, CPAP/PEEP
   - Tidal Volume - Set (Inspired), Monitored (expired)
   - Minute Volume - expired, spontaneous, leakage
   - Frequency/ Rate - Set (Inspiratory), Spontaneous, Total, I:E Ratio
   - FiO2
   - Lung Mechanics - Resistance, Compliance, NIF, RSBI
   - Measurements - P0.1(Occlusion) pressure and Intrinsic (Auto) PEEP
   - EtCo2 Monitoring – Should be Mainstream sensor based
7. ATC – Automatic Tube Compensation
   - to compensate for both inspiratory and expiratory resistance if the endo tracheal tube,
   - for tube sizes from 5 – 12 mm (Adults), 2 – 8 mm (paediatrics), 2 – 5 mm (neonates)
   - should be available in all modes if required – from Control to Spontaneous.
8. Closed Loop knowledge based weaning system with diagnosis
   - automatic continuous adjustment of Pressure Support based on feedback from ETCO2 and tidal volume
   - with message to discontinue ventilation after successful weaning.
   - Trends for patient diagnosis matched with breathing patterns upto 24 hours.
   - Suitable for patients with higher etCO2 (eg COPD) and patients with neurological issues.
9. Three level alarm management including corrective help messages on the screen
10. Scope of supply should include

	○ Basic Unit (220 - 240 V) with battery backup for 2 hours ○ Battery status indicator with charging time while charging and remaining time during ventilation also should be displayed ○ Servo controlled Heated humidifier suitable for use with high flow Oxygen therapy ○ Silicon Hose set for paediatrics including for High Flow oxygen therapy ○ NIV Mask Reusable (All three sizes- L/M/S one each) ○ Flow sensor - 10 Nos. for life cycle of machine ○ Reusable autoclavable expiratory valve - 2 Nos. ○ 5 Nos. disposable valves for use with serious infectious patients should also be included ○ Accessories for High Flow Oxygen therapy including prongs ○ Permanent O2 sensor ○ Oxygen connecting Hose ○ Air connecting Hose ○ Nebuliser ○ Hinged arm for rail (Support for patient circuit) ○ RS232C Interface ○ Test Lung 11. Instruction Manual	
6.	**Electrosurgical Generator with Vessel Sealing and Saline resection with RF cut and coag.** 1. Unit should have microprocessor-controlled tissue feedback technology. 2. Unit should have Combo Generator Technology having conventional ESU, Vessel Sealing System, Saline Plasma Bipolar system, and RF Bipolar cut and coag. 3. It should feature a touch screen display of 7 inches or larger, clearly indicating the true power on the screen. 4. An accessory socket with self-illumination should be incorporated, featuring automatic selection during generator settings. The light on the socket should blink to indicate the activation of the particular socket. 5. It should have separate and isolated sockets for the Monopolar, Bipolar and vessel sealer. 6. It should complete self-Diagnosis during power on and should show an error code with its solution if any fault is detected. 7. It should accept dual-area (Disposable) and single-area (Reusable) patient return electrodes. Should give Green Indication if dual area patient plate applied to patient & Red indication with alarm tone if the patient is not applied. 8. It should have at least 100 user programs for different surgical procedures. 9. Unit should have pure sinusoidal output waveform in HF power output in cut and bipolar modes. 10. Operating Frequency of the unit should be between the 300 kHz t to 500Kh. It should not be more or less than this range. 11. Unit should be useful for underwater procedures in monopolar as well as saline resection. 12. It should have RANDOMIZED spray coagulation for larger area coverage. 13. Unit should have Seven different modes for cutting with a max output of 400 Watt. 14. Unit should have Seven different modes for Coagulation with a max output	01

	of 200 Watt. 15. Unit should have Five Bipolar modes with a max output of 120 watts. 16. Unit should have Auto Bipolar with delay time adjustment. 17. It should have an Alarm facility after the completion of bipolar coagulation. 18. Power should change from 1 to 40 by step of 1W, 40 to 100 by step of 5W & 100 to max power by step of 10 W for fat setting of the generator. 19. Unit should have Two sealing modes with 5 sealing levels (80W to 150W). 20. Unit should have Vessel Sealing Mode to seal up to 7mm tissue bundle & vessels with reusable vessel sealing attachments. 21. Unit should give an alarm after the completion of the sealing cycle & auto-stop the HF power. 22. Vessel Sealing should be completed within 6sec otherwise it should have to give an alarm and stop the HF output to prevent thermal Damage 23. System should give an alarm in Vessel sealing mode: a) if the tissue is not held properly in the sealer instrument. b) If the instrument has an internal failure. c) If too much tissue is grasped in forceps. 24. Unit should supply with 5mm reusable/autoclavable Vessel sealing instrument with integrated blade and should be from the same manufacturer. 25. Unit should have Three Saline Plasma Bipolar Cut mode with 300watt and Three Saline plasma Bipolar Coag with max output 200Watt. 26. Unit should be suitable to do TURP and bipolar hysteroscope resectoscope in Saline with Monopolar TURP Set with isolated Bipolar Sheath. 27. Unit should give an alarm in case of Saline Plasma Bipolar cable is broken or activated in non-saline medium activation. 28. Unit should have two RF cut and Two RF coag mode with 5 levels. 29. Unit should have rf scalpel cut and Coag mode with current bar indication. 30. The RF/Vessel Sealing socket should include a hand control function for laparoscopic instruments, enabling cut and coagulation. Additionally, it should be operate through a double paddle footswitch for added convenience. 31. The laparoscopy instrument should feature a handswitch control on the handle for RF/bipolar cut and coagulation, eliminating the need to change instruments during surgery. 32. Unit should have tissue feedback, and pulsed interval-controlled ENDO-CUT function. 33. Unit should be supplied Double Paddle footswitch with toggle function to change the usability between the monopolar, bipolar, vessel sealing and RF cut/ coag without going back to the generator. 34. It should be supplied with the following accessories: a. Patient plate with cable reusable – 1no b. Hand switching pencil reusable – 1 no. c. Bipolar forceps with Cable – 1 no. d. Monopolar Foot Switch (Double paddle) – 1 no. e. Bipolar Foot Switch (Single Paddle) – 1 no. f. Universal adaptor – 1 no. g. Set of electrodes – 1 no. h. Reusable Sealing clamp with ratchet and cable i. Reusable 5mm laparoscopic coagulation instrument, featuring hand control, with a 32cm insert (straight/Maryland) and with cable – 1 no.	
7.	**Digital Radiography System with Flat Panel Detector**	01

Unit should be specifically designed for all aspects of general X-Ray imaging and operating at a High Frequency of 50KHz for highly efficient X-ray production and preeminent Image Quality. The Integrated Design of the machine allows the operator to acquire X-ray Images very conveniently.

A. HIGH FREQUENCY GENERATOR (Indigenous):

- Generator should be of latest technology with high frequency 50KHz X-Ray generator.
- Oil filled based generator for high dielectric strength, better heat dissipation, and easy service stability.
- Constant Power output of 30 KW.
- KV range should be 40 to 125 KV in 1KV/step.
- mA output: 400mA
- mAs range should be 1 to 200 mAs.

B. X-RAY TUBE:

i. A Dual focus Rotating anode X-ray tube should be provided.
ii. Focal spot size of 1.0mm (small focus) x 2.00mm (large focus).
iii. Anode heat storage capacity should be 140kHU or more
iv. Collimator having halogen lamp / bright light source and auto shut provision of the light.
v. HV Cable: 1 Pair of H.V. Cable of suitable length.

C. STAND:

Ceiling Free tube Stand with Counter Balanced Tube Head with following features should be provided.

Tube Stand (Ceiling Free) and the Detector Stand are integrated on the same Floor Rail:

- Ceiling free stand with counter balanced movements.
- Manual movements with electromagnet locks in longitudinal & vertical movements are provided with release switches on electromagnet panel mounted on Tube collimator assembly.
- Telescopic Transverse movement of tube with manual lock is provided.
- Tube incline angle indication on electromagnet panel to show tube angle position.
- Continuous tube rotation around horizontal axis with manual lock.
- Longitudinal movement of column on track: 1900 mm or more
- Total up/down movement of the tube head: 1200mm or more.
- Tube head rotation along horizontal axis: ±180°.

Detector Stand:

- Height of the stand: 2200mm or Less
- Up /down travel of Bucky: 1200mm or more
- Bucky rotation movement of flat panel detector: 0°-90°.

D. TABLE:

Mobile Diagnostic table should be provided.

- Table should be of following dimensions:
  - Length: 1900mm or more

- Width: 660mm or more
- Height: 721mm or less

- Locks should be available on front wheels for table stability during exposure.
- The maximum weight carrying capacity for the table should be 180Kg or more.

E. FLAT PANEL DETECTOR:

Specifications:

- The detector should be flat panel type with A-Si (amorphous silicon) and CSi as scintillator.
- Size of detector must be 43cm x 43cm.
- Active Image matrix 3K x 3K.
- Image depth should be 14bit.
- Pixel size should be 150um or less (Smaller pixel size is preferred)
- Detector resolution should be more than 3.3 lp/mm.
- DQE (Detector Quantum Efficiency) should be more than 65%.

F. OPERATING STATION/ WORK STATION:

1. **X-RAY/ IMAGE CONTROL CONSOLE: Fully integrated system with following features:**
   - Digital Display of KV & mAs.
   - KV & mAs increase and decrease control on G.U.I (Graphical user interface).
   - Ready and X-Ray ON indication on G.U.I (Graphical user interface).
   - Self diagnostic Program for error code display of faults such as Earth fault error, KV error, Filament error & Tube's Thermal Overload.
   - An Inbuilt overload protection device.
   - Anatomical Programming Radiography (i.e. APR): Preprogrammed parameters of human Anatomy which helps the user to select exposure parameters based on body part, examination view and size of the patient. Since it is a computer based system (full system integration) so any number of Organ programming combinations is possible. User can define his own Organ parameters and can edit the existing parameters to his satisfaction and comfort level.
   - APR programs: More than 1000 programs. (Expandable as per user's requirement).
   - A dual action hand Switch with Retractable cord for Radiation Protection of Operator.
2. **IMAGE ACQUISITION SOFTWARE AND ITS CHARACTERISTICS:**

   Software provides complete control of all image capture functions within the examination room. It enhances the entire workflow by delivering

diagnostic images instantly. It also allows user to transfer X-Ray images electronically to remote workstations, image archives, and printers, also has an excellent performance on image quality control such as:

Pre-Processing Features

- New patient entry manual, Synch with MWL & emergency
- E-Mail ID option to mail the Image to patient in JPG format
- Sort of patient data based on day, date, week & Patient ID.
- Refresh facility
- Exam protocols – preset & customizable
- Total exam count as per selected period for accepted & rejected images
- Remaining hard disk storage for image indication in %.

Post processing features

- Image preview time in less than 5 sec
- DICOM MWL & DICOM Send with auto sending facility
- Advance Harmonica for Image processing as per body part
- True image 1:1 display
- Image reversal-Left to Right & Top to Bottom
- Image rotation Clockwise & anti clock wise in 90 degree steps & with custom rotation steps
- Window width (WW) & Window level (WL) adjustment for brightness & contrast.
- Dynamic Zoom with pan
- Image Crop facility in rectangular & Circular shape
- Magnifying Glass
- Image Invert / Negative Image
- EXI value indication to indicate over/ under exposure
- Pre-set multiple image layouts
- Reset tab to restore to the default parameters of image

Text & Annotation

- Addition of pre defined editable text, Addition of user defined text
- Addition of arrow pointer
- Save or Removal option of all text from the image.
- Line, rectangle, Circle, polygon/ free style.
- Cobb's angle
- Histogram

Measurements Features

- Length / Distance measurement
- Angle measurement

	Connectivity & storage Features ○ Storage of Images on CD/DVD with inbuilt DICOM viewer software enables to view images on any PC. ○ Image transfer through USB in JPEG, ○ DICOM 3.0 ready to connect with any DICOM 3.0 modality (like PACS, RIS/HIS/ Dry laser printer) ○ LAN connectivity to transfer the image to another system. ○ On line review of the Software. **Print Facility** ○ Offered software is compatible to connect with normal printer & with dry laser DICOM printer ○ Customizable user selectable multiple print layout ○ Print status facility ○ Post processing feature in print screen **G. MONITOR:** 1 No. 19" LCD TFT monitor should be provided. **H. POWER SUPPLY REQUIREMENT:** Three Phase, 400Volts AC 50Hz with line resist 0.2Ohms. Line Regulation ±10%. **I. ACESSORIES:** Servo Voltage Stabilizer of Suitable Rating- 01 No. **J. DRY IMAGER SYSTEM – 01 No** • Should be a dry laser camera with a resolution of 500 dpi or more. • Should have a gray scale resolution of at least 14 bits. • Capable of Printing Images in DICOM 3.0 format or newer version. • Should have two online universal trays and have mechanism to print images of minimum 2 film sizes simultaneously. **K. OTHER REQUIRMENTS:** • The unit should be approved by AERB. • The equipment should have import/manufacturing license from Central licensing Authority or State licensing authority of CDSCO for Medical Devices and copy of valid license should be submitted. Generator, Software & Flat panel detectors should be from the same manufacturer for consistent image quality & seamless connectivity.	
8.	**Computed Radiography System** **I. Image reader system (Single Loader – Table top)** 1. The system should be compatible for general radiography & Mammography 2. Should have the capability to process at least 40 plates per hour for cassette size of 18x24cm Mammo @ 20 pixels/mm 3. Offered system should have capability to read @ 20 pixels/mm 4. The initial film preview time should be less than 50 seconds for cassette size of 14x17 and less than 40 seconds for cassette size of 18x24cm 5. Should have the following sizes of image plates and compatible cassettes will supply along with system	05

	a. 14"-17" – 5 Nos. b. 10"-12" – 5 Nos. c. 18x24cm – 2 Nos. (Quote Optional) d. 24x30cm – 2 Nos. (Quote Optional) 6. Should have a 17" LCD/TFT display to view images of resolution 1kx1k 7. Should be possible to take print outs directly. Mechanism for printing Multiple Images in one film, with the possibility of slide and true size printing 8. Should have a protocol for verifying the connectivity status of configured image destinations 9. Should have Customizable Graphic User Interface 10. Should be capable to store more than 5000 images 11. Indication of Over Exposure on the preview module 12. Capability of interfacing to HL7, Non-HL7, Proprietary, DICOM Work list or user defined Windows/DOS /Linux based interface protocols to HIS/RIS. 13. Customizable Graphic User Interface (GUI) in Identification station with facility of selecting DICOM print & Storage destination 14. Mechanism for User release from Preview terminal in case of Auto-routing Images to Predefined DICOM Destinations 15. Solution for storing patient demographic data for multiple exams in RIS/non RIS environment 16. It should be possible to put a custom configurable data field in the demographic information of the patient linked with the image 17. CD and DVD Burner. 18. Various image-processing protocols should be available for the respective regions of the body. 19. Built in routine for using predefined image processing parameters for image quality enhancement. 20. Mechanism for storing the Patient image based on name, date, exam, etc. 21. Capability of storing user defined image processing parameters 22. Capability of overwriting predefined image parameter with user-defined parameters & storing these two images separately 23. Manual correction typographically in Patient Demographic module, in case of any problem with RIS connection 24. Capability of changing W/L, Flipping, Rotating, Zooming, Collimating Annotating incoming image **II. Dry Laser Imager System** 1. Should be a dry image printer with a resolution of 500 dpi or more 2. Should have a gray scale resolution of at least 14 bits. 3. Capable of Printing Images in DICOM 3.0 format or newer version 4. Should have two online trays and have mechanism to print images14x17",10x12 and 8x10" film sizes **III. Others** Should supply an UPS of suitable capacity with minimum 30 minutes battery backup	
9.	**Digital X-RAY Machine With CR** **A. HIGH FREQUENCY GENERATOR (Indigenous):**	01

- Generator should be of latest technology with high frequency 50KHz X-Ray generator.
- Oil filled based generator for high dielectric strength, better heat dissipation, and easy service stability.
- Constant Power output of 40 KW.
- KV range should be 40 to 125 KV in 1KV/step.
- mA output: 500mA
- mAs range should be 1 to 200mAs.

B. X-RAY TUBE:

i. A Dual focus Rotating anode X-ray tube should be provided.
ii. Focal spot size of 1.0 mm (small focus) x 2.00 mm (large focus).
iii. Anode heat storage capacity should be 140 kHU or more
iv. Collimator having halogen lamp / bright light source and auto shut provision of the light.
v. HV Cable: 1 Pair of H.V. Cable of suitable length.

C. STAND:

Ceiling Free tube Stand with Counter Balanced Tube Head with following features should be provided.

Tube Stand:

- Height of the stand: 2200mm or Less
- Longitudinal movement of column on track: 1900 mm or more
- Total up/down movement of the tube head: 1200mm or more.

Detector Stand:

- Height of the stand: 2200mm or Less
- Up /down travel of Bucky: 1200mm or more\
- Rotation movement of panel detector 0° to 90° (anti clockwise)
- AEC mode available.

D. TABLE:

Mobile Diagnostic table should be provided.

- Table should be of following dimensions:
  - Length: 1900mm or more
  - Width: 660mm or more
  - Height: 721mm or less
- Locks should be available on front wheels for table stability during exposure.
- Maximum weight carrying capacity for the table should be 180Kg or more.

E. FLAT PANEL DETECTOR:

Specifications:

- The detector should be flat panel type with A-Si (amorphous silicon) and CSi as scintillator.
- Size of detector must be 43cm x 43cm.
- Active Image matrix 3K x 3K.
- Image depth should be 16bit.
- Pixel size should be 150um or less (Smaller pixel size is preferred)

- Detector resolution should be more than 3.3 lp/mm.
- DQE (Detector Quantum Efficiency) should be more than 65%.

F. OPERATING STATION/ WORK STATION:

a. **X-RAY/IMAGE CONTROL CONSOLE:** Fully integrated system with following features:

- Digital Display of KV & mAs.
- KV & mAs increase and decrease control on G.U.I (Graphical user interface).
- Ready and X-Ray ON indication on G.U.I (Graphical user interface).
- Self diagnostic Program for error code display of faults such as Earth fault error, KV error, Filament error & Tube's Thermal Overload.
- An Inbuilt overload protection device.
- Anatomical Programming Radiography (i.e. APR): Preprogrammed parameters of human Anatomy which helps the user to select exposure parameters based on body part, examination view and size of the patient. Since it is a computer based system (full system integration) so any number of Organ programming combinations is possible. User can define his own Organ parameters and can edit the existing parameters to his satisfaction and comfort level.
- APR programs: More than 216 programs. (Expandable as per user's requirement).
- A dual action hand Switch with Retractable cord for Radiation Protection of Operator.

A. IMAGE ACQUISITION SOFTWARE AND ITS CHARACTERISTICS:

Software provides complete control of all image capture functions within the examination room. It enhances the entire workflow by delivering diagnostic images instantly. It also allows user to transfer X-Ray images electronically to remote workstations, image archives, and printers, also has an excellent performance on image quality control such as:

Pre-Processing Features

- New patient entry manual, Synch with MWL & emergency
- E-Mail ID option to mail the Image to patient in JPG format
- Sort of patient data based on day, date, week & Patient ID.
- Refresh facility
- Exam protocols – preset& customizable
- Total exam count as per selected period for accepted & rejected images
- Remaining hard disk storage for image indication in %.

Post processing features

- Image preview time in less than 5sec
- DICOM MWL & DICOM Send with auto sending facility
- Advance Harmonica for Image processing as per body part
- True image 1:1 display
- Image reversal-Left to Right & Top to Bottom
- Image rotation Clock wise & antic clock wise in 90 degree steps & with custom rotation steps

- Window width (WW) & Window level (WL) adjustment for brightness & contrast.
- Dynamic Zoom with pan
- Image Crop facility in rectangular & Circular shape
- Magnifying Glass
- Image Invert / Negative Image
- EXI value indication to indicate over/ under exposure
- Pre-set multiple image layouts
- Reset tab to restore to the default parameters of image

Text & Annotation

- Addition of pre-defined edit able text, Addition of user defined text
- Addition of arrow pointer
- Save or Removal option of all text from the image.
- Line, rectangle, Circle, polygon/ free style.
- Cobb's angle
- Histogram

Measurements Features

- Length / Distance measurement
- Angle measurement

Connectivity & storage Features

- Storage of Images on CD/DVD with inbuilt DICOM viewer software enables to view images on any PC.
- Image transfer through USB in JPEG,
- DICOM 3.0 ready to connect with any DICOM 3.0 modality (like PACS, RIS/HIS/ Dry laser printer)
- LAN connectivity to transfer the image to another system.
- On line review of the Software.

Print Facility

- Offered software is compatible to connect with normal printer & with dry laser DICOM printer
- Customizable user selectable multiple print layout
- Print status facility
- Post processing feature in print screen
-

G. MONITOR: 1 No. 19" LCD TFT monitor should be provided.

H. POWER SUPPLY REQUIREMENT: Three Phase, 400Volts AC 50Hz with line resist 0.2Ohms. Line Regulation ±10%.

I. ACESSORIES:

a. Dry Laser Imager System
- Should be a dry image printer with a resolution of 500 dpi or more
- Should have a gray scale resolution of at least 14 bits.
- Capable of Printing Images in DICOM 3.0 format or newer version

	• Should have two online trays and have mechanism to print images14x17",10x12 and 8x10" film sizes b. Servo Voltage Stabilizer of Suitable Rating- 01 No. **J. OTHER REQUIREMENTS:** • The unit should be approved by AERB. • The equipment should have import/manufacturing license from Central licensing Authority or State licensing authority of CDSCO for Medical Devices and copy of valid license should be submitted. • The generator, software and image acquisition software should be from the same manufacturer of the equipment.	
10.	**6 KW High Frequency Mobile X-RAY Machine** **A. X-RAY GENERATOR:** • High Frequency X-Ray Generator having frequency of 50KHz or more should be provided. • Power output of generator should be 6KW. • Radiographic KV Range should be 40 to 110KV. • mA Range (Rad.): 150mA. • Exposure time (Rad.):6.6 ms to 5 Sec. • mAs Range (Rad.): 1 to 200mAs. **B. CONTROL:** Attractive and ergonomically designed control panel with total soft feather touch switches for various operations. having following functions & indications. • Machine ON/OFF switch • Digital display of KV and mAs. • KV and mAs increase and decrease switches. • Ready and x-ray on switch with indicators • Bucky selection switch. • Stand by and exposure release switch. • Self diagnostic program with indicators for:- ➢ Earth fault error ➢ KV error ➢ Filament error ➢ Tube Head thermal overload. • X-Ray on indicator. • Incoming voltage indicator. • Anatomical programming up to 216 pre-programmed functions in which automatic selection of Technical Factors is done according to the Body part Selection. • Provision of auto shut off of control panel if no key is pressed for 10 minutes should be provided. A 2-Step hand switch with dual action for exposure release with retractable cord should be provided for taking images from a safer distance. **C. X-RAY TUBE:**	03

	• Mono-block version X-Ray tube head should be provided. The mono-block consists of Stationary Anode X-Ray tube, H.V. transformer, filament transformer, H.V. rectifiers and capacitors, all immersed in high grade oil with high dielectric strength. Mono-block Tube Head should be protected for thermal overload. • Focal spots are Single focus with 2.8mm • Manual LBD (light beam diaphragm) with should be provided with provision of Auto Shutoff. **D. STAND:** Mobile stand with 4-wheel design, which ensures easy mobility and steering. The spring balance stand (with fixed Tube Head column) should be very light in weight with tube arm, which is very easy to maneuver and allows smooth movements of tube head in vertical plane. Lead lined cassette storage box. This mobile stand is made to withstand all jerks while in use offering unparalleled reliability. SBM Stand can be easily moved on floor and lock should be provided to lock its movement on floor. The equipment occupies minimum floor area and is capable to be taken through elevators with ease. **E. TABLE:** • Horizontal Bucky Table for over couch & Bucky Radiography of various body parts should be provided. The Table should consists of bucky with motorized reciprocating grid of size 17 ¼" x 18 7/8" having grid ratio of 8:1, 85 lines/Inch. • The Bucky should travel the entire length of the table and can be locked at any desired position by a lock. • The tabletop should be made of low radiation absorption, waterproof material. • A stainless steel cassette Tray & Compression Band (Immobilizing device) should be provided with the table. POWER REQUIREMENT: Single Phase 230V, AC and 50 Hz., 15 Amps with line regulation of ±10%.	
11.	**Standalone Colour Doppler Machine** **A. Specifications of colour doppler system for radiology:** 1. System architecture should be able to support High definition mode that is provided in standard function. That mode should provide Speckle noise reduction to reduce artifact such as multiple echoes and to improve spatial resolution and contrast resolution. 2. The system must be high end and should be latest and state of the art with fully digital technology equipment to incorporate the facility of 2D, M-Mode, PW Doppler, CW Doppler, Power Doppler, directional power, Contrast Imaging, Elastography imaging, Imaging for abdomen, obstetrics & Gynae, Peripheral vascular & superficial parts imaging like breast, scrotum, thyroid, musculoskeletal and adult cardiac 3. System must be offered with a minimum of 250000 digital processed channels. Technical data sheet should be enclosed in technical bid to support the number of channels on the systems. If not mentioned Please attach a letter from manufacturer along with the technical bid clearly	01

stating the digital processed channels of the offered system

4. System must be offered with a very high system dynamic range of at least 270 dB to pick up subtle echoes. Dynamic range in dB must be clearly mentioned in the technical quote. System offered lesser than specified will not be considered.
5. System should have A/D 12 bit or more converter
6. System must be offered with a minimum 21 inch or More High Resolution Flat Panel Medical grade IPS monitor with nearly infinite position adjustments.
7. System should have at-least Three Imaging universal active probe ports with electronic switching facility from key board without probe adapter. It connects 3 probes simultaneously.
8. Operating modes B-mode, M-Mode, B/M Mode, Doppler Mode, Colour flow, Power Doppler, Contrast Imaging, B/Colour flow, PW Doppler, CW Doppler,
9. System should be with facilities of Color Flow, Power Flow, Directional Power flow & High spatial & temporal resolution color flow (fine flow, B Flow or e-flow).
10. System should support broad band probes spanning a frequency of 1-18 MHz.
11. System should have Pan Zoom & Hi Zoom display magnification 8 times, display format change in flip flop, horizontal, vertical and rotation.
12. B mode & B colour simultaneous should be available side by side real time display of B Mode & Colour flow. Digital zoom facility for region of interest in real time and frozen images.
13. System should allow us to take 10 pair distance measurement at a time on a frozen image. System should support Baseline Shift and angle correction in both real time and after freeze.
14. Image storage facility on external hard disc or CD/DVD-RW facility should be available. In built hard disk with minimum capacity of 500 GB or More.
15. Cine loop as well as cine scroll facility in B mode with storage Max 18000 or more storage capacity. M/D Recording time Max 300 seconds.. Technical data sheet should be enclosed in technical bid.
16. System must be offered with Speckle Reduction Imaging : Image processing technique to remove speckles and clutter artifacts.
17. Advanced measurements & calculation package for abdominal, Obst & Gync, Cardiac urology & Vascular should be available.
18. System should be capable of scanning depth of 38cm or 380 mm. Scanning Depth should be clearly mentioned in the technical quote If not mentioned Please attach a letter from manufacturer along with the technical bid clearly stating the scanning depth of 38cms in the offered system.
19. System must be offered with a 2D frame rate of 800 frames/second or more. Acquisition frame rate should be clearly mentioned in the technical quote If not mentioned Please attach a letter from manufacturer along with the technical bid clearly stating the frame rate of the offered system.
20. System should have THI & should be able to work in combined mode of

harmonic imaging and real time compound imaging to get excellent image quality. The system shall offer Tissue Harmonic Imaging in Power Doppler imaging mode for improve dsensitivity and specificity in differentiating blood/agent from tissue.

21. The system should be upgradable to Contrast Harmonic Imaging and should have optimization settings to detect the Contrast Agents. Please specify other advanced Technologies to perform better Contrast Harmonic Imaging.
22. Automatic real time & frozen tracing of instantaneous peak velocity &instantaneous mean velocity (or frequency) should be available. Triplex Imaging should be standard on the system.
23. System should Contain Automatic optimization which adjusts TGC, B mode gain, baseline, PRF& Doppler gain.
24. The System should have Panoramic imaging and Trapezoidal imaging
25. Omni Directional M Mode with 3 Cursors both in real time & on frozen image in all the probes, with M Mode cursor rotation of Complete 360 Degree, system should have provision of getting M-mode image from the stored B-mode image.
26. Advanced Cardiac features to compare real time cardiac wall motions with the slow moving counterpart
27. Advanced directional color Doppler to pick the difficult & small vessels without blooming artifacts.
28. Machine should have Biplane transrectal probe of Convex/convex, Convex/ Linear transducer for any future upgradation and realtime Biplane mode should be available in the system
29. The system should have minimum touch screen of 10 inch or more.
30. Machine Should have the option of scanning the patients based on the body diagram or body type to minimise the workflow
31. Power requirements, System operates between 200 to 240V AC, 50Hz.
32. Power Consumption of the machine should not be more than 800VA
33. DICOM software should be standard on the machine II

B. Required Probes (Mandatory)

1. 2–5 MHz Broadband Convex Transducer for General Imaging, Abdomen, Renal, OB/GYN imaging. Must have Tissue Harmonic Imaging for excellent Image quality on Difficult to image patients. All probes should be suitable for Contrast Harmonic Imaging.
2. 2 –12 Mhz Linear Array Transducer for Small parts and MSK studies
3. 2 - 10 Mhz TV/TR Transducer for Early Pregnancy, Vaginal & Prostate Studies with minimum 200 degree viewing angle

Optional Probes (Mandatory to quote in the schedule II of the price bid)

1. Machine should have high frequency Linear probe of 5 to 18 Mhz frequency for future upgradation
2. 1-5 MHz broadband single crystal cardiac transducer for cardiac scanning. Must have tissue harmonic imaging for excellent image quality on difficult to image patients. Please indicate THI in the technical datasheet of transducer.
3. Machine should have surgical micro- convex probe of 4 to 10 Mhz frequency along with Biopsy guide for future upgradation

	4. Machine should have Hockey stick transducer of 4 to 15 Mhz frequency for future upgradation 5. Machine should have Bi-plane Convex-Linear Transrectal transducer of 4 to 10 Mhz frequency for future upgradation **C. System should be supplied with the following peripheral devices:** 1. Thermal B/W Printer. 2. 2 KVA online UPS	
12.	**Cable Operated Power Drill** **1. Driving Unit** ➢ Completely enclosed with stainless steel body ➢ 400 Watt motor instant stop, 220V/5 amp AC/DC supply with MCB (Miniature Circuit Breaker) ➢ Supported on a mobile folding stand (Stainless steel tubes & M.S. square bars, with castors) ➢ Includes a foot control with step-less speed control & ON/OFF switch with fuse **2. Cannulated Drill (One-piece Pistol Grip) Handpiece (Autoclavable)** ➢ Stainless steel Jacob's Drill Chuck (0-1/4") ➢ Weight 800 gms. Approx ➢ Maximum speed 1200 RPM ➢ 5.5 mm Cannulated **3. Saggital Saw (one-piece Pistol Grip) Handpiece (Autoclavable)** ➢ More than 17500 CPM. Oscillating type ➢ Weight 700 gms. Approx ➢ Five types of blades can be set at 45°, 90° ➢ Blades from – hardened & tempered high quality stainless steel ➢ 1 Special Blade for Total Knee Replacement (TKR) is to be provided ➢ To take difficult cuts at depth ➢ Ideal for TKR, THR **4. Flexible Shaft (Autoclavable)** ➢ Length 1.5 mtrs ➢ Weight approx 1000gms ➢ Push-Pull type ends (Stainless steel)	04
13.	**Orthopaedic Operating Traction Table** **General construction features:** • Operating table should be for orthopedic surgeries, general surgeries and compactable with other surgeries of all types • Electro-mechanical motor driven table, oil free & leak proof design for easy maintenance. • Table should be independently maneuverable, can be moved with or without patient and stopped in any position. Table should have a single centralized lever for floor locking. • Modular or tabletop, consisting of 4 sections, with mounting points on the end sides for the adaptation of head rest and leg board. • Padding or tabletops should be equipped with radiolucent foam padding, min.	02

	40/50 mm thick, with protective against decubitus and for optimum distribution of pressure. • The main central section padding should be removable easily without the use of tools. • Velcro attached cushions should be easy to clean • The tabletop should be a special composite material to minimize radiation hazard to surgeons and other staff. • Column cover should be stainless steel. The operating tabletop should be equipped with side railings enabling accessory adaption. The base exterior of the table should be molded plastic, for easy maintenance and rust-free long life. **Technical Specification:** • Following movements of the table must be motorized, controlled from the remote handset: ➢ Height (without pad): 785-1035 mm ➢ Trendelenburg/reverse Trendelenburg 30°/30° ➢ Lateral tilt left/right 20°/20° • All motorized movements must be precise, smooth and jerk free. **Dimensions:** • Table length should be 1980 mm minimum. • Width of the tabletop should be 550mm (+ 10%) without side rails. • Table should have wired remote control handset for all movements of the table. There should be an auxillary emergency operating panel on the table base for independent operation of the movements of the table. • Permissible load of the operating table: max patient weight: 200 kgs **Standard accessories for OT Table:** • Universal body supports (1 pair) for patient safety • Body restraint strap – 2 nos. • Arm Rest – 2 nos. • Detachable Head rest. **Orthopaedics attachments to be supplied with table:** • Tibia nailing bar, adjustable with padding • Detachable orthopaedic base attachment (Universal telescopic design) consisting of pelvic Rest, Radio Translucent pelvic support, set of inner thigh supports, foot plate with specially designed shoes for firm grip on foot fixation during heavy traction. Traction unit with counter traction post. • Radiolucent Extension board • Total Knee stabilizer • Allen arm/hand table (Radiolucent)	
14.	**Cardiac Stress Test System** **ECG** • Acquisition: Simultaneous 12 leads,14 bits • Sampling Rate: 3600 samples/ sec	01

- Input Impedance: > 100M ohms
- Time Constant: 3.2 Sec
- CMRR: > 100dB
- Patient Leakage: < 10µA
- Frequency Response: 0.05 Hz to100 Hz
- Digital Filters: 50Hz, muscle tremor 20, 35 or none
- Baseline Correction: DSP technique to remove ECG wandering
- Sweep Speed: 5,12.5 ,25 ,50 and 100mm / sec
- Sensitivity0.25, 0.5, 1.0, 2.0 and 4.0cm / mV

ECG Computations

- Calculated Parameters: ST-Level, ST-Slope, HR, METS, Axis etc.
- Fiducial Points: Auto/ Manual
- Enlarged median lead: Configurable
- Median update Interval: 10 seconds
- HR Computation: 6 beats, updated every second

Protocol

- Standard: Bruce, Modified Bruce, Balke, Ellestad, Naughton
- Custom: Unlimited customized protocols can be created

Display

- Display Resolution: 1024 x 768 pixels
- ECG Display format: 4 leads + medians + enlarge median, 6x2 leads + medians, 12 leads + medians + Enlarge median, 3 x + R lead, Static linked medians + R, 12 leads (3.2/ 10 sec)
- Data display: HR, Target HR, BP, Stage Time, Test Time, Speed, Grade, METS, Protocol Name, Protocol Stage, STL, STS and Patient Information etc.
- Full Disclosure: Beat-to-Beat ECG record
- Event Marker: Yes

Printing

- Printer: Laser or DeskJet
- Paper Size: A4 size

Reports

- Online: 12L + Medians, Linked Medians, 3x4 + R,12 Linked Medians + Enlarge Median, Summary
- Auto report: Online Reports, 6LFrontal, 6LPrecordial, 12L Rhythm, Average, 12L + Comparison, Trends, ST Tables, Comparison
- Offline: All of the above, Linked Medians Summary, Total Disclosure

Connectivity

- Export/ communication: PDF, TCP/IP, DICOM (optional)
- Network Interface: File storage, Distribution and E-mail

Treadmill

	• Speed: 0.1 to 9.3 mph • Elevation: 0 to 22% • Belt drive motor power: 2 HP AC Motor • Conveyer Belt: Anti skid • Safety: Optical isolation, Emergency stop • Communication: RS 232 • User capacity: 250 Kg • Walking area: 1520 x 510mm • Dimension: 2180 x 815 x 1165mm (L x W x H) • Weight: 145 Kg **Operating conditions** • Operating Temperature: 10°C to 50°C • Storage Temperature: 0°C to 40°C • Relative Humidity: 15 to 90% non condensing • Cart dimension: 1070 (H) x 780 (W) x 435 (D) mm • Standard Kit: Treadmill, Acquisition Box, Patient Cable, A4 size paper set, Disposable Electrodes, User Manual, Software CD and Trolley • Options: PC Workstation, Printer, UPS for PC • Minimum Computer OS: Windows7 Professional 32bit/ 64bit, Processor: Core2Duo 2.5GHz or higher, RAM:2GB or higher, 500 GB hard disk or higher, CD/DVD Optical Drive, Screen Resolution 1024 x 768 or higher	
15.	**Phacoemulsification Machine with trolley** **Technical Specification:** **A. Ultrasound:** 1. Phaco Handpiece: Light Weight, Titanium Make, 6 Crystal with Protection Cover 2. Frequency : 20 to 30 KHZ 3. U/S Modes : Linear, Pulse, Burst, CMP, Occlusion, Override Modes. 4. U/S Power : 1 – 100% 5. Phaco Tips : 2.8mm, 2.2mm – Both should be available with Sleeves. 6. Co-MICS : 1.8mm Option should be possible without any upgrade cost 7. Tuning : Auto Tuning **B. Irrigation:** 1. Fluid Delivery : Gravity Fed/Continuous/Foot Operated 2. I/V Pole : Manual and should be supplied 3. I/A Cassette : Reusable Tubing system with Integrated Closed Sensor **C. Aspiration:** 1. Pump : Peristaltic or Venturi or both 2. Vacuum : 0 to 600 mmHg 3. Flow Rate : 0 to 50ml/min. 4. Rise Time : 1, 2 & 3 **D. Diathermy:** 1. Type : Bipolar, 500 KHZ 2. Power : 0 to 8.5W	03

	3. Control : 10- 100% Linear 4. Endo & Macro Diathermy 5. RF capsulotoy: Should be available **E. Vitrectomy:** 1. Cutter Type : Pneumatic 2. Cut Rate : 60 to @ 2400 Cuts/min. 3. Guage Size : 20G, 23G, 25 G all options should be available 4. I/C/A or I/A/C : Should be programmable 5. Phaco Fragmentome: should be available 6. Compressor: Inbuilt 7. Single Cut & On-Off: Should be possible **F. Other Requirements:** 1. User – 20 Surgeon Memory 2. System should have Advance Phaco Technology like Ellipse/ Ozil Phaco technology. 3. Dual Linear Foot Pedal 4. Auto tuning capability. 5. Machine should have upgradation Option. 6. All Accessories supplied should be from the Same Original company. 7. Machine should be Light Weight 5.5 Kgs & portable. 8. Should be non-touch panel system. **G. Accessories to be supplied:** 1. Phaco Handpiece, 6 crystal – 1 No. 2. 2.8mm Phaco Tip – 1 No 3. 2.8mm Sleeves – 2 Nos. 4. 2.2mm Phaco Tip – 1 No. 5. 2.2mm Sleeves – 2 Nos. 6. Reusable Cassette- 2 Nos. 7. Test chamber – 2 Nos. 8. Diathermy Set with Forcep – 1 No. 9. Sterilization Tray – 1 No. 10. IA Bimanual Set – 1 No. 11. Vitrectomy Cutter, 23G – 2 No. 12. IV Pole - 1 no. 13. UPS should be provided	
16.	**High end slit lamp with digital imaging system** **Specification:** **A. Microscope** 1. Type: Galilean magnification changer with converging binocular tube. 2. Magnification selection 5 steps by rotation 3. Magnification having Continuous zoom stepwise with steps at 6x,10x,16x,25x,40x. 4. Eyepiece 12.5x 5. Should have facility for stereoscopic examination of fundus where in angle on stereoscopic observation can be reduced from 13 deg. to 4.5 deg. to have better view of eyes with small pupil or high Myopia. 6. Facility for viewing into the microscope at 20 deg to horizontal to enable	01

	the examiner to keep his head in fatigue free position **B. Slit Illumination** 1. Slit Width Continuous from 14 to 0 mm (at 14 mm, slit becomes a circle) 2. Slit length Continuous from 14 to 1 mm (at 14 mm, slit becomes a circle) 3. Slit angle 0 to 180 degree with horizontal Scanning capability 4. The tilt of slit (decentration), To horizontal 0-15 deg, To vertical 0-20 deg 5. Filters Blue, Red-free, Amber UV cut (normal use), ND (13% transmission), Heat insulation. 6. Illumination should have from Tip using LED unit capacity of giving Illumination intensity upto 600,00Lux. **C. Chinrest** Vertical movement 80 mm Fixation target Red LED or white bulb **D. Should have applanation tonometer with all filters.** **E. Slit lamp Imaging System** 1. Imaging module with built in High resolution digital camera. 2. Advance image management software with storage facility of still images & movie recordings. 3. Should have History Trigger Option and Freeze Technology 4. Should have an option to manually control the aperture. 5. Latest processor with minimum 1 TB Hard Disk with latest RAM provided with 19 inch LED monitor. • UPS should be provided	
17.	**Slit Lamp with table** **Specifications:** • Magnification: 5-step: 6x/ 10x/16x/25x/40x 3-step: 10x/16x/25x • Field of view: 5-step maginification: 41 mm to 5.7 mm 3-step magnification: 26.5 mm to 8.7 mm • Eyepiece magnification: 12.5x, compension of ametropia ± 8 D • Width of Slit images: Continuous from 0 to 12 mm • Length of Slit lamp: Variable in steps of 0.2/1/3/5/9/12 mm, continuous 1- 12 mm with scale indication • Rotation of slit image Continuos ± 90° • Decentration of slit lamp: ±4° horizontally, fixated at 0° • Swivel range of slit projector: 180*, scale for angular difference, click stops at- 10°/ 0°/ + 10° • Angle of incidence: Variable in steps of 0°/5°/10°/15°/20° • Filters: Blue, Green, (red free), grey, red, swing-in, diffusing screen swing-in; swing-in; barrier filter yellow, swing • Free working distance exit mirror/patient's eye: 88 mm • Travel of instrument base: 30 mm (vertical), 1.2 in (vertical), 110 mm (lateral), 4.3 in (lateral), 90 mm (axial), 3.5 in (axial)	04

	• Vertical travel of headrest: 59 mm, 2.3 in • Projection illumination: 15 V, LED • Brightness: Continously adjustable • Rated voltage: 100… 240V ± 10%, 50/60 Hz • Weight: 12.5 kg/27.55 ibs (instrument including headrest) • Dimensions of basic instrument (W x H x D): 300 mm x 705 mm (±15 mm) x 355 mm 11.8 in x 27.7 in (± 0.6 in) x 13.9 in	
18.	**Autorefractometer with keratometer with Motorized Table** **Specifications:** • Automated Auto- refractometer with facility to measure k, • Sphere range: -25D to +22D (0.12D/0.25D steps). • Cylindrical range: Cylinder (CYL) : 0.00 to (-) or (+) 10.00D (Increments: 0.12 and 0.25D) • Axis range: 0 to 180° • Minimal measurable pupil diameter: 2mm PD measurement range 20 mm to 85 mm. • Corneal curvature mode – radius: 05.00 to 10.00 mm(0.01mm steps). • Corneal refractive range: 67.50D to 33.75D (0.12 D to 0.25D steps. • Refractive index: 1.3375 • Corneal Astigmatism: 0 to +10.00D (0.12 to 0.25D steps). • Psuedophakia/Aphakia • Automatic Support • Measurement Mode: Auto/Manual • Motorized table should be provided	11
19.	**Handheld Autorefractokeratometer** • Measurement range SPH: - 20D to +23 D (VD=12mm) (AUTO/0.12/0.25D steps) • CYL: 0D to +/- 12 D (AUTO/0.12/0.25D Steps) • Radius of curvature: 5.00 - 15.00 mm (in 0.01 mm increment) • Corneal astigmatism: 0D +/- 12D (R5 mm to 13 mm) 0D +/- 7D (R14 mm to 15 mm) • Center: 3.2 mm (R8 mm) • Pupil Measurement: 2.0 to 12.0 mm (in 0.1 mm increment) • Dimensions (main body): 168(W) x 202(D) x 236(H) mm • Weight: 970g (with battery) • External output: Infrared • Station Dimensions (Main body): 180(W) x 244(D) x 79(H) mm • Input Voltage: AC 100 to 240V 50/60Hz • Printer Dimensions (Main body): 103(W) x 167(D) x 75(H) mm • External output: USB Micro-B • Model Eye should be provided • Flexible screen for easy viewing during Anaesthesia • Charging and docking station to be provided • Integrated printer to be provided • Paper roll and extra batteries to be provided • Dust cover	03

	• Hard carrying case, for safe transport and storage • Additional batteries *2 with the equipment to be provided	
20.	**A Scan Biometer** **Specifications** • Transducer Probe: ➢ Frequency: 10 MHz+ 10% ➢ Fixation: Internal LED ➢ Sampling Frequency: 15.625 MHz ➢ Bandwidth: > 6 MHz at 6 dB • Accuracy ➢ Electronic Accuracy: + 0.05 mm ➢ Clinical Accuracy: 0.1mm • Measurement Techniques: Contact & Immersion • IOL Power calculation formulas: SRK T, SRK II, Holladay, Binkhorst II, Haigis, Hoffer Q • Measurement Mode: PMMA, Silicone, Acrylic, 2 Custom Lens, Automatic, Manual and Calibration Check • Measurements Range: 15mm to 45mm Axial Length • Memory: 100 Patient memories with 10 user profiles • Electrical Requirement: 100-240 VAC 50-60 Hz • Touch Screen: High Resolution LCD Display with Touch Screen overlay Internal Printer. • Internal High-Speed Thermal printer and optional use of external printer through USB • Connectivity: LAN connectivity and USB ports – software field upgrades possible. • Optional accessories: Footswitch, Immersion Cup, One RJ45 Crossed Cable, USB Host A Type Cable, Carry Case. • The equipment should have an adjustable viewing angle. • The equipment should be portable, compact and light weight. • The equipment should have SNF Technology for fast freezing of A Scan Spikes	01
21.	**ND Yag Laser** **Specification:** • Laser wavelength 1064nm, • Structure Mode: super-Gaussian for highly precise beam profile. • Optical breakdown 2- 2.5 mj or less in air. • Pulse duration < 4ns • Max. Laser energy 10mj (Single Pulse), 23mj(Double pulse) And 37mj (Triple pulse) • Minimum Energy 0.3Mj – 10mj or higher(Single Pulse) • Energy levels:20- 25 steps • Pulse repetition frequency Max.2 Hz. • Focus diameter 8- 10 micron in air. • Cone angle/Angle of exit aperture 16 Deg. • Aiming beam Laser diode with 620 - 670nm wavelength, It should be with 4 Point in shape of quadrant of a circle aiming beam system for identifying astigmatic disorders. This system allows the visualization of optical	01

	aberrations in the patient's eye, allowing the physician to set the energy accordingly. Normally, all 4 points can be easily brought into coincidence at perfect focus. • Aiming beam focus offset +/- 150 um posterior & anterior focus shift with fixed optics for highest precision. • Remote laser control unit so that laser parameters can be changed by assistant for easy use. **LASER SLIT LAMP:** • Slit Lamp with 5,8,12,20,32x magnification changer with 10x eyepieces and straight tube f=140mm with PD adjustable 50-78mm. • Illumination : halogen12v/30w; adjustable • Slit width 0-14mm continuous, Length 1/3/5/9/14mm. • UPS should be provided	
22.	**Indirect Ophthalmoscope with 20D Lens** **Specifications:** Light weight • Binocular with stereo optical system • Should have all pupil features • Should be wireless with charger • Rechargeable battery should be integrated • Bright white light with uniform LED illumination • Direct operation should be possible when battery is charging • Cobalt Blue and Green Filters should be available • Teaching Mirrors in Left and Right positions should be available • Following accessories should be available i. Battery charger (1) ii. Carrying case (1) iii. Scleral depressor (1) iv. 20 Diopters Aspheric viewing lens v. Double sided Co-observation mirror **Technical specifications:** Focus distance — upto 800mm Inter papillary distance — 54-74mm Pupil size optics — 1.00mm Illumination — LED illumination Field — Good, clear circular Illumination spot size — Ø4.0mm, Ø3.0mm, Ø1.2mm Illumination area — Ø80mm, Ø60mm,Ø25mm (at the distance 500mm) Illumination source — LED on the instrument Illumination control — linear control Filters — Green(red free), cobalt blue Vertical adjustment — +/-4◦ **Electrical specifications** Power supply — ~110-240 V,50-60V Hz Light source — LED	03

	Battery Rechargeable **Physical parameter** Weight Net 550g & gross 2.1kg Dimensions (L x B x H) 240 x 210 x 130mm	
23.	**I care tonometer** **Specification:** • Dimensions: 24-29 mm x 35-95 mm x 215 mm. • Weight: 140 g (without batteries), 230g (4 x AA batteries). • Power supply: 4 x AA non-rechargeable batteries, 1.5V alkaline LR6. • Measurement range: 7 -50 mmHg. • Accuracy (95 % tolerance interval relative to manometry): ±1.2mmHg (20 mmHg) and ±2.2 mmHg (>20 mmHg). • Repeatability(coefficient of variation) <8% • This device should have BF-type electric shock protection.	02
24.	**Non-contact tonometer** **Specifications:** IOPg (Goldmann Correlated IOP) and IOPCC (Corneal Compensated IOP) should be clearly displayed on color LCD screen. Best Signal Value (BSV) should be automatically selected Easy-to-use, touch-screen user interface requires minimal operator training The softest air puff and real-time applanation detection system should provides a custom air puff for every measurement. Simple, fast patient positioning- No chinrest, joystick, or elevation controls. Fixation cues should obvious Alignment and measurement should be completely automated. Triple-measurement mode should deliver three consecutive IOP. Measurements with a single button. Internal printer and electronic data transfer via USB port. Should have corneal data transfer via USB port Voltage: 100/240 VAC. Frequency: 50/60 Hz Measurement Range: 7-60 mmHg.	01
25.	**Non-contact biometer with swept source oct technology** 1. SWEPT Source Biometry showing full length OCT image showing anatomical details of the Eye on a longitudinal cut through the entire eye. 2. Should be able to detect usual eye geometries, such as a tilt or decentration of crystalline lens. 3. Facility of fixation check. All measurements calipers are shown on the full-length OCT image to verify the structure of the eye has been measured. Thus, potential source of errors are eliminated. 4. Should have telecentric keratometry for distance independent keratometry. 5. Axial Length 14 - 38 mm. 6. Corneal radii 5 - 11 mm. 7. Anterior Chamber depth 0.7 - 8 mm. 8. Lens thickness 1 – 10mm(Phakic eye) & 0.13 – 2.5mm (Pseudophakic eye) 9. Central corneal thickness 0.2- 1.2mm. 10. White - to – white 8mm - 16 mm. 11. Should have Posterior keratometry measurements, Total K.	02

	12. New Haigis T formula on board for Toric IOL power calculation. 13. Formulas for IOL calculation SRK II, SRK / T, Holladay 2, Hoffer Q, Haigis suite including Haigis L & Haigis T. 14. Barrett Suite consisting of Barrett Universal II, Barrett Toric & Barrett True-K 15. The equipment should have integrated hardware & software (CPU) within the single unit. 16. Should have Central Topography without external hardware or any attachment. 17. UPS should be provided	
26.	**Lensometer** **Specifications** • Target – Cornea Target • Scale reading – Internal • Vertex Power Scale – 0 to +-25 diopter • Vertex Power Scale graduation – 0.125D upto +- 5D/0.25D above +-5 • Prism Dioptre Scale – 0 to 6 prism diopter 1 prism diopter graduations • Eyepiece adjustment – +3 to -5 diopter • Lend Diameter – 24 mm to 90 mm in diameter • Tilt Angle – 0 to 90 degree, freely adjustable • Light Source – LED 570 nm • Dimensions – 160 (W) x 420 (D) x 310 (H) mm • Weight – approx 4.0 kg • Power Source – Battery operated (1.5V size D x2) Auto shut off 5 min	04
27.	**Dehumidifier (For High end Ophthalmic Equipments room)** **Specifications** • Type of Dehumidifier: Desiccant type • Requirement of Dehumidified air: 170 CMH • CNC fabricated unit with powder coated finish • Eco Dry rotor and totally self contained • The desiccant rotor shall be of fluted honeycomb type • The humidifier shall have differential air pressure switch to control reactivation air flow • The Dehumidifier shall have high temperature thermostat cut out • The Dehumidifier shall have additional cooling thermostat as a safety measure • The Dehumidifier shall have electrical interlocking of fan, motor, heaters and rotor as a safety measure. • The Dehumidifier shall have PTFE bonded silicon bulb seal designed to minimize air leakage. • Physical characteristics • 676 mm x 470mm x 390mm(H)+- 10% • Power Requirement 220V, 50 Hz	06
28.	**Anaesthesia Workstation** • It should be advanced, reliable, compact and mobile with integrated ventilator and patient monitor • It should be based on microprocessor and suitable for low flow as well as minimal flow anesthesia for adults, pediatrics and neonatal use • It should have a facility to connect to the central supply (oxygen, nitrous oxide and air) in index cylinder one each of oxygen and nitrous oxide and pressure gauges for central supply and cylinder	02

- Machine should have working surface and the storage space for keeping accessories
- It should have electronic gas mixture with electronic hypoxic guard.
- It should have integrated safety features like hypoxic guard, N2O cut off in case of O2 low pressure/failure, alarm and O2 flush etc.
- It should have virtual flow meter of O2, N2O and air. Should have Electronic display for cylinder and pipeline pressure of oxygen N2O and compressed air supply
- It should have compact autoclavable breathing system and soda lime chamber maximum capacity of 1.5L.
- It should have electronically controlled and electrically/pneumatically driven anaesthesia ventilator.
- The Machine should have settings for oxygen and anaesthetic agent based on Continuous monitoring of patients O2 and anaesthetic agent values to reduce agent consumption in low and minimal flow anaesthesia and to get the desired end result. OR Machine should be able to display the efficiency of gas and agent delivery.
- The machine should be able to calculate and give the total uptake of anesthetic gases and agent consumption at the end of the case.
- It should all be able to deliver fresh gas with negligible rebreathing.
- Anaesthesia ventilator should have the following settings:
    1. Ventilator Mode
        i. Manual/ spontaneous, IPPV/VCV
        ii. Volumes guarantee ventilation / PRVC/ Autoflow / equivalent
        iii. Pressure controlled ventilation
        iv. SIMV pressure and SIMV volume controlled mode
        v. CPAP with pressure support and apnea ventilation
    2. Tidal Volume: 20-1400ml in volume control
    3. PEEP: 2-40cm H2O
    4. Frequency: 4-60 or above
    5. I:E ratio: 1:8 - 2:1
    6. Pressure range: 5-80cm H2O
    7. Pressure support above PEEP: 5-80cm H2O
    8. Flow trigger 300ml to 10 LPM/0-10% of fixed trigger
    9. Setting of inspiratory time (0.2–10 sec) and inspiratory flow (0–120 or more LPM)
- It should have tidal volume compensation or fresh gas decoupling valve.
- It should have dual flow sensing technology and flow sensor should be covered for the warranty period.
- It should have integrated color display of all the parameters at least 15 inch screen, with mountable rotating and tilt screen, having both knob and touch control.
- It should have display the continuous wave forms, real time wave forms and loops e.g. Paw vs time, Volume vs time, P-V and F-V loops.
- It should have CPB or standby mode.
- Anesthesia machine should monitor and display the measure value of minute volume, tidal volume, peak airway pressure, mean pressure, plateau and PEEP.
- It should have alarms for high/low volume for expired tidal volume, minute volume frequency and airway pressure.

- It should be supplied with vaporizers of, Isoflurane, Sevoflurane and Desflurane, with anesthetic agent delivery based on electronic principle along with the machine. Should have electronic monitoring of vaporizer setting with display on main anesthesia screen.
- It should have dual detection of anesthetic agent in case of change of anesthetic agent.
- It should have RS232 port to interface monitor to transfer the expired parameters on monitor and in-built data output port for data retrieval.
- It should have battery back up to at least 60–90 minute including that for ventilator and monitor.
- System should have backup oxygen control in case of complete power failure and auxiliary oxygen supply source.
- It should have a servo-diagnostic mode and should display status message of the pneumatics, electronics and microprocessor.
- Machine should be equipped with anesthesia gas monitoring with automatic identification of anesthetic agent (MAC and end tidal concentration) as well as O2, N2O, FiO2 and ET CO2.
- Machine should be equipped with AGSS. It will be sole responsibility of the vendor to make AGSS functional as per the facility available in trauma centre.

The Monitor should have the following

- A modular configurable patient monitor for Adult Pediatric and Neonatal Patient.
- Should have at least 19" or more TFT color display with more than 8 waveforms at a time.
- Should be touch screen
- Should be able to measure the following parameters:
  a) 3 and 5 lead ECG with electrocautery & defibrillator filter with ST Segment & arrhythmia detection with analysis
  b) Respiration, SpO2 (Masimo technology), temperature
  c) NIBP, 2 IBP, ETCO2
  d) Multi-Gas analysis with auto detection of all anesthetic agents. In Machine or Monitor.
  e) Integrated BIS/entropy Monitoring.
  f) Integrated modular NMT monitor parameter display on the main monitor.
- Should be able to calculate and display FiO2.
- Intelligent cooling system to keep the unit running quiet during use.
- Separate indicator lights for technical and physiological alarms.
- Maximum BEEP tone should be loud enough to be audible from at least a distance of 12 feet.
- Should have graded audio and visual alarms for the following parameters:
  a) Blood pressure – High and Low
  b) SpO2 – High and Low
  c) Heart rate – High and Low
  d) Respiration – High and Low
  e) FiO2 – High and Low
- Trends – Up to 48 Hours or more, trend analysis, upto 24 hours full disclosure.
- Anesthesia machine, monitor and the ventilator should have Battery Back-up – Li-ion Battery of 45 minutes or more.

	• Should be upgradeable to run Web based application like PACS, HIS, RIS, LIS, Cath lab Report, X-Ray as standard on the patient monitor. • Display of Anesthesia ventilator data like wave forms for flow, pressure, agent and loops, and trends on patient monitors/ventilator monitor. • All the components like anesthesia ventilator and vaporizer should be from same manufacturer. • Each machine should be supplied with the following accessories: a) Reusable silicone patient hose: Adult 1 in number and pediatric 1 in number. b) Reusable Mask – 2 of Each 6 Sizes from 0 to 5, c) Power cord – 5 meter. d) Sampling line and Watertrap–50 number each. e) Vaporizers–one each for isoflurane, sevoflurane and desflurane. f) Oxygen sensor cells up to the period of guarantee and warranty g) ECG 3 lead Cable – 5 nos with each and ECG 5 lead cable – 3 nos with each h) Reusable SpO2 Sensors: 2 each for Adult, Pediatric & Neonatal (Wrap Around type) i) NIBP Cuff: 2 each for thigh cuff; 2 each: Adult, Pediatric & Neonatal. NIBP Hose – 2 Nos. j) IBP Transducers: Disposable 20 nos. k) IBP Cable: 2 nos l) BIS Electrode: 25 Adult and 25 Pediatric m) Rectal Temperature Probe – 2, skin temp probe: 2 n) Soda Lime – 25 Kg per unit o) SpO2 cable – 2 p) AGSS Filter – 20 Nos. • All Reusable and Disposable consumables being offered should be from the same manufacturer or from reputed brand with proper certification. • System should have provision for upgrading with Web based Anaesthesia Charting facility in future. • It should be HL-7 compliant. • Equipment should be demonstrated and compliance statement should be supported with brochures of the machine model quoted and technical data sheet. • Cost of all accessories/spares/consumables like: H2O trap, ECG cable, SpO2 sensor & cable, temp probe, BP cuff (all size), IBP cable/entropy cable, NIBP cable, soda lime canister and filter, etc. should be quoted separately in case of future purchase fixed for 10 years from the date of procurement of the equipment or it will be considered free of cost • Battery Oxygen sensor should be included in warranty/ AMC.	
29.	**Anaesthesia (Boyles Apparatus)** **1. Performance Parameters** • Purpose of anesthesia machine: Anesthetic machine to be used to provide an accurate and continuous supply of medical gases mixed and deliver this to the patient at a safe pressure and flow • Provision for Vaporizer • Type of mounting: Trolley mounting	02

2. Gas Delivery System

- Availability of Pin index yokes for gases: Oxygen and Nitrous oxide
- Availability of Separate Pin index yokes for gases: Oxygen, Nitrous oxide
- Availability of flow meters: O2 and N2O
- Mode of gas mixing: Pneumatic
- Availability of rotameter control guards in anesthesia machine
- Availability of pressure gauges for cylinder and pipelines in anesthesia machine
- Availability of audible and visual oxygen failure alarms
- Minimum emergency oxygen flow in liter per minute: 35-70
- Type of hypoxic guard with automatic cutoff of N2O: Mechanical

3. Vaporizer

- Vaporizer
- Number of quick mount type vaporizer for easy interchangeability at a time: 1
- Number of selectable back bar: 2
- Facility of interlock for vaporizer
- Volume percentage of delivery range: 0 to 10
- Minimum agent capacity for free volatile anesthetic agent in ml: 225
- Sensor connection should be internal to prevent disconnection
- Vaporizer compatible to gases: Only sevoflurane
- The vaporizer design should be maintenance free
- Vaporizer calibration requirement: After every five years

4. Breathing System

- Breathing system should have fresh gas de-coupled / compensation, closed circle absorber system
- Range of pressure relief valve in mbar of breathing system: 5 to 70
- Inbuilt absorber heater
- Single step in change over from spontaneous to bag ventilation
- Number of bains circuit (adult) to be supplied with workstation: 10
- Number of Jackson Rees circuit for pediatric patients to be supplied with workstation: 10
- Volume capacity of breathing system in liters: 1.7
- Reusable flow sensors to be covered in warranty
- Breathing system should have leak and compliance test
- Number of alarms: 2

5. Arms

- Alarms should be adjustable to high / low limits with audio and visual alarms

6. Power Supply

- Length of main cable in meter with power socket of standard Indian make to be provided: 5
- Inbuilt battery backup in hrs
- Power supply: 220-240VAC, 50Hz Single phase

	• Transparent re-usable silicon face mask size 0,1,2,3,4 & 5: 2 each **7. Accessories** • Breathing bag 2 Liter & 500 ml: 2 each • Mox regulator with 3 meter high Pressure tubing: 1 **8. Miscellaneous Parameters** • User/Technical/Maintenance manuals to be supplied in English in hard and soft copy • Copies of reports and certifications to be furnished to buyer on demand at time of supplies:	

(Dr. Rupa Naik)
Director of Health Services

Annexure II

Sr. no.	Items	Qty.
1.	Ear Speculum Child	50
2.	Ear Speculum Adult	50
3.	Tuning Fork 512 Hz	50
4.	Eustachian Catheter	50
5.	Nasal Speculum	50
6.	Ear Curette	50
7.	Jobsons Horne Probe	50
8.	Nasal Prongs Adult	3000
9.	Nasal Prongs Paediatric	1000
10.	**Fetal Doppler** • Should be Compact, Pocket Type and Light Weight not more than 500 g. • Large LCD display for display of Fetal Heart Rate. • Back light for better visibility • Display signal quality, low battery etc. • High sensitivity Doppler probe of frequency 2.0 MHz. • Ultra sound intensity < 10 mw/ cm2 • Auto shut off facility to save battery power • Built-in speaker with output not less than 1.0 W • Should work on rechargeable batteries with minimum battery time of 300 min. • Battery charger and spare set of batteries AA type to be supplied. • Volume control facility and Audio output for ear phone should be available. • Heart rate range should be from 50 to 240 bpm with accuracy of +/ - 2% • Should have water proof body • Should have facility for FHR Data transfer to PC • Doppler probe should be light weight with holder facility when not in use. • Should be supplied with carrying case.	20
11.	**Autoclave** Electric Capacity: IOL Material: Stainless Steel Finish Type: Mirror Product Dimensions: 28 D, x 22 W x 28 H centimeters Special Features: Automatic Shut off Wattage: 220 Control Method: Touch Controller Type: Hand Control Operation Mode: Manual Voltage: 220 Volts Closure Type: Clipon	10
12.	**Bi-Phasic Defibrillator** • Defibrillator should be Bi-Phasic. • Should have a high resolution colour TFT display of minimum 8 inch or more • Should have energy levels for defibrillation: 2 to 200 joules or more.	15

	• Should have direct trim knob and direct function keys for mute and freeze. • Should have manual & automated modes of operation • Should be mains and battery operated. Internal battery should provide backup operation up to 2 -3 hours in monitoring mode or at least 100 defibrillation shocks should be delivered from fully charged battery. • Facilities of ECG pickup from paddles in case of ECG electrodes are not connected to the Defibrillator. • Integrated external re-usable adult and paediatric paddles for defibrillation. • Should have non synchronised and synchronised cardio version. • System should have 24 hrs graphical as well as tabular memory for all parameters. • The charging time should be less than 10 sec's for charging upto 200 joules. • Should have USB/Data Card storage facility wherein data gets recorded & can be retrieved with the help of software on computer. The software should be provided as standard scope of supply • Should have integrated Printer. • Should have Transthoracic Pacemaker • Should have Pulse Oximeter & NIBP inbuilt • Machine should be upgradeable to ETCO2 monitoring • Should be supplied with Suitable Trolley for mounting the machine ECG cable 1 nos Adult spo2 probe 1 no Adult NIBP cuff 1 no Disposable pads: 5 nos	
13.	**CTG Machine** • Light-weight, compact and portable device that can provide measurements of FHR (Fetal Heart Rate), FM (Fetal Movement) and TOCO. • 12.1 inch TFT LCD Display with tiltable display upto 90°. • Can monitor the following parameters: ➢ Fetal Heart Rate ➢ Fetal Movement ➢ TOCO Pressure • Device should be light-weight (less than 4 kgs.) • Device should be compact and portable. • Should be available with rechargeable Li-ion battery. • Should have audio and visual alarms. • Should be able to monitor single as well as twin FHR. • Should be available with multi-chip pulsed operation transducer operation. • Should be provided with a special high sensitive water tight probe. • Should have a low power ultrasound probe, that is safe on foetus. • Ultrasound probe should have a frequency of 1 MHz. • FHR measuring method should be beat to beat basis averaging method. • Should have a measuring range of 50-210 bpm for FHR measurement. • Should have special DSP signal processing technology for the detection of FHR. • Should be able to display 2 x TOCO and FHR graphs. • Device should have off-set for FHR graphs.	5

	• Should have Foetal stimulator built in to FHR probe and activation key should be there on the front panel. • Thermal paper with 152 mm dimensions. • Should have automatic and manual foetal movement detection. • Should have facility to save data for 25 hours. • Should have facility for data-save and print back facility. • Foetal movement should be detected on the screen and displayed on the printout as well. • Device should be supplied with standard accessories.	
14.	**Continuous Glucose Monitoring System (CGMS)** The Glucose Monitoring system is a professional continuous glucose monitoring (CGM) device indicated for detecting trends and tracking patterns and glucose level excursions above or below the desired range, facilitating therapy adjustments in persons (age 18 and older) with diabetes. The system is intended for use by health care professionals. It must have 3 parts: sensor, reader and software **SENSOR** • The sensor placed on the back of the upper arm. Should be water resistant. • Filament should be <0.4 mm thick and inserted 5 mm beneath the skin surface to measure interstitial fluid • Should record glucose level automatically every 15 minutes to provide more insightful patterns. • No patient interaction with the sensor is required: to be designed to integrate with patients daily lives • No separate receiver, transmitter or recorder to wear to carry • Sensor glucose assay method: Amperometric electrochemical sensor • Sensor glucose reading range 2.2 to 27.8 mmol/L • Sensor power source one silver oxide battery • Sensor wear period upto 14 days • Sensor memory upto 14 days (Glucose reading stored every 15 minutes) • Operating temperature 50°F to 113°F • Sensor Applicator and sensor pack storage • Temperature 39°F to 77°F • Operating and storage relative humidity 10-90%, non-condensing • Sensor water resistance IP27: Can withstand immersion into 3 ft (one meter) of water for upto 30 minutes. **READER** • The system reader should quickly scan the sensor to retrieve your patients complete glycemic profile using Near Field Communication (NFC) technology. • A single reader can be used to start and gather data from sensors on multiple patients **SOFTWARE** • The software to deliver powerful reports from glycemic data that help you in your clinical decisions. • Daily patterns (with Ambulatory Glucose profile and glucose traces) to show	02

	patterns which can help detect potential problems, such as hypoglycemia, hyperglycemia and glucose variability. • Glucose pattern insights (with and without glucose readings) to make critical decisions easier with an inbuilt likelihood of Low Glucose Algorithm. One of the visual reports is the Ambulatory Glucose Profile (AGP) that collapses a patient's glucose readings from several days/weeks into a representative 24-hour graph making it easier to visualize glycemic patterns. AGP provides 2 sets of comparative patient glycemic data at a glance: a. Variations within a day (high and lows), that can be compared to a target range. b. Day-to-day variations denoted by breadth of the profile.	
15.	**Examination Lamp Pedestal** ➢ Should be screwless design in compliance with DIN 1964 - 4 – 2008 -12 ➢ Shadowless LED O.T Light with glare free German lighthing technology ➢ Spring arm with German springs ➢ Variable CT Model (4000K – 5000K IN 4 Steps) ➢ Red tonning color enhancement ➢ Unique paint technology for protection against rusting ➢ German osram modules (With LED'S Life > 50000 Hrs) ➢ Temperatures limiting circuits ➢ Specially designed medical lenses for greater depth and cool lighting effect ➢ Should use clean technology that does not contain halogen, Lead cadmium, CFCS , POPS , VOCS OR Mercury content ➢ The dome should be round in shape ➢ Sterilizable handles; Standard pack of two [2] handles should be provided with each unit. Type: Mobile No. of Domes: 1 Light intensity in 1m distance: 80000 or more No. of LEDs: 19 or more Color Temp: 4000-5000 k Service Life of LEDs: Approx x 50,000 Hrs Color Rendition Index (Ra): 95 Temp at Surgeon's Head: $\leq$ 1 Degree Color Rendition Index (R9): Approx 96 Light Head Diameter (mm): approx 280 Spot Diameter (mm):Approx 150 mm Supply Voltage: 220-240 V Lighting Depth (L1 + L2) mm: 750-1200 Sterilizable Handle: Required LED's Life: 50000 Hours Weight: Not more than 15 kg	50
16.	**Pulse Oximeter Table Top** Monitor should measure SpO2 & should be upgraded to Temperature High Contrast LCD Display of atleast 5". Plethysmograph Display with auto gain for highest resolution Trend Tabular for 24 hours	10

	Alarms for individual parameter and should be selectable Rechargeable battery Light Weight & portable SpO2 Should be Nellcor Technology Should have optional temperature with skin probe. Accessories should include : Adult SpO2 Probe – 1 no. Paediatric SPO2 Probe – 1 no. Power Cable – 1 no.	
17.	S. S. Trays with Lid (Medium)	2000
18.	S. S. Trays with Lid (Small)	2000
19.	S. S. Trays with Lid (Large)	2000
20.	S. S. Trays without Lid (Medium)	2000
21.	S. S. Trays without Lid (Small)	2000
22.	S. S. Trays without Lid (Large)	2000
23.	S. S. Kidney Tray (Large)	2000
24.	S. S. Kidney Tray (Medium)	2000
25.	S. S. Kidney Tray (Small)	2000
26.	S. S. Bowl Big	1000
27.	S. S. Bowl Small	1000
28.	C shaped oxygen hood	20
29.	Trans Urethral Resection of Prostate Set (T.U.R.P)	20
30.	Nasal Packing Forceps	200
31.	Proctoscope	100
32.	LED Head Lamp	30
33.	Uterine Sound	100
34.	Episiotomy Scissor	200
35.	Tissue cutting scissor	500
36.	Suture Cutting scissor	500
37.	Lead Gloves	20
38.	Lead Letters (R & L)	50
39.	X- Ray View Box	50
40.	Tongue Depressor S.S. Adult	500
41.	Tongue Depressor S.S. Paediatric	500
42.	Otoscope	100
43.	Knee Hammer	100
44.	Cuscus Speculum Large	100
45.	Cuscus Speculum Medium	100
46.	Cuscus Speculum Small	100
47.	Weighing Scale Digital Adult	1000
48.	Weighing Scale Digital Child	1000
49.	**LED Vision Chart** **Specification** Display size: 18.5 inches (Diagonal) Resolution: 1280 x 720 Pixel Luminance: 200 cd/m2	07

	Connectivity: USB, MMC Power Supply: 100 VAC to 240 VAC Frequency: 50 or 60 Hz Power consumption: 21 watts Power save mode: Enables when no key press for 2 hours Remote control : IR -wide operating range Battery: 2 x AAA Overall size: 350.9 (H) x 447.2 (W) x 182.4 (D) mm	
50.	**90 D Volk Lens** **Specifications:** Used for Retina examination 74 degree/89 degree field of view 0.76x image maginification 1.32x laser spot magnification 7 mm working distance	02
51.	**Streak Retinoscope** **Specifications** • Simple sturdy construction, • Compact and light weight • Retinoscope should be adjustable for preferred eye alignment • Streak should revolves 360 degree without stops • Width of streak should be controlled by smooth up and down action of thumb slide • Instrument should includes a power adaptor • Rechargeable battery handle and charger **Technical Specification** Working distance 50 cm Lamp 4 V 0.9A / 3.6 W Length 230 mm Weight 150g **Standard Accessories** 1. Packing case (1) 2. Power adaptor (1)	08
52.	**4 mirror Gonioscope** 4 X 64 degree mirror angles 1.0 X image magnification 1.0 X laser spot size 15mm (flange)/ 8.4 mm (no flange) contact diameter Allows for quick exam with maximum patient comfort No flange/ No fluid version is ideal for dynamic and identation/compression gonioscopy.	05
53.	**Trial Set with Trial Frame** **Specifications:** • Full Diameter Trial Lens Sets- combination of spheres, cylinders. • Convex & Concave Spherical Lenses range 0.12–20D with stepping of 0.25D. • Convex & Concave Cylindrical Lenses range 0.25–06D with stepping of	08

	0.25D. • Accessory lenses like prisms, blocker, Stenopic slit, Maddox rod, red-green lenses, pin hole, occlude. • Prisms range 1D–12D. • Mounted in metal rims that have the lens power engraved. • Supplied with a wooden case. • Should contain an all-metal durable Trial Frame which is lighter and comfortable to wear. • Should fit Trial frame adult and pediatric size. • Cross cylinder 0.25 and 0.5. • Frame light in weight with a comfortable fitting nose. • Adjustable both horizontally & Vertically. • The compartment of the cylindrical lens should be capable of smooth and accurate rotation. • The dial indicating the axis should be properly positioned to avoid error in the prescription of axis of cylindrical lens. • Adjustable PD from 54-58mm.	
54.	**Prism Bar Set** It has two vertical and horizontal sets of prisms for evaluation of squint	02
55.	**Titmus fly test for stereopsis** **Specification** Titmus Stereo Fly Test is a widely used method for assessing stereoacuity, the ability to perceive depth with both eyes. It utilizes polarized 3D images, typically presented in a booklet, and requires the patient to wear polarized 3D glasses. The test includes: Fly: A large-disparity housefly is used to assess gross stereopsis. Animals: Animals at varying disparities are presented. Circle patterns: Circles are shown at varying distances, allowing for the measurement of fine stereopsis.	01
56.	**Infant Radiant Warmer for Neonates** (a) Should be operated in servo & Manual mode of operation. (b) Temperature probe should be thermistor based interchangeable probe & bio compatible. Temperature display should be bright numerical LED display. (c) Alarm should be present & should be for: i. High temperature (more than 0.5^0 difference) ii. Low Temperature (more than 0.5^0 difference) iii. Temperature probe failure. iv. System failure v. Heater failure vi. Over temperature vii. Power failure. (d) Halogen examination lamp (e) Timer/ Apgar Timer (f) Should have side mounted Monitor- tray attachment. i. Pole for syringe/Infusion pump. ii. Stainless steel IV Stand (g) Unit should be mobile with swivel castors fixed with locking system.	05

	(h) Should have a battery back-up to show baby temperature during power failure. (i) Working temperature range should be 25^0 C to 40^0 C (j) Heater output control range(Manual) 0 to 100% with increments of 10% (k) Accuracy should be +/- 0.2^0C (l) Resolution should be 0.1^0 C (m)Accuracy of probe interchangeability should be +/- 0.1^0C (n) Voltage should be 230V +- 10% at 50Hz (o) Maximum power consumption 800 W maximum. (p) Heater power should be 600 watts (q) Heating element should be quartz infrared heater with parabolic reflector (r) Automatic heater power reduction to 60% after 10 min in manual mode for baby safety. **Bassinet (Baby bed)** a) The neonatal bed should acrylic with removable & washable mattress b) Should have bed tilting facility. c) Should have acrylic side panel with hinges. d) Bassinet should be mobile with swirl castors & brake. e) Below bassinet- Storage shelf.	
57.	**Suction Machine Portable** • Should have negative pressure adjustable from 0.03 mpa • Negative pressure range should be 0.08Mpa+/-0.01Pa • The instantaneous pumping speed should be ≥ 15L/min • The noise should be ≤ 65dB • Reservoir bottle should be more than 900 ml • It should be light weight, weighing not more than 3.5 kg	10
58.	**Blood warmer** • **Temperature Settings:** ABM blood warmers to allow for temperature adjustments between 33°C and 42°C (or 95.0°F to 107.6°F). • **Warming Up Time:** Warming up time from 20°C to 36°C can be around 2 minutes. • **Power Requirements:** Power supply can be AC 100-240V, 50/60Hz. Power consumption can vary using 60-100 VA. To have a 12V DC output for certain functions. • **Overheat Protection:** ABM blood warmers to have overheat protection, cutting off the power supply when the fluid reaches 46°C. • **Dimensions and Weight:** Dimensions may vary depending on the model. ABM fluid warmer to have dimensions of 85×65×175mm and a net weight of 1.2 kg. The ABM FW11 to have dimensions of 18.3 X 8.6 X 5.7 cm. • **Alarm System:** ABM blood warmers to have visual and acoustic alarms for low	2

	temperature, overheat, system errors, and door open warnings. • **Other Features:** To have one-touch control, permanent self-tests, and advanced dry heating technology. To be designed for continuous operation. • **Applications:** ABM blood warmers to be primarily used in hospitals and healthcare settings. They are crucial during massive transfusion events to prevent hypothermia. They ensure that blood and fluids are at the appropriate temperature before being administered to patients. 2 Peripheral nerve stimulator with needle	
59.	**Peripheral nerve stimulator with needle** **1. Stimulation Characteristics:** • Constant Current Generator: To ensures a stable and predictable electrical stimulus. • Monophasic Rectangular Output Pulse: The current to flow in one direction only, with a rectangular shape. • Pulse Duration: Adjustable between 0.1 and 1.0 ms, with shorter durations (0.1ms) more effective for motor fibers and longer durations (1.0ms) for sensory fibers. • Stimulation Intensity: Adjustable range of 0-5 mA, with a recommended range of 1-5 mA. • Frequency: Adjustable, with common frequencies like 1 Hz, 2 Hz, and 3 Hz. • Impedance Measurement: A range of 1 kΩ – 60 kΩ or more is suitable for target stimulation current > 0.5 mA. **2. Display and Functionality:** • Digital Display: To show the actual current flowing through the patient and the selected current. • Impedance Display: Recommended to allow the operator to monitor circuit integrity. • Safety Features: Should have features like circuit disconnection alerts, impedance alerts, low battery warnings, and malfunction alerts. • Test Function: A pause function to interrupt stimulation without delivering impulses. • LCD Display: For stimulation current, impulse pattern, pulse width, and impulse amplitude. • Handle and Accessories: • Percutaneous Handle: A monopolar or bipolar handle for localized nerve stimulation without puncturing the nerve, which should be autoclavable/ETO sterilizable. • Leads: Clearly marked to distinguish between cathode and anode, with modern machines only connecting to the cathode. • Cable: For invasive and percutaneous nerve stimulations. • Battery: Should be a reliable and easily replaceable power source. • General Specifications: • Weight: 500 gm or less.	20

	• Additional Considerations: • Sterilization: The percutaneous handle should be autoclavable or sterilizable via ethylene oxide (ETO). • Patient Safety: Ensure the device has safety features to prevent accidental overstimulation or injury. 20 Peripheral nerve stimulator.	
60.	**Syringe Pump** • Syringe Pump stackable front loading with drug library • Power supply AC 220V to 240V 50Hz • Battery backup 8 hrs @ 5ml/Hr flow rate on 50 ml syringe • Power consumption 7VA • Applicable syringe 2ml, 5ml, 10ml, 20ml, 30ml, 50/60ml syringes from JMS, Braun, Dispovan, BD and Custom Brands • Automatic syringe size detector • Custom Syringe programmable • Programmable to any brand of syringe on field • Flowrate Range 0.01 – 350 ml/Hr (2ml syringe) – 750 ml/Hr (5ml syringe) – 1000 ml/Hr (10ml syringe) – 1800 ml/Hr (20ml syringe) – 2500 ml/Hr (30ml syringe) – 3000 ml/Hr (50ml syringe) • Infused volume 0.1 – 9999ml • Elapsed time display of elapsed time from 00.00 to 199.59 hrs • Accuracy Mechanical Accuracy±1% Including Syringe ±2% • Bolus Purge Bolus & Auto Bolus(hands free bolusoperation) • BolusRate 0.01 – 350 ml/Hr (2mlSyringe) – 750 ml/Hr (5ml Syringe) – 1000 ml/Hr (10mlSyringe) – 1800 ml/Hr (20mlSyringe) – 2500 ml/Hr (30mlSyringe) – 3000 ml/Hr (50mlSyringe) • Auto BolusVolume 0.1ml to 10 ml in 0.1 ml increments • Sequential Mode Sequential program of Ten different flow-rate at different time or volume target • Dosage TaperUp/Down Available, 10 different programs are available • KVO 0.0ml/Hr to 9.9ml/Hr in 0.1 ml increment. • Occlusion Pressure 9 steps selection • Target reached (time & volume), Occlusion, Syringe not engaged, Syringe holder disturbed during infusion, Near to Empty, Near to target End of syringe, Battery mode, battery • Audio & Visual Alarms • low, Internal mechanism fault, KVO Mode, Bolus Mode, PCA Mode, PCA probe disconnected, Patient end drug line disconnected alarm, Operation on mains / battery, Battery low, Mains Over voltage alarm, Mains low voltage alarm • Alarm Indicator Viewable from 3 sides • Modes Flow Rate only • Flow Rate & Target volume Flow Rate & Target Time Target volume and	10

	target time Drug Library Mode • High pressure Mode • Drug Library • Available with 100 drug list • Flow rate calculation based on patient weight, drug concentration and drug dosage. • Patient weight in Kg. • Drug concentration in mg/ml & mcg/ml. • Drug Dosage mg/kg/hr, mg/kg/min, mcg/kg/hr, mcg/kg/min • Anti Bolus Function Available • Event log with RTC Available • PCA (Optional) Should be upgradeable to PCA at not more than 20% of cost of machine • PCA dose can be preset from 0.1 to 10ml Minimum locking time interval between two Doses, Time interval from 0 - 24hrs in steps of 1 min, Delivered and non delivered doses display • Space occupied by machine Occupy less space of less than 2 liters • Weight Strictly portable and weight 1.85kg (including fixing clamp- rear side) • Syringe sized eduction Automatic with manual confirmation • Syringe brand and size indication Continuous display of syringe brand and size for quick view • Display 4x20 LCD & 7 Segment Display for viewing in dark ICUs from long distance, LED Displays for machines current Ok status indicatioin • Stackable Stack up to 4 machines in a single pole • RUN/ STOP/ ALARM • Indication Safety Test • Long distance quick view indication of status from 30 feet • EN ISO 13485:2012, EN 60601-1:2006/AC2010: (3rd edition), EN 60601-1-2:2007/AC: 2010, EN 60601-1-6:2010, EN 60601-1-8:2007, EN 60601-2-24:1998. • Certification CE, ISO13485:2016,BIS, CDSCO • Fixing Can be fixed horizontal and vertical pole (Optional) • Make Made in India • QR Code Scanning to Track Asset Movement through GPS Location and take the effective utilization of the machine used hours single report. • Drug Lable 840 with pre defient 30 drug name with international colour code. 05	
61.	**Video Laryngoscope (Handheld)** • Type of Camera: CMOS • Lux of camera: Greater than 800 • Resolution of camera with anti fog lens: 2.0 M Pixels • Display anti shatter protection: LCD • Size of Display in inches: 3.5 inches or more • Screen movement: up & down, left & right • Light source: LED • Should have facility to insert all sizes of endo tracheal tube • Source to record images and videos: USB Drive	01

	• Spare USB hard drive for backup to be provided • Image out put: • HDMI port for connectivity to external monitor • Type of Blades: Reusable • Size of Blades: Mac 1,2,3,4,5 • Material of blades: SS (Medical grade) • Movable stand to hang the screen to be provided • Water proof protection: Required • Source for power of system: Rechargeable Battery • Battery backup in hrs: 3 or more • Should be liquid immersible for complete disinfection. • Protection cap to be provided. • Compliance to Medical Device Rules (MDR) 2017 as amended till date: Required • Availability of valid drug licence for the product issued from the competent authority defined under Drugs and Cosmetic Act 1940 and Rules made there under as amended till date: Required • Availability of test report from central govt/ NABL/ ILAC accredited lab to prove conformity to specification indicated including safety requirements: required. • Certification of product: European CE/ BIS • Conformity of Manufacturers Certification: ISO 9001 • Conformity of quality system for medical devices: ISO 13485 • Submission of all necessary certifications, licenses and test reports to the buyer at the time of bid submission or alongwith supplies as per buyer requirement: Required • Copies of certifications of manufacturer, Certificates from manufacturers for bought out components and material test certificates to be submitted to buyer on demand after placement of order. • Warranty in years: 3 • Preventive maintenance and calibration should be performed as per required standards during warranty period. • Should be supplied complete with accessories, consumables, user and service manuals, certificates at time of installation.	

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