INDIRA GANDHI INSTITUTE OF MEDICAL SCIENCES

SHEIKHPURA, PATNA – 800 014.
(A Super specialty Autonomous Institute of Govt. of Bihar)
Tel.: 0612 – 2297631, 2297099, Fax: 0612 – 2297225, Website: www.igims.org

NIT No 14 /2015-2016 / Bio Medical Equipment// IGIMS/STORE

TENDER NOTIFICATION

Sealed tenders in two Packet system (Technical & Commercial bid) are invited from eligible and qualified manufacturers or their authorized distributors / agents for supply and installation of following biomedical equipments/instruments of the Institute under different Groups;-

Group-A: CTVS a) Heart Lung Machine with Accessories.-01 b) Cell Saver-01 c) Reservoir Cooler/Heater (TCM)-01 d) Sternal Saw- 01 e) Redo Sternal Saw- 01 f) Cardiac Stabilisers-04 g) ACT Machine-02no. h) Invasive Cardiac Monitor-06 i) Autoclave-01 j) Defibrillator-02 k) Surgical Loupe-02 l) Consumable (CPB accessories) m) External Pacemaker- 04 n) IABP(Intra Aortic Balloon Pump) - 02	**Group – B: Orthopedics & Trauma unit** a) Arthroscopy System-01 b) O.T. Table for Orthos Surgery & Neuro Surgery - 03 c) C- Arm System - 02 d) Power Drill(Battery Operated)-02 e) General Instruments **C: R.I.O.** a) Vitrectomy Machine with LIO - 01 no. b) Operating Microscope-01 **c)** Phaco Emulsification System - 01 **D: Cardiology** a) Cardiac Cath Lab.(Mechanized Single Plane System) – 01 b) 2 D Color Doppler Echo Machine-03 c) IABP(Intra Aortic Balloon Pump) - 01
E: Neurosurgery a) Operating Microscope-01	**F: ENT** a) Endoscopic Sinus Surgery-01 b) Audiometer-01
G:- Nephrology a) Hemodialysis Machine - 03 nos. b) R O System.01	**H: Medical College**. Equipment/ Instruments for F M T , Pharmacology and Physiology

Last date of submission of completed bidding documents through registered /Speed Post/ Courier only is **23 / 09/ 20 15 till 4.00 P.M.** and technical bid will be **opened on 24 / 09 / 2015 at 3.30 P.M.** in the conference hall of the Institute.

The details terms & conditions and technical specification of the equipment may be downloaded from Institute official Website: www.igims.org. The undersigned reserve the right to accept or reject any or all the tender without assigning any reasons.

Sd/-
Prof. (Dr.) N. R. Biswas
Director,
I.G.I.M.S. - Patna

BIDDING DOCUMENT

TENDER NOTICE No.: 14/ 2015 - 2016 / Biomedical Equipt./ IGIMS / Store

Supply, Installation & Commissioning of Bio-Medical Equipments / Instruments

TENDER NOTICE No.: 14 /2015 – 2016/ Bio-Medical Equipments / IGIMS / Store

Issued to:

Cost of Document: Rs.

Paid By: Cash: Receipt No.:

Demand Draft: No.:

Issuing Bank:

(Authorized Signatory)

INDIRA GANDHI INSTITUTE OF MEDICAL SCIENCES,
SHEIKHPURA, PATNA - 800014.

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IMPORTANT DATES

Last date for Purchase of Bidding Document	Can be downloaded from Institute website.
Last date for submission of Technical bid.(Hard copy)	23/9/2015 up to 4.00 P.M. registered/speed post/ Courier only
Date of opening of technical bid	24/9/2015 at 3:30 P.M. in conference hall IGIMS, Patna.
Date of demonstration of equipment	To be informed to the qualified bidders qualifying after opening of technical bids.

INDIRA GANDHI INSTITUTE OF MEDICAL SCIENCES,
SHEIKHPURA, PATNA -800014 (Bihar, India)

Sl. No. OF TENDER: _____

FILE NO. : Tender No.: _____

Tender form issued in favour of:

_____

_____

Dear Sir,

1. I/We hereby submit our tender for the
_____
_____

2. I/WE are enclosing herewith the Demand Draft No…… dated……..……. for **Rs. /-** drawn in favour of **Director I.G.I.M.S. - Patna (payable at Patna)** towards **EMD / Bid Security.**

(EMD AND COST OF BIDDING DOCUMENTS MUST BE SUBMIITED IN SEPRATE ENVELOP.TENDERS NOT ACCOMPANIED WITH EMD / BIDSECURITY ALONGWITH THE TECHNO-COMMERCIAL BID SHALL BE SUMMARILY REJECTED).

3. I/We have gone through all terms and conditions of the tender documents before submitting the same.

4. I/We hereby agree to all the terms and conditions, stipulated by the I.G.I.M.S. - Patna including delivery, warranty, penalty etc. Quotations for each group are being submitted under separate covers, and sheets and shall be considered on their face value.

5. I/We have noted that overwritten entries shall be deleted unless duly cut & rewritten and Initialled.

6. Tenders are duly signed and stamped.(No thumb impression should be affixed)

7. I/We undertake to sign the contract/agreement, if required, within 15 (Fifteen days) from the date of issue of the letter of acceptance, failing which our/my EMD/Bid deposited may be forfeited and our/my name may be removed from the list of suppliers

Yours faithfully,

(Signature of Bidder with full name and address)

CHECK LIST FOR TERMS AND CONDITIONS

A.: **To be filled by the bidder and submitted along with the Technical Bid.**

Sl. No.	Terms & Conditions as per Bidding Document	Page No.	Remarks
1.	**Status of Bidder:** • Manufacturer or Authorized Agent of the Manufacturer • Whether Public Undertaking, Public Ltd., Private Ltd. Company or Proprietary Firm/partnership firm (Please attach Notary certified **MANUFACTURER'S AUTHORISATION FORM as per FORMAT placed at Annexure – III)**		
2.	**Power of Attorney as per Annexure - V** in favour of person to sign, submit and negotiate the bid.		
3.	Certificate towards market standing of minimum 05 years in the area of supply and or maintenance of bio-medical equipments.		
4.	Certificate for sole ownership / partnership		
5.	Statement of financial standing from bankers		
6.	Statements of turnover per year for last three successive years duly certified by the Chartered Accountants.		
7.	**Notary certified User List** (List of Govt. / Semi Govt., Reputed Pvt. Hospital) where quoted model of the items has been supplied and installed.		
8.	**Notary certified Supply** order copy (Minimum 3nos. or more) issued by Govt./Semi Govt.//Reputed Pvt. Institutions/organization for the quoted items. (same model)		
9.	**Notary certified Performance certificate** of the same supplied machine (of quoted make and Model) issued by **Head of the deptt. or Institution** after a minimum period of six months of installation.		
10.	Prerequisite (if any) for installation of the Machine, if any, to be provided by the Institute.		
11.	Whether rates quoted are inclusive of all taxes or not.		
12.	Whether rates are quoted as per format mentioned in the Bidding Document or not.		
13.	Affidavit to the effect that the bidder is not blacklisted by any Govt. agency or have no pending case either Civil or Criminal against them.		
14.	Affidavit, to the effect that the bidder is not supplying the quoted item(s) to any other Govt. / Pvt. Organizations / Institutions / Hospitals at the rate lower than the rate quoted against this tender.		

15.	**Quality Assurance Certificate** like ISI, ISO-9002, IP/BP, CE, FDA (US) or any other (please specify)		
16.	**Bid Security** amount deposited is enclosed or not. If yes, please mention the details.		
17.	**Original Technical Catalogue** of the quoted model		
18.	Certificate, to the effect that bidder will maintain the quoted item(s) during Warranty period of three years including all spares, accessories, consumables etc., (Please mention the name of the item / items with price, which are not supplied by the bidder free of cost with frequency of replacement)		
19.	Certificate, to the effect that bidder has quoted its rate for Comprehensive Annual Maintenance Contract inclusive of labour, spares, consumables, accessories etc. on per year basis for a further period of seven years after expiry of warranty period of three years in the **price bid**. (Please mention the name of the item / items with price, which are not supplied by the bidder free of cost with frequency of replacement during Comprehensive Annual Maintenance Contract period in the price bid)		
20.	Acceptance of all terms / conditions towards **after sales / services** as mentioned in the bidding document.(Clause No- 13 of " Instruction to Bidder " & clause no-3, 4 and 5 of Condition of contract.)		
21.	**Compliance Statement** with relation to the technical specification as mentioned in the bidding document duly supported by the original catalogue. The bidder must quote specification in the compliance column mere writing" Complied shall not be accepted.		
22.	**Compliance Statement** with relation to the terms & conditions as mentioned in the document.		
23.	**PAN and copies of Income Tax Returns** for the last three years.		
24.	Duly attested copy of sales tax/Vat registration certificate.		

B: To be filled by the Bidder and submitted along with Price Bid

Sl. No.	Terms & Conditions as per Bidding Document	Page No.	Remarks
1.	**Item wise price for the item(s)** as mentioned in the Bidding Document and as per format attached as **Annexure – I(a) or I (b)**		
2.	**Rate for Comprehensive Annual Maintenance Contract** as per terms & conditions mentioned in the Bidding Document and as per format attached as **Annexure - II**		

Note: If the above-tender details are not mentioned and required documents are not attached at appropriate places, the offer of the bidder(s) shall be summarily rejected. Hence, bidder(s) are advised to go through the bidding document carefully and tender be prepared with all the required documents to avoid rejection of offer.

(Name of the Bidder with signature & seal)

ELIGIBILITY CRITERIA

01	Manufacturers or their authorized dealers/Indian subsidiaries/direct importers having a place of business in any of the States of India are eligible to participate in this tender.	Mentioned Page no.
2	The bidder and manufacturer of the equipment offered should be in the business of the supply and installation of same / similar equipment for the last five calendar years.	
03	(a) The manufacturer should have completed at least 05(Five) nos. installations of the quoted items in Govt. /Pvt. Institutions /Hospitals in India. The installations mentioned by the manufacturer in their offer must be functional and performance certificate for the same issued by the user concerned also be attached with the offer. (b) The bids quoted as the authorized representative of the manufacturer meeting the above criteria 02 (a) should have also supplied and installed at least 03(Three) nos. installations of the quoted items in Govt. /Pvt. Institutions/ Hospitals in India in last five years from the last date of submission of tender. The installations mentioned by the authorized representative in their offer must be functional and performance certificate for the same issued by the user concerned also be attached with the offer.	
4	The Bidder should be public undertaking /Autonomous Body /Public Ltd./Pvt. Ltd. Company or proprietary firm /Partnership Firm and should be in medical equipment business since last five years in India. The Bidders having manufacturing facility in their name in India for the majority of the items offered by them shall be given preference.	
5	The Bidder (manufacturer or their authorized agent) should have had average annual financial turnover of Rs. 50 Lakh during the last three years ending s 31st March 2015.	
6	Bidders who have the capability to attend repairs of these equipment within the time mentioned in this bidding document and who are willing to provide stand by equipment or replace the faulty equipment if the repair/down time extends beyond 72 hours from the time of reporting of the fault within the next 48 hours (total down time should not exceed 5 days in one instance). The bidders who have the capability to ensure the uptime mentioned in this document (Documentary proof shall be submitted on the after sales facilities and expertise of the bidder.)	
7	Bidders are not offering the equipment of a firm /company that has been blacklisted by Indira Gandhi Institute of Medical Sciences – Patna or blacklisted/debarred by any other State / Central Government's organization.	

Note:

- Notwithstanding anything stated above, the Institute reserves the right to assess the Bidder's capability and capacity to perform the contract satisfactorily before deciding on award of contract, should circumstances warrant such an assessment in the overall interest of the purchaser.
- The Institute reserves the right to ask for a free demonstration of the quoted equipment at a pre determined place acceptable to the purchaser of technical acceptability as per the tender specification, before the opening of the price tender.

INSTRUCTION TO BIDDER

GENERAL INSTRUCTIONS T0 BIDDERS

1. **Tendering System**

The tenders/Bids are to be submitted in two Parts i.e. **Part - I & Part II**.

PART - I titled as TECHNICAL BID shall contain the complete technical specifications and details on the competency of the bidder and also the commercial bid package with terms and conditions of supply, warranty, after sales service etc. (Except Price Bid Form). Apart from the documents and signed copy of the purchased tender document, the necessary enclosures should be submitted in this technical bid. In short, the technical bid should contain all the necessary documents to prove the technical competency and capability of the bidders for supplying and installing a trouble free equipment meeting the quality standards and technical specification and the ability of the bidders for providing efficient after sales service to the satisfaction of the Tender Inviting Authority and the user institution.

PART - II titled as per format PRICE BID

2. The tender offers, duly filled, shall be submitted in sealed covers for **technical**. Such covers shall be super scribed as **"Tender No……. (here mention the tender no as specified) TECHNICAL BID for supply of ……..... (here mention the name of the equipment**

3. Quantity of items may increase or decrease. Director, I.G.I.M.S. - Patna reserves the rights to purchase different sub items/ components of items from different bidders.

This rate Contract will be valid for one FY andrepeat Supply Order will be placed as per requirement of the deptt. of all the quoted and approved items.

4. The "Bidding Document" along with terms and conditions, technical specification can be obtained from the office of the Store Officer, IGIMS, Patna on payment of Rs. 2000/-(Rs. Two thousand only) Non – refundable for each Group either by cash or demand draft favouring Director , IGIMS, Patna payable at Patna.

5. The " Bidding Document" can also be downloaded from institute website www.igims. Org.. In case, downloaded bidding document is used ,Bidder(s) have to submit the cost of the Tender Document alongwith the completed documents in the form of demand draft in favour of Director , IGIMS, Patna, payable at patna towards cost of the " Tender documents" Bidder is required to attach seprate D D for the same in a seprate envelop super scribed with " cost of bidding document" if the cost of tender document is not submitted by the bidder, his offer shall be outright rejected .

6. Last date for submission of bidding document is 23/09/2015 up to 4.00PM and will be opened on 24/9/2015 at 3.30PM.

7. **Earnest Money Deposit (EMD):**

Earnest Money2% of the cost of Equipment required to be submitted along with tender by Demand Draft from any scheduled Indian Bank (valid up to one year from the date of technical bid opening.) only along with the tender favoring Director, I.G.I.M.S. – Patna (payable at Patna). No interest is payable on EMD/ Bid security.

b. Bidder may quote more than one/several models. In such a situation EMD will be payable on the basis of highest priced model.

c. EMD of the unsuccessful bidders will be returned to them at the earliest after expiry of final bid validity and latest on or before the 30th day after the award of the contract without any interest.

d. EMD must be submitted in separate sealed envelope and endorsement of the same with DD number & date Bank Guarantee No. and its validity period be made with technical bids without amount stating that the same has been complied with price bid. If same is later found not enclosed tender will be cancelled for the party.

e. Non- submission of sufficient EMD along with the Technical Bid shall be one of the primary reasons for rejection of the offer in the first round**.**

f. Cheque, Cash payment, Money Order, Fixed deposit etc will not be accepted as EMD.

g. Public Sector Units within the State or State micro, small and medium enterprises registered with Govt. are exempted from remittance of EMD subject to submission of valid documents.

h. The EMD shall be in one of the following forms:
i. A demand draft in favour of Director, I.G.I.M.S. – Patna (payable at Patna);

OR

ii A Bank Guarantee issued by a nationalized/ scheduled bank locted in India, in the form prisecrived in the tender document as Annexure- IV (valid up to one year from the date of technical bids opening) Bank Guarantee in any other format will not be acceptable and render the bid non-responsive.

iii. The successful Bidder's EMD will be discharged upon the Bidders signing the contract and furnishing the performance security. The EMD deposited in the form of DD of the successful Bidder can be adjusted towards the security deposit payable.

9. Bidder(s) should mention the DGS & D registration, if registered, and attach photocopy of DGS &D registration certificate Photocopy of Income tax & sales tax clearance certificate should be enclosed.

10. For Imported Goods, Indian Agency Commission must be declared in financial bid.

11. The Bidder's shall have to submit the following documents (Certified by Notary) in technical bid: -

a. User List (List of Govt. / Semi Govt., Reputed Pvt. Hospital) where quoted model of the items has been supplied and installed.

b. Performance certificate of the same supplied machine (of quoted make and Model) issued by **Head of the deptt. or Institution** after a minimum period of six months of installation.

c. Prerequisite (if any) for installation of the Machine if any to be provided by the Institute.

d. If the manufacturing company and/or its Indian agent (for Foreign manufactured) have authorized some agency for participation in this tender for a limited period than in that case they (Manufacturer / Indian agent) shall have to submit an undertaking duly notarized by Public notary that if their tender is selected they shall be solely responsible for compliance of all the terms and conditions mentioned in the bilateral agreement for purchase and subsequent supply order even if their authorized agent is changed. Any tender offer without such certificate duly certified by public notary shall be rejected in technical scrutiny itself.

e. Bidder must submit a compliance checklist along with the technical bid itself.

f. (Any tender offer without submission of above mentioned document (i.e. a to e) shall be rejected during technical scrutiny**.)**

g. If any new System/ Latest model machine is a launched in the market and seller has not installed such quoted models they should submit an undertaking that he has not installed such models previously (Notarized by Public Notary). . They may submit supply order / performance certificate of previous model, which was recently installed by them.

12. <u>Installation & site plan</u>:-

Requirement regarding site/location etc for installation of equipment, if any, should be mentioned in the tender. Time required for installation of system after delivery must be mentioned. In case of delay in

installation institute will have right to charge liquidated damage. Specify the following points for installation of the System: -

a. Total power consumption along with break up of main System and Accessories.
b. Whether the System needs uninterrupted power supply where ever applicable.
c. Maximum tolerated transfer time in case of interruption of power supply.
d. Whether the System needs any humidity control device.
e. Whether the System needs any separate power line/isolation Transformer.
f. Does the System need the electrical shielding?
g. Does it require special civil works for installation?
h. Whether Air conditioner is an essential requirement for the system.
i. Does it require any special civil works for Installation?

13. <u>After Sales Service Conditions</u>:

a. The Institute is in the pursuit of ensuring excellent after sales service for every user in respect of the equipments supplied under this contract. The after sales services terms and conditions will be strictly enforced and those Bidders who are willing to support the Institute in its endeavor to provide trouble free operation/performance of the equipments for the prescribed period need only participate in the tender.

b. The after sales service shall be performed during the warranty period and also during the Comprehensive Maintenance Period (CMC)/ Annual Maintenance Contract, if awarded. The detailed terms and conditions for after sales service are mentioned hereunder.

c. <u>Guarantee/Warranty Terms</u>:

i. The successful Bidder has to warrant that the Goods supplied under this Contract are new, unused, of the most recent or current models and incorporate all recent improvements in design and materials unless provided otherwise in the Contract.

ii. The successful Bidder further have to warrant that the Goods supplied under this Contract shall have no defect arising from design, materials or workmanship (except when the design and/or material is required by the Tender Inviting Authority's specifications) or from any act or omission of the successful Bidder, that may develop under normal use of the supplied goods.

iii. All the equipments including the accessories supplied as per the technical specification as mentioned in the bidding document should carry comprehensive warranty (including all spares, accessories and consumables) for a period mentioned in this document in the first instance. During this period, the successful Bidder shall replace all defective parts / accessories / consumables and attend to all repairs/break downs and undertake stipulated number of preventive maintenance visits to every user installation site. The cost of spare parts for all replacements has to be borne by the successful Bidder during the period of comprehensive warranty. The items which are not covered under warranty should be clearly mentioned along with rate of the items . If any spares / accessories / consumables etc. are not replaced by the bidder during warranty period, bidder should mention it clearly with name of the items with frequency of replacement and its rate

iv. On expiration of the comprehensive warranty period, the successful Bidder shall be willing to provide after sales support for an additional period prescribed in this document.

v. The prospective Bidder, who are not manufacturers, shall submit an undertaking from the Original Equipment Manufacturers (OEM) that they are willing to provide spare parts for the period of warranty as mentioned and also during the additional CMC/AMC period, if awarded. The OEM shall also assure continuity of service to their product, in the event of change in dealership or the Bidders – their existing dealers - couldn't provide service during the warranty / CAMC period. The undertaking from OEM is an essential document forming part of the Technical Bid, without which the tenders will be rejected summarily in the first round itself.

vi. After sales service centre in Patna (Bihar) preferably or at least in East India should be available as part of the pre-qualification and the Bidder shall provide proof of their capability to undertake such maintenance/repair within the stipulated time.

vii. The successful Bidder shall provide preventive maintenance as per the frequency mentioned in this document during the warranty period. The Bidder shall attend any number of break down/repair calls as and when informed by the institute authority.

viii. Upon receipt of such notice for repair/breakdown from the institute, the successful Bidder shall, within the period as specified in this document, and with all reasonable speed, repair or replace the defective goods or parts thereof, without cost to the Tender Inviting Authority.

ix. If the successful Bidder, having been notified, fails to rectify the defect(s) within the period specified mentioned in this document, the Tender Inviting Authority may proceed to take such remedial action as may be deemed necessary, at the successful Bidder's risk and cost and without prejudice to any other rights which the Tender Inviting Authority may have against the successful Bidder under the contract.

x. Failure to attend the repairs in time or failure to attend the stipulated preventive maintenance visit or failure to replace the defective equipments or to provide stand by equipment if the fault/down time exceeds the stipulated period or to ensure the stipulated up-time in an year shall lead to forfeiture of the performance security and/or may lead to blacklisting/debarring of the defaulting Bidder.

xi. The equipment which requires quality assurance test shall be done at free of cost immediately after installation, during the comprehensive warranty period, during the CMC/AMC period, by the demand of User and also when major spares are replaced.

xii. Any mandatory approval required for installation shall be obtained by the successful Bidder in liaison with the respective authorities.

xiii. The Bidder shall submit the parameters which require calibration and the frequency of calibration required.

xiv. The Bidder shall undertake on-site calibration of the equipment every year as part of the after sales service during the period of comprehensive warranty, CMC/AMC or on demand from the user.

xv. The Bidders shall also have to submit whether periodic replacements of consumable items are required for proper functioning of their quoted machine/Equipment? If yes they should submit the list of such consumables along with price list and frequency of replacement per year, if the same is not replaced free of cost during warranty / guarantee period.

xvi. An undertaking of the principal regarding continuity of after sales and services (CAMC) @ the agreement rate even in case of changes of Indian agent during the life span of the equipment, must be enclosed in the technical bid. Further, it will be the responsibility of the manufacturer Indian agent to get counter signature on the agreement to be executed with them by the principal.

Xvii. The offered warranty includes:

- Visits to the user institutions at frequencies prescribed as part of preventive maintenance.
- Testing & calibration as per technical/service/operation manual of the manufacturer or as per the period specified or as per the demand of the user.
- Quality Assurance tests (if applicable).
- The cost of labour for all repairs/ and all spares required for replacement during repairs all kinds of accessories, Probes, all types of sensors and transducers, Electrodes, Detectors, battery, battery for UPS, other vaccumatic parts etc wherever applicable and also the accessories and other devices supplied along with the equipments like stabilizer, UPS, AC, Computer, Compressor, Monitor, etc, which forms part of the equipment system, without which it cannot perform satisfactorily.
- The exclusion of warranty of any vital equipment parts will be compared with offers of other Bidders during evaluation of the bids and this may be taken into consideration in deciding the successful Bidder on the basis of expert advice.
- The Bidder shall provide up-time warranty of complete equipment as mentioned in this document, the uptime being calculated on 24 (hrs) X 7 (days) basis failing Warranty period will be extended for every additional day of down time equal to one week.
- All software updates, if any required, should be provided free of cost during Warranty period.

d. Comprehensive Annual Maintenance Contract:

- The decision to enter into CMC or AMC will be determined on the basis of cost and complexity of the equipment by the Tender Inviting Authority, at its discretion, prior to the expiration of warranty period.

- The Comprehensive Maintenance Contract (CMC) is otherwise an extended warranty. All the terms and conditions agreed by the successful Bidder for executing the comprehensive warranty of the equipment shall be extended during the period of CMC, only difference being the payment of CMC charges is absent during the period of comprehensive warranty.

- The cost of CMC, accessories and spares, reagents and consumables as in case may be quoted along with taxes applicable, if any. The taxes to be paid extra, to be specifically indicated. In the absence of any such stipulation the price will be taken inclusive of such taxes and no claim for the same will be entertained later.

- Failure/refusal on the part of the successful tender supplying/installing the equipments to enter into CMC with the Tender Inviting Authority, at the end of the Comprehensive Warranty Period, if the Institute, as the case may be, desires so, shall lead to forfeiture of performance security and may also result in the blacklisting/debarring of the Bidder.

- The successful Bidder shall also indicate the rates for the CMC in price bid form and such rates are binding on the successful tenders after the expiration of the warranty period. The yearly rates for CMC shall remain the one and the same as quoted in the price bid form for the extended years.

- Cost of CMC (excluding taxes, if any) will be considered for Ranking/Evaluation purpose.

- The payment of the agreed CMC charges will be made as per frequency for payment after satisfactory completion of said period, on receipt of service report/ break down report from the user.
- The Bidder shall also have to submit whether periodic replacement of consumable items are required for proper functioning of their quoted machine/Equipment? If yes they should submit the list of such consumables along with price list and frequency of replacement per year if the same is not included in quoted Comprehensive Annual Maintenance Contract charges per year.

14. Time Limits prescribed

Sl. No	**Activity**	**Time Limit**
a.	Installation & Delivery period	12 weeks from date of issuance of Supply Order
b.	Comprehensive warranty period	3 years from the date of successful installation.
c.	CMC period	7 years
d.	Frequency of visits to all User Institution concerned during Warranty/CMC	One visit every three months (4 visits in a year) for periodic/preventive maintenance and any time for attending repairs/break down calls.
e.	Frequency of payment of CMC charges	Every six months after completion of the Period.
f.	Submission of Performance Security and entering into contract	10 days from the date of issuance of Letter of Intent
g.	Maximum time to attend any Repair call	Within 24 hours.
h.	Uptime in a year during warranty as well as during CAMC period.	95% of 365 days.

15. Firm have to provide a minimum **UPTIME GUARANTEE** of 95% (95% of 365 Days) per year during the warranty period as well as during the Comprehensive Annual Maintenance Contract.

16. **While calculating the total unit price of the item / system to be procured, expenditure to be incurred in maintenance of the quoted item / system including all spare parts for a total period of seven years after expiry of the warranty period of three years shall also be taken into consideration. Accordingly, it is mandatory for the bidders to submit the rate for Comprehensive Annual Maintenance Contract (with spares) for a minimum period of seven years after the expiry of warranty period of three years.**

17. Supplier will submit undertaking for ensuring uninterrupted supply of spares during the total life span of the equipments.

18. Indian agency commission and Installation charge if any will be paid in Indian rupees after successful installation and demonstration of the equipments.

19. Principal's Invoice of the quoted items must be submitted with the quotations.

20. Proof of the official Indian agent certificate of the firm must be attached. (Notary Certified Photocopy)

21. In order to fully and optimally utilize the equipment, training to Para Medical Staffs and Doctors should be provided. In continuation to this training, separate maintenance training for the machine and the sub systems should also be given to the "Equipment Maintenance Engineer" and "Equipment Maintenance Technicians". All the financial commitments in this regard shall be met by the bidder(s).

22. Bidder(s) have to submit an affidavit to the effect that they have not supplied the offered item(s) to any Govt., semi Govt. / Pvt. Organization, Institution, Nursing Home etc. at the price lower than the price offered to I.G.I.M.S. – Patna.

23. All the claims regarding meeting the specifications shall be duly supported by appropriate, latest technical catalogues/brochures from the manufacturer. Simply stating that the equipment(s) meets the specifications is not sufficient and any such quotations will be summarily rejected. Computer printed documents or Photostat copy or laser printouts will not be accepted as technical catalogues / brochures.

24. Bidder might be required to demonstrate the system at the discretion of the institute.

25. **Notification of Award/Letter of Intent (LOI)**

a. Before expiry of the tender validity period, the Institute will notify the successful Bidder(s) in writing, by registered / speed post or by fax or by email (to be confirmed by registered / speed post immediately afterwards) that its tender for equipment(s), which have been selected by the Institute, has been accepted, also briefly indicating there in the essential details like description, specification and quantity of the goods & services and corresponding prices accepted. This notification is undertaken by issuing a Letter of Intent (LOI) by the Institute.

b. The successful bidder, upon receipt of the LOI, shall furnish the required performance security and submit an agreement in the prescribed format within ten days, failing which the EMD will forfeited and the award will be cancelled.

c. The Notification of Award shall constitute the conclusion of the Contract.

26. **Signing of Contract**

The successful bidder shall execute an agreement for ensuring satisfactory supply, installation, commissioning and the after sales service/support during the warranty period and during the Comprehensive Annual Maintenance Contract.

27. The Director reserves the right to accept or reject any or all tenders without assigning reasons.

28. The Director reserves the right to modify, add or delete any terms & conditions of the contract as and when required.

29. **Amendment of tender documents**:

a. At any time prior to the dead line for submission of Tender, the Institute may, for any reason, modify the tender document by amendment.

b. The amendment shall be notified and uploaded on the institute website www.igims.org only and such amendments shall be binding on them thereafter.

c. The Institute shall not be responsible for failure to inform the prospective bidders. Purchasers of tender documents are requested to browse the website of the Institute for information/general notices/amendments to tender document etc on a day to day basis till the tender is concluded.

30. The Dispute, if any, will be subject to Jurisdiction at Patna (Bihar).

Sd/-
Director,
I.G.I.M.S. - Patna

CONDITIONS OF THE CONTRACT

1. Clearance, Transportation, Forwarding & Handling Charges:

Clearance charges at point of Entry / Air Port and on ward transportation charges with Insurance upto I.G.I.M.S. - Patna will be borne by supplier's Indian Agent for which this Institute will not pay the charges.

2. Demurrage. Taxes & Octroi:

No demurrage charges will be paid by the Institute in case of delay on the part of supplier. However, this Institute will provide all necessary documents required for clearance / transportation of the goods and for exemption of the taxes/octroi for which supplier/Indian agent will have to intimate/furnish his requisition of document required, if any, well in advance. Octroi will be payable by supplier / Indian agent, if required.

3. Warranty Period:

a. The "**Complete System**" shall remain under warranty period of **three years** from the date of satisfactory installation. The Complete System should include the basic unit and allied supporting components like UPS, Computer System, Printer, De-ionizer, Dehumidifier etc to be supplied by the bidder along with basic unit.

b. During warranty period of three years, bidder shall provide at least **four maintenance visits per year** at regular interval for usual maintenance and supervision. If bidder fails to provide these maintenance visits at regular interval, a proportionate deduction in the form of penalty on pro-rata basis will be recovered from the bidder from the Bank Guarantee amount. In case the Bank Guarantee is not adequate, Institute shall have right to recover the losses / penalty from other sources as well.

c. Bidder shall also attend all breakdown calls within 48 hours of the receipt of the information from institute through fax/e-mail/mobile/sms etc.

d. During warranty period, **bidder** shall maintain and keep **95% uptime** per year of the "**Complete System**" as per calculation given below:-.

1 Year = 365 days
95% of 365 days = 347 Days per annum

e. The bidder shall compensate the uptime less than the specified above for **every additional day** of down time over and above 18 days stipulated above, warranty period will get extended by one week as penalty at no extra cost i.e. the extended penalty period will be equal to one week for every additional day of down time.

f. During warranty period, **bidder** will make the "**Complete System**" in satisfactory working condition. In case, any spare parts, accessories, PCB, consumables etc. needs replacement due to normal wear and tear, **bidder** will supply and install the same for which no additional payment is to be made with a validity to cover warranty period.

g. In case, the **bidder** is not able to provide services (and the items / accessories is not functioning as the reason thereof) due to natural calamity (act of God), Political unrest, Riot and fire at the user site, then in such a situation the warranty period will be extended by the period for which the item / accessories could not be operated because of supplier not been able to provide services.

h. During warranty period, in case of any alleged damage due to accident / human error, a committee under the Chairmanship of Director, I.G.I.M.S. – Patna with one member from the bidder and one member from the Institute will decide the authenticity of the claim. The decision of the committee shall be final and biding on both the parties.

4. **<u>After Sales Services</u>**: -

a. After expiry of the warrantee/Guarantee period of the equipment, the Indian agent will have to undertake the Comprehensive Annual Maintenance contract (with spare parts, accessories, consumables etc.) of the Complete System for the further life span of equipment. The life span of the equipment shall not be less than ten years. In special circumstances the total life span of the Equipment/ items may be reduced by the Institute.

b. The Complete System should include the basic unit and allied supporting components like UPS, Stabilizer, Computer System, Printer, De-ionizer, Dehumidifier etc to be supplied by the bidder along with basic unit.

c. During Comprehensive Annual Maintenance Contract, bidder shall provide at least **four maintenance visits per year** at regular interval for usual maintenance and supervision. If bidder fails to provide these maintenance visits at regular interval per year, a proportionate deduction in the form of penalty at the rate of 25% of contract amount per year will be deducted.

d. Bidder shall also attend all breakdown calls within 48 hours of the receipt of the information from institute through fax/e-mail/mobile/sms etc.

e. During Comprehensive Annual Maintenance Contract, **bidder** shall maintain and keep **95% uptime** per year of the "**Complete System**" as per calculation given below:-.

1 Year = 365 days

95% of 365 days = 347 Days per annum

f. The bidder shall compensate the uptime less than the specified above for **every additional day** of down time over and above 18 days stipulated above, warranty period will get extended by one week as penalty at no extra cost i.e. the extended penalty period will be equal to one week for every additional day of down time.

g. During Comprehensive Annual Maintenance Contract, **bidder** will keep the "**Complete System**" in satisfactory working condition. In case, any spare parts, accessories, PCB, all type of consumables etc. needs replacement due to normal wear and tear, **bidder** will supply and install the same for which no additional payment is to be made. .**If any spares / consumables / accessories etc. are not covered under Comprehensive Annual Maintenance Contract charges, it should be clearly mentioned with frequency of replacement and with rate. The validity of rate of such items should also be mentioned clearly. What will be the rate of escalation on the quoted rate after expiry of the validity of rate of such item must be mentioned.**

h. The payment of Comprehensive Annual Maintenance Contract will be made on half yearly basis after submission of satisfactory functioning report of the Complete System by the officials authorized by the Institute.

i. In case, the **bidder** is not able to provide services (and the items / accessories is not functioning as the reason thereof) due to natural calamity (act of God), Political unrest, Riot and fire at the user site, then in such a situation the Comprehensive Annual Maintenance Contract will be extended by the period for which the item / accessories could not be operated because of supplier not being able to provide services.

j. During Comprehensive Annual Maintenance Contract, in case of any alleged damage due to accident / human error, a committee under the Chairmanship of Director, I.G.I.M.S. – Patna with one member from the bidder and one member from the Institute will decide the authenticity of the claim. The decision of the committee shall be final and biding on both the parties.

5. **Performance Security**

a. There will be a performance security deposit amounting to 10 % of the total value of the equipment excluding taxes, which shall be submitted by the successful bidder within 10 days from the date of issuance of "Letter of Intent".

b. The contract duly signed and returned to the Institute shall be accompanied by a demand Draft or Bank Guarantee in the prescribed format.

c. Upon receipt of such contract and the performance security, the Institute shall issue the Supply Orders containing the terms and conditions for the execution of the order.

d. Failure of the successful bidder in providing performance security as mentioned above and / or in returning contract copy duly signed in time shall make the bidder liable for forfeiture of its EMD.

e. The Performance security shall be denominated in Indian Rupees or in the currency of the contract as detailed below:

i. It shall be in any one of the forms namely Account Payee Demand Draft or Bank Guarantee issued by a Scheduled bank in India, in the prescribed form as provided in this document endorsed in favour of the Institute.

ii. Institute will release the Performance Security without any interest to the successful bidder on completion of the successful bidder's all contractual obligations including the warranty obligations & after receipt of certificates confirming that all the contractual obligations have been successfully complied with.

6. Delivery period/Liquidated Damage: -

Goods should be delivered within two months after receipt of irrevocable and confirmed Letter of Credit. If the delivery is not affected by due date, the Director, I.G.I.M.S. - Patna shall have the right to charge liquidated damage on supplier/his Indian agent as under: -

i. 1st extension for a month or a part thereof @ 2% per month of C.I.F. value.

ii. 2nd extension for an additional month or a part thereof @ 3% per month of C.I.F. value subject to maximum Limit of 20% of the order items. All expenses incurred for extension of L.C. will be borne by supplier/his Indian agent.

iii. Cancellation.- If delivery is not done even after 2nd extension Institute shall have the right of cancellation of Supply order at its discretion..

7. Payment: -

100% payment through International Irrevocable Letter of Credit in favour of principal abroad, but 80% will be released on shipment of goods & balance 20% after satisfactory installation of equipment on submission of Bank Guarantee of value not less than 20% of the cost of the quoted equipment (with a minimum validity to cover up the warranty / guarantee period) will be submitted by supplier. This Bank Guarantee will be released after expiry of guarantee period.

a. In case, the equipment is purchased in Indian Currency then the payment will be made as per following scheduled.

b. 90% payment will be released against delivery and successful installation of the equipment & balance 10% will be released on submission of 10 % Bank Guarantee of the total cost of ordered value. This Bank Guarantee will be released after expiry of guarantee period.

c. L. C. will be opened only after receipt of the 10% bank Guarantee of the total cost of equipment (with a minimum validity to cover up the warranty / guarantee period), confirmation letter of all our terms and condition, submission of agency certificate in favour of Indian agent who have submitted and quoted the price, name of the Bankers abroad; intimation about country of origin and 10 copies of Performa invoice of the ordered item. Indian Agency commission will be paid in Indian currency only to Indian agent, if any. No extra charges will be paid for installation/demonstration and training to personnel.

8. **Validity of Price:-**

Minimum up to one year from date of tender submission and it should be extendable.

9. **Part Supply**: No part supply/ wrong supply or short supply will be accepted by the Institute. The Director IGIMS, Patna will be the final authority and will have the right to reject full or any part of supply, which is contradictory to the terms and conditions agreed at the time of placement of order. In

case of rejection of any supplied items due to nonconformity in quantity and/or quality, Institute will have right to charge liquidated damages, as it deems fit

10. **Packing & Marking:-**

Goods must be securely and adequately packed and protected in order to prevent damage, otherwise all losses and /or damage resulting from inadequate packing and/or inadequate protection or inadequate marking shall be borne by seller/seller's Principal abroad.

11. Supplier may have to provide required manpower for running the equipments at mutually agreed remuneration (Which shall not be more than remuneration payable for the particular category of staff at IGIMS) at the sole discretion of the Institute, till institute is able to arrange its own staff for the purpose.

12. Insurance: -

Insurance up to Patna will be borne/arranged by principal supplier/his Indian Agent.

13. Installation & site plan:

Requirement regarding site/location for installation of equipment, if any, should be mentioned in the tender. Time required for installation of system after delivery must be mentioned. In case of delay in installation institute will have right to charge liquidated damage.
Specify the following points for installation of the System: -

a. Total power consumption along with break up of main System and Accessories.
b. Whether the System needs uninterrupted power supply.
c. Maximum tolerated transfer time in case of interruption of power supply.
d. Whether the System needs any humidity control device.
e. Whether the System needs any separate power line/isolation Transformer.
f. Does the System need the electrical shielding?
g. Whether Air Conditioner is required for the System.
h. Does it require special civil works for installation?

14. The bidder should also quote for supply of "Un-Interrupted Power Supply" (UPS) with a battery back up of at least 30 minutes, **"**Constant Voltage Transformer (CVT)" of reputed manufacturer of required capacity along with Spike Suppressor or "Servo Voltage Stabilizer" as per requirement of the System.

Bidder may quote the prices for all the above items (UPS/CVT/SERVO VOLTAGE STABILIZER) and the decision will be taken during technical evaluation of the item whether UPS is suitable or CVT / Servo Voltage Stabilizer will serve the purpose.

15. Responsibility:-

The principal as well as its agent will be severally and jointly responsible for ensuring the minimum life span of 10 years for the equipment. Both the said principal abroad and his Indian agent will have the full responsibility for the proper functioning of the equipment/instruments within the warrantee period and thereafter during the life span of the equipment

16. The bidder is required to provide list of persons (along with their permanent and correspondence address) owing more than 1% share ownership in the company/firm (both principle and Indian Agent).

17. The bidder is required to submit compliance sheet, which should reflect details of clause-by-clause compliance of technical specifications as well as general terms & conditions failing which their offer shall be rejected.

18. In order to fully and optimally utilize the equipment, training to paramedical staff and Doctors should be provided. In continuation to this training a separate maintenance training for the machine and the sub system should also be given to the Equipment Maintenance Engineer and Maintenance Technicians of the Institute. All the financial commitment in this regard shall be met by the firm/Principal.

19. Penalties for non-performance

The penalties to be imposed, at any stage ,under this tender are;

a. imposition of liquidated damages,
b. forfeiture of EMD/performance security,
c. termination of the contract,
d. Blacklisting/debarring of the bidder.

20. **Termination of Contract**

a. Termination for default:- The Institute, without prejudice to any other contractual rights and remedies available to it (the Institute), may, by written notice of default sent to the successful bidder, terminate the contract in whole or in part, if the successful Bidder fails to deliver any or all of the goods or fails to perform any other contractual obligation(s) within the time period specified in the contract, or within any extension thereof granted by the Institute.

b. In the event of the Institute terminates the contract in whole or in part, the Institute may procure goods and/or services similar to those cancelled, with such terms and conditions and in such manner as it deems fit and the successful bidder shall be liable to the Institute for the extra expenditure, if any, incurred by the Institute for arranging such procurement.

c. Unless otherwise instructed by the Institute, the successful bidder shall continue to perform the contract to the extent not terminated.

d. Termination for insolvency: If the successful bidder becomes bankrupt or otherwise insolvent, the Institute reserves the right to terminate the contract at any time, by serving written notice to the successful bidder without any compensation, whatsoever, to the successful Bidder, subject to further condition that such termination will not prejudice or affect the rights and remedies which have accrued and / or will accrue thereafter to the Institute.

e. Termination for convenience: - The Institute reserves the right to terminate the contract, in whole or in part for its (Institute) convenience, by serving written notice on the successful bidder at any time during the currency of the contract. The notice shall specify that the termination is for the convenience of the Institute. The notice shall also indicate interalia, the extent to which the successful bidder's performance under the contract is terminated, and the date with effect from which such termination will become effective.

21. **Fall Clause**:

The prices charged for the equipment supplies under the contract by successful bidder shall in no event exceed the lowest price at which the successful bidder sells the equipments of identical description to any other persons during the period of contract. If any time, during the contract, the bidder reduces the sales price chargeable under the contract, he shall forth with notify such reduction to the Institute and the price payable under the contract of the equipments supplied after the date of coming into force of such reduction or sale shall stand correspondingly reduced.

22. **Applicable Law & Jurisdiction of Courts**

a. The contract shall be governed by and interpreted in accordance with the laws of India for the time being in force.

b. All disputes arising out of this tender will be subject to the jurisdiction of courts of law in Patna (Bihar, India).

Sd/-
Director,
IGIMS - Patna

SCHEDULE OF THE REQUIREMENT

Group	Name of the Department	Name of the equipment
A	CTVS	a) Heart Lung Machine with Accessories.-01 b) Cell Saver-01 c) Reservoir Cooler/Heater (TCM)-01 d) Sternal Saw- 01 e) Redo Sternal Saw- 01 f) Cardiac Stabilisers-04 g) ACT Machine-02no. h) Invasive Cardiac Monitor-06 i) Autoclave-01 j) Defibrillator-02 k) Surgical Loupe-02 l) Consumable (CPB accessories) m) External Pacemaker- 04 n) Intra Aortic Balloon Pump (IABP) - 02
B	Orthopaedics & Trauma Unit	a) Arthroscopy System-01 b) O.T. Table for Orthos Surgery & Neuro Surgery - 03 c) C- Arm System - 02 d) Power Drill(Battery Operated)-02 e) General Instruments
C	R.I.O.	a) Vitrectomy Machine with LIO - 01 no. b) Operating Microscope-01 c) Phaco Emulsification System - 01
D	Cardiology	a) Cardiac Cath Lab.(Mechanized Single Plane System) – 01 b) 2 D Color Doppler Echo Machine-03 c) IABP(Intra Aortic Balloon Pump) - 01
E	Neuro Surgery	a) Operating Microscope
F	ENT	a) Endoscopic Sinus Surgery-01 b) Audiometer-01
G	Nephrology	a) Hemodialysis Machine - 03 Nos. b) R. O. System – 01 No.

ANNEXURES

Annexure - I (a)

PRICE SCHEDULED FOR DOMESTIC GOODS OR GOODS OF FOREIGN ORIGIN

LOCATED WITHIN INDIA.

1	2	3	4	5							6
				Price per unit (Rs.)							
scheduled	Brief description of goods Make: Model:	Country of origin	Qty. nos.	Ex-factory/ex-warehouse /ex-showroom/ off-the shelf (a)	Excise duty(if any) % and value. (b)	Sales tax/ vat(if any % and value. (C)	Packing and forwarding charge (d)	Inland transportation , insurance for a period including 3 months delivery, loading/ unloading and incidental cost till consignee site. (e)	Incidental services (including installation and commissioning, supervision, demonstration and training) at the consignee site. (f)	Unit price (at consignee site basis(g) a + b + c + d+ e + f	Total unit price (At Consignee Site) Basis Rs. 4x5(g)

Total quoted price in Rs. ……..
In Words: ……
Note:

1. If there is a discrepancy between the unit price and total price THE UNIT PRICE shall prevail.
2. The charges for Annual CMC after warrantee shall be quoted separately as per price scheduled.

Place: Name:
Date: Business Address;-

Signature of Bidder;-

Seal of the Bidder;-

Annexure: I (b)

PRICE SCHEDULED FOR GOODS TO BE IMPORTED FROM ABROAD

1	2	3	4	5					6
				Price per unit (CURRENCY)					
schedule d	Brief descrip tion of goods Make: Model:	Country of origin	Qty. nos.	FOB priceat port/ Airport of lading (a)	Carriage & Insurance (port of loading to port of entry) and other incidental cost . (b)	Incidental Services (Including Installatio n & Commissi oning, supervisio n, Demonstr ation And Training) at the consignee ’s site. (C)	Extended Insurance (Local transportation and storage) from port of entry to the consignee site for a period including 3 month beyond date of delivery . (d)	Unit Price on CIP Named port of Destination + Extended Insurance (Local Transportati on and storage) (e_)	Total Price on CIP Named Port of Destination + Insurance (Local Transportati on and storage) 4x5(e)

To be paid in Indian Currency (Rs) : ……..
Total Tender Price in Foreign Currency:……
In Words;-……

Note:-

1. If there is a discrepancy between the unit price and total price THE UNIT PRICE shall prevail.

2. The charges for Annual CMC after warrantee shall be quoted separately as per price scheduled.

3. The Bidder will be fully responsible for the safe arrival of the goods at the named port of entry in goods condition as per terms of CIP as per INCOTERMS, if applicable

Indian Agent;-
Indian agency commission: % of FOB

Name:
Signature of Bidder;-
Business address;-
Signature of Bidder
Seal of the Bidder;-

Place;-
Date

Annexure – II

COMPREHINSIVE ANNUAL MAINTENANCE CONTRACT PRICES SCHEDULE

S. No.	Item Description	1st Yr.	2nd Yr.	3rd Yr.	4th Yr.	5th Yr.	6th Yr.	7th Yr.	Total Comprehensive Annual Maintenance Contract over a period of seven years after expiry of warranty period of three years from the date of successful installation. (a + b + c + d + e + f + g + h + i)
a	b	c	d	e	f	g	h	i	j
1.	Name of the Equipment: Make: Model: Qty.:								
2.	Name of the Equipment: Make: Model: Qty.:								

Scope of Contract (details as mentioned in the Clause No. – 13 of "Instruction to Bidder" & Clauses No.: 3, 4 and 5 of "Condition of Contract".):

a) The rate of Comprehensive Annual Maintenance Contract as mentioned above should cover the Complete System. Complete System should include the basic unit and allied supporting components like UPS, Stabilizer, Computer System, Printer, De-ionizer, Dehumidifier etc to be supplied by the bidder along with basic unit.

b) **Preventive maintenance visit:** Four Maintenance visits at regular interval for usual maintenance & supervision failing which 25% of the contract amount per visit would be deducted as penalty.

c) **Break down maintenance visit:** As & when required

d) **Response Time:** within 48 Hours.

e) Uptime Guarantee: 95% of 365 days

f) The above-mentioned charges should includes labour charges for maintenance and breakdown visits per year, spares, accessories and all type of consumables required for the maintenance of the supplied items. If any spares / consumables /accessories etc. are not covered under above-mentioned charges; it should be clearly mentioned with frequency of replacement and with rate. The validity of rate of such items should also be mentioned clearly. What will be the rate of escalation on the quoted rate after expiry of the validity of rate of such item must be mentioned.

g) Payment of Comprehensive Annual Maintenance Contract would be made on half yearly basis after completion of work and satisfactory working report. In no case, advance payment is to be considered.

Seal and Signature of the bidder

ANNEXURE – III

MANUFACTURER'S AUTHORISATION FORM

(To be submitted by authorized dealers/representatives/importers)

No.

Dated:

To
The Director
Indira Gandhi Institute of Medical Sciences,
Sheikhpura,
Patna – 800 014 (Bihar, India)

Dear Sir,

Tender No :
Equipment Name :

1. We …… (name of the OEM) are the original manufacturers of the above equipment having registered office at …….. (full address with telephone number/fax number & email ID and website), having factories at _____ and _____ , do hereby authorize M/s._____ (Name and address of bidder) to submit tenders, and subsequently negotiate and sign the contract with you against the above tender no..

2. No company or firm or individual other than M/s._____ are authorized to bid, negotiate and conclude the contract in regard to this business against this specific tender.

3. We also hereby undertake to provide full guarantee/warrantee /Comprehensive Annual Maintenance Contract as agreed by the bidder in the event the bidder is changed as the dealers or the bidder fails to provide satisfactory after sales and service during such period of Comprehensive Warranty / Comprehensive Annual Maintenance Contract and to supply all the spares/ accessories / consumables etc. during the said period.

4. We also hereby declare that we have the capacity to manufacture and supply, install and commission the quantity of the equipments tendered within the stipulated time.

(Name)
for and on behalf of M/s._____

Date: (Name of manufacturers)

Place:

Note: This letter of authority should be on the letterhead of the manufacturing concern and should be signed by a person competent and having the power of attorney to bind the manufacturer.

ANNEXURE – IV

BANK GUARANTEE FORM

To The Director
Indira Gandhi Institute of Medical
Sciences, Sheikhpura,
Patna – 800 014 (Bihar, India)

WHEREAS _____ (Name and address of the supplier) (Hereinafter called "the supplier") has undertaken, in pursuance of tender no_____ dated _____
(herein after called "the contract") to supply The Director, Indira Gandhi Institute of Medical Sciences, (address) with ……. (description of goods and supplies).

AND WHEREAS it has been stipulated by you in the said tender/bid that the supplier shall furnish you with a bank guarantee by a scheduled commercial bank recognized by you for the sum specified therein as security for compliance with its obligations in accordance with the bid scopet;

AND WHEREAS we have agreed to give the supplier such a bank guarantee;

NOW THEREFORE we hereby affirm that we are guarantors and responsible to you, on behalf of the supplier, up to a total amount of _____ (Amount of the guarantee in words and figures), and we undertake to pay you, upon your first written demand declaring the supplier to be in default under the contract and without cavil or argument, any sum or sums within the limits of (amount of guarantee) as aforesaid, without your needing to prove or to show grounds or reasons for your demand or the sum specified therein.

We hereby waive the necessity of your demanding the said debt from the supplier before presenting us with the demand.

We undertake to pay you any money so demanded notwithstanding any dispute or disputes raised by the supplier(s) in any suit or proceeding pending before any Court or tribunal relating thereto our liability under these presents being absolute and unequivocal.

We agree that no change or addition to or other modification of the terms of the contract to be performed there under or of any of the contract documents which may be made between you and the supplier shall in any way release us from any liability under this guarantee and we hereby waive notice of any such change, addition no modification.

No action, event, or condition that by any applicable law should operate to discharge us from liability, hereunder shall have any effect and we hereby waive any right we may have to apply such law, so that in all respects our liability hereunder shall be irrevocable and except as stated herein, unconditional in all respects.

This guarantee will not be discharged due to the change in the constitution of the Bank or the Supplier(s).

We, _____ (indicate the name of bank) lastly undertake not to revoke this guarantee during its currency except with the previous consent, in writing, of The Director, Indira Gandhi Institute of Medical Sciences, Patna (Bihar). This Guarantee will remain in force up to (Date). Unless a claim or a demand in writing is made against the bank in terms of this guarantee on or before the expiry of (Date) all your rights in the said guarantee shall be forfeited and we shall be relieved and discharged from all the liability there under irrespective of whether the original guarantee is received by us or not.

(Signature with date of the authorized officer of the Bank) …….
Name and designation of the officer
…….
…….
Seal, name & address of the Bank and address of the Branch

ANNEXURE - V

POWER OF ATTORNEY

(On a Stamp Paper of relevant value)

I/ We…….(name and address of the registered office) do herebyconstitute,appointandauthoriseSri/Smt ----------…….…(name and address) who is presently employed with us and holding the position of ……. as our attorney, to act and sign on my/our behalf to participate in the tender no…… for …… (Equipment name).

I/ We hereby also undertake that I/we will be responsible for all action of Sri/Smt…….. undertaken by him/her during the tender process and thereafter on award of the contract. His / her signature is attested below

Dated this the ___day of 201_ For_____

(Name, Designation and Address)

Accepted

_____

(Signature) (Name, Title and Address of the

Attorney) Date : _____

SPECIFICTION AND ALLIED TECHNICAL DETAILS

Group – A: CTVS

A. Heart lung machine with accessories – (Qty. 02)

1. Description of function

1.1 Heart Lung Machine is an apparatus through which blood is temporarily diverted, during heart surgery, to oxygenate it and pump it throughout the body, thus maintaining circulation until the heart and lungs are able to return to normal functioning

2. Operational requirements

2.1 BASIC EQUIPMENT will consist of the following unit

1) 5- Pump Console

2) Temperature Control Module (Hypo-Hyper thermia unit)

3) Monitors:

   a) Pressure monitor – arterial and cardioplegia with transducers

   b) Time – at least three timers

   c) Temperature Monitor with at least two probes

   d) Display of total volume of each infusion along with delivery time

4) a). Air- Oxygen Blender with hoses and Flow meter

   b). CO_2 Blender Optional

5) Safety Devices –

   a) Level Sensor

   b) Ultrasonic air sensor (optional)

2.2 ACCESSORIES will include

1. Stainless steel line clamps
2. Stainless steel intra cardiac suckers
3. Remote Control module for Temperature Control Monitor Instrument tray with mounting arm S.N. Technical Specifications

3.1 5- Pump Console

1. The unit should have 5-pump console compactly arranged with separate power supply and control modules. Should have easy access connectors for interchanging the pump.
2. Each individual roller pump should be capable of running on 180-270 V/50- 60 Hz or DC supply.
3. Should have a spill proof base.
4. The unit should be supplied with a Battery backup for at least two pumps, all safety systems and accessories for a minimum of 60 minutes. Switch over from main power to battery backup should be automatic and immediate. The battery unit should be built in to the pump base and it should be recharged automatically when the system is operating with main power supply.
5. Individual pump heads should have Harvey/ Horse Shoe Roller pumps with facility for tubing to be used adjustable and easily changeable mechanism.
6. Individual pump heads should have display in digital –The total infusion volume in litres and delivery time, the flow rates in LPM and in RPM
7. Each Pump should have easy mechanism for occlusion setting for different thickness of tubes available in the market

8. Should have unidirectional/ Bidirectional hand crank facility as a critical safety feature hand crank loading should be from top for faster access.

9. The Console should have a compact base mount for the entire pump heads together, with pole and handles.

10. Should have variable, changeable tubing holders in each pump head

11. Should have movable oxygenator holder.

12. Roller pump should have a self diagnostic circuit with provision to detect and display critical alarm conditions. Optional Pulsatile module which can be mounted on any of the blood pump.

3.2 Should have a Optional venous control module with single pole mast with electronic venous line occluder.

3.3 Should have a monitor mount with adjustable monitoring arm

3.4 Instrument tray positionable with long monitoring arm

3.5 Lightweight surface table; writing surface

3.6 TEMPERATURE CONTROL MODULE:

Temperature control and Monitor system with Cardioplegia supply and remote Temperature display with the following features:

1. Delivery of water for arterial and cardioplegia heat exchangers and to thermal blankets to be available from suitable ports.

2. To work with power supply of 220± 20 V 50 Hz.

3. Pressure regulated blanket ports maintaining the temperature of the arterial port.

4. Temperature display range of 3- 50 ° Celsius; remote accuracy of 0.3 ° Celsius and remote temperature display unit module with2- 3 temperature display.

5. Microprocessor based unit to control, cool, re-warm and maintain temperature.

6. Water outlet temperature of heat exchanger and blanket range 0-42° C.

7. Maximum flow performance of oxygenator heat exchanger supply port 15 – 22 LPM for fast cooling; 480mmHg maximum pressure; Blanket 1.5 to 2.5 LPM at zero head.

8. Should be capable of providing ice/ cold water for cardioplegia independently with variable cooling rate

10. Rewarming facility with venous difference mode settable at 6 to 10 ° C gradients to hold the water bath temperature at higher than the venous blood temperature.

11. Temperature probe module for the operating ranges of 3-50° C.

12. Temperature probes to fit in standard oxygenators (bubble / membrane)

13. Optional remote control unit should be capable of taking 4- 9 Temp. Probes and display temperature in digital readouts. Alarm limits setting for at least three probes at crucial sites.

3.7 **MONITORS:**

PRESSURE MONITOR: Facility to monitor one arterial line pressure and one cardioplegia line pressures (total 2); along with necessary pressure transducers, cables six (2 x 3 = 6) and domes reusable, with accurate digital display and alarm facilities audio and visual.

TIME MONITOR: Facility for 4 time displays -- 2 for arterial and 2 for cardioplegia delivery. With stop, reset and start function.

TEMPERATURE: 4 - 6 temperature displays for patient monitoring and for cardioplegia monitoring with digital display in Celsius with 4 - 6 necessary compatible temperature, 4 - 6 probes and 6 additional probes (6x2=12 probes) with 3x2 = 6 of them for nasal, rectal and oesophageal use

3.8 **AIR- OXYGEN BLENDER:**

To work at 50-60 PSI for membrane oxygenator with water trap attached with necessary hoses and connections of minimum of 5 meters length and with triple flow glass flow meters.

3.9 SAFETY DEVICES: Safety monitor should have optional capability for computer interface to retrieve perfusion data

ULTRASONIC AIR SENSOR: Ultra sonic air sensor to detect bubbles to work equally well with crystalloid and blood; should be possible to fit anywhere in the circuit easily.

LEVEL SENSOR SYSTEM: Ultrasonic transducers to work well with crystalloid and blood with adhesive pads, with alarm settings.

3.10 **ACCESSORIES:**

1. STAINLESS STEEL LINE CLAMPS for cardio pulmonary bypass 12 Nos.
2. REMOTE CONTROL MODULE FOR THE TEMPERATURE CONTROL MONITOR

   Optional remote control unit should be capable of taking 9 Temp. Probes and display temperature in digital readouts. Alarm limits setting for at least three probes at crucial sites.
3. INSTRUMENT TRAY WITH MOUNTING ARM
4. AT LEAST TWO THERMAL BLANKET.
5. Optional ON LINE MEASUREMENT OF PH, PCO2*& HB FOR NEONATAL CARDIAC SURGERY

4. System Configuration Accessories, spares and consumables

4.1 12 Stainless steel line clamps

4.2 Remote Control module for Temperature Control Monitor

4.3 Instrument tray with mounting arm

4.4 Machine cover

4.5 System should be provided with appropriate furniture like adjustable revolving chair for the perfusionist to operate the system. The system should contain all the above accessories in Integrated or as separate accessories.

5. Environmental factors

5.1 The unit shall be capable of operating continuously in ambient temperature of 10 -40^0 C and relative humidity of 15-90%

5.2 The unit shall be capable of being stored continuously in ambient temperature of 0 -50^0 C and relative humidity of 15-90%

5.3 Shall meet IEC-60601-1-2:2001(Or Equivalent BIS) General Requirements of Safety for Electromagnetic Compatibility.

6. Power supply

6.1 Power input to be 180-270VAC, 50-60 Hz,/440 V 3 Phase as appropriate fitted with special imported plug dedicated to the unit.

6.2 Resettable over current breaker shall be fitted for protection

6.3 Suitable UPS of with voltage regulation and spike protection for 60 minutes back up.

7. Standards, safety and training

7.1 Should be US-FDA and European CE approved product (Copy has to be enclosed)

7.2 Electrical safety conforms to standards for electrical safety IEC-60601 / IS-13450

7.3 One engineer should be posted for a week to impart training

7.4 Manufacturer should have ISO certification for quality standards.

7.5 Must submit user list and performance report within last 3 years from major hospitals

8. Documentation

8.1 User manual in English

8.2 Service manual in English

8.3 List of important spare parts and accessories with their part number and costing available in stock with the supplier.

8.4 Certificate of calibration and inspection from factory.

8.5 Log book with instruction for daily, weekly, monthly and quarterly maintenance checklist. The job description of the hospital technician and company service engineer should be clearly spelt out

8.6 List of Equipments available for providing calibration and routine Preventive Maintenance Support as per manufacturer documentation in service/technical manual

B. Cell Saver- (Qty-1.)

1. Description of Function

1.1 The Cell Saver system reprocesses blood for the patient and separates it into blood cells and plasma. Used in Surgical procedures in which there is rapid bleeding or high volume blood loss. It can also separate and remove clotting agents for the plasma. In this manner, blood may be prepared for long term storage or may be re-infused back into the patient during surgery. This reduces the need for blood from donors.

2. Operational Requirements

2.1 Manual & Automatic operation

2.2 Compact, portable design

3. Technical Specifications

3 . 1 Spinning centrifuge

3.2 Built-in programming

3.3 Built-in safety features

3.4 Sound volume control

3.5 Automatic protocols

3.6 Set up guide

3.7 The equipment should have inbuilt and regulated vacuum pump to suck the blood.

3.8 Centrifuge speed should be adjustable from 0 to 10000 RPM with variable speed wash. The pump flow 25 to 1000 ml. per minute.

3.9 System should have smaller foot print with big lockable castor wheel and weight should be less then 35Kgs.(inclusive of accessories and cart) for ease of mobility.

3.10 System should be fully automated with single button operation with self start capability and absolutely minimal user intervention.

3.11 Centrifugal bowl capacity should be 125-150ml with two stage filling cycle.

3.12 System should be approved by US FDA for autologous blood transfusion.

3.13 The company should quote a price for buy back of the existing machine (one) on an "as is where is" basis including the physical shifting of the machine.

3.14 It should have display to show all information during the operation as pump speed, centrifuge speed and alert messages.

3.15 The equipment should be able to separate lost blood, anti coagulant, filter store concentrate and wash.

3.16 Optional RMC separation and washing it should able to sequester plasma and platelet from salvaged blood in separate bags

4.System Specification, Accessories, spares and consumables

4.1 Electrical specification:

Class I type B, ordinary Continuous operation. 4.2 Power :

Voltage – 220/240V or 110/120

Cycles – 50-60 Hz.

Phase – Single.

4.3 Speed and Flow rate specification :

Centrifuge – 0-10000 rpm.

Pump – 0-600 ml/min (+/- 5%)

Vacuum – 200-280 mbar.

4.4 Temperature Limit :

Operational : $10\text{-}40^0$

Storage : $5\text{-}30^0$.

4.5 Humidity range :

Operational : 10-95% non-condensing.

Storage : 10-95% non- condensing.

4.6 30 disposables should be provided with equipment

4.7 All consumables required for installation and standardization of system to be giv en free of cost.

5.Environmental factors

5 .1 The unit shall be capable of being stored continuously in ambient temperature of 05 - 30^0 C and relative humidity of 10-95%

5 1 The unit shall be capable of operating continuously in ambient temperature of 05 – 40^0 C and relative humidity of 10-95%

6. Power Supply

6.1 Power input to be 180-270V AC, 50 Hz Fitted with Indian plug

6.2 Suitable UPS of rating with spike protection, voltage regulation and for 60 minutes back up.

7. Standards, Safety and Training

7.1 **Should be USFDA and European CE approved product**

7.2 Manufacturer/Supplier should have ISO Certification for quality standards.

7.3 Comprehensive training for lab staff and support services till familiarity with the system.

7.4 Must submit user list and performance report within last 3 years from major hospitals

8 Documentation

8.1 User/Technical/maintenance manuals to be supplied in English

8 . 2 Certificate of calibration and inspection.

8.3 List of Equipments available for providing calibration and routine maintenance support as per manufacturer documentation in service/ technical manual.

8.4 List of important spare parts and accessories with their part number and costing.

8.5 Lo g book with instructions for daily, weekly, monthly and q uarterly maintenance checklist. The job description of the hospital technician and company service engineer should be clearly spelt out.

C. Specification of Dual Reservoir Cooler/Heater (Qty-01)

Technical Specification:-

1. Should be capable of providing hot and cold water for heat exchanger and cardioplegia.
2. Should be provided with atleast two heat exchanger blankets.
3. Microprocessor controlled with water temperature selection from 3° – 42°c, in one degree increment.
4. Should have a separate port for supplying water to the blankets.
5. Heat exchanger supply port should have a supply of 15.0 L/ min. for fast cooling and heating.
6. The hot water circulating system should have a reservoir capacity of 5.7 liters and cold system reservoir capacity should be 7.6 liters.
7. The system should operate on 220 V/50Hz. Single phase supply.
8. Should have separate ports for draining water from cold and hot tanks. It should have a valid European CE and US FDA certification

D. Sternal Saw Hand piece: (Qty- 1)

1. Should have Safe Mode
2. Should have minimum 14000 CPM
3. Weight of hand piece with battery should be not more than 3.5 lbs
4. Should have Pistol grip Hand piece
5. Should have tool less mounting of accessories for all blades or attachments
6. Saw noise level should not more than 93db
7. Should be ETO / Autoclavable.
8. The sternal saw is light weight and provide clear line of sight.
9. The sternal saw operates with or without flexible drive cable by an electric motor/ Battery.

10. The blade holding mechanism is chuck type assembly for quickly replacing the blades.
11. The saw should have a blade protector on it and blade protector should be easily replaceable. Additional 10 blades of sterna saw should be provided.
12. Foot/Hand switch permits variable saw speeds with waterproof and anaesthetic agent proof..
13. The system operates on be 220V/250Hz. Single phase.
14. Should provide minimum1 Nos. of sterile micro oil 300 ml.
15. Overheating cut off of motor with reset facility.
16. With different blades it should have maximum speed of 14000CPM
17. Should have option of Sternum Guard.
18. Should be provide with Battery kit and Battery Charger and the sterilization case.
19. Should be CE certified / US FDA approved.
20. Demonstration of the product is must.

Battery Charger:

1. 220-240 volts charger and should have the feature to count the charging cycle for a particular battery.
2. Should have capability to identify the worn out battery
3. Should have to charge four batteries at a time
4. Should have an indicator to provide battery status for charging.
5. Should be able to check over autoclaved battery cycles (Number of Time and Total time)
6. Should have reconditioning features for battery
7. Should be able to charge different batteries with same charger.
8. Should be CE certified / US FDA approved.
9. Demonstration of the product is must.

Battery Kit:

1. Ni Mh batteries with low internal impedance to deliver higher current than other battery Types.
2. Ni Mh cells with capacity to produce more torque and non autoclavable with life of 300 approximate charging cycles.
3. Should have a run time of minimum 21 minutes
4. Should include Autoclavable outer housing
5. Shield to protect battery from the housing
6. 180 degree opening of battery housing for easy insertion of battery
7. Should have option for autoclavable batteries.
8. Should be CE certified / US FDA approved.
9. Demonstration of the product is must.

Sterilization Case:

1. Should accommodate all hand piece, attachment and accessories for autoclave.
2. Demonstration of the product is must.

E. Specification of Redo STERNAL SAW (Saggital Saw)

Hand piece with accessories- (Qty-01)

1. Should have two speed controls with standard and fast mode. Free speed of 10000-12000 Cycle's per minute.
2. Saw Noise level should not more then 89db
3. Weight of hand piece with battery should be not more than 3-4 lbs
4. Blade mount should be adjustable to different angles with 360 degree rotation
5. Should have tool less mounting of accessories
6. The sternal saw is light weight and provide clear line of sight.
7. The sternal saw operates through a flexible drive cable by an electric motor.
8. It is able to be ETO Sterilized/autoclaved.
9. The blade holding mechanism is chuck type assembly for quickly replacing the blades.
10. The reciprocating blade has a 5mm stroke length.
11. The saw should have a blade protector on it and blade protector should be easily replaceable. Additional 10 blades of sterna saw should be provided.

12. Foot switch permits variable saw speeds with waterproof and anaesthetic agent proof..
13. The system operates on be 220V/250Hz. Single phase.
14. Should provide minimum1 Nos. of sterile micro oil 300 ml.
15. Overheating cut off of motor with reset facility.
16. Should be ETO/autoclavable
17. Should have safe mode.
18. Should be provide with Battery kit and Battery Charger and the sterilization case
19. Should be CE certified / US FDA approved.
20. Demonstration of the product is must.

Battery Charger:

1. 220-240 volts charger and should have the feature to count the charging cycle for a particular battery.
2. Should have capability to identify the worn out battery
3. Should have to charge four batteries at a time
4. Should have an indicator to provide battery status for charging.
5. Should be able to check over autoclaved battery cycles (Number of Time and Total time)
6. Should have reconditioning features for battery
7. Should be able to charge different batteries with same charger.
8. Should be CE certified / US FDA approved.
9. Demonstration of the product is must.

Battery Kit:

1. Ni Mh batteries with low internal impedance to deliver higher current than other battery Types.
2. Ni Mh cells with capacity to produce more torque and non autoclavable with life of 300 approximate charging cycles.
3. Should have a run time of minimum 21 minutes
4. Should include Autoclavable outer housing
5. Shield to protect battery from the housing
6. 180 degree opening of battery housing for easy insertion of battery
7. Should have option for autoclavable batteries.
8. Should be CE certified / US FDA approved.
9. Demonstration of the product is must.

Sterilization Case:

1. Should accommodate all hand piece, attachment and accessories for autoclave.
2. Demonstration of the product is must.

F. Cardiac tissue stabilizer – (Qty.04)

Specification:-

1 Pod spread for effective visualization of anastomotic site.
2 very secure arm for maximum stabilization
3 Greater flexibility with unlimited positioning options with 360deg movement
4 simple, secure one handed attachment of the clamp to the retractor
5 Dual vacuum tubes for superior tissue capture, whale tail easily tightening facility
6 Head-lock design for toes up position, pod spread and bend
7 Rigid clamp to eliminate rocking
8 Reduced handling profile to improve visibility of surgical site.
9 Should be European CE and USFDA approved. Copy of certificate is to be enclosed with bid.
10 Demonstration of all the product is must.

G:- ACT Machine(Qty. 2 Nos)

1. Description of Function

1.1 Activated Clotting Time (ACT) is a measure of the anticoagulation effects of heparin. The main use of this diagnostic test is in cardiac catheterization labs and open heart and vascular surgery, where they need to keep track and have specific measures of clotting times.

2. Operational Requirements

2.1 One button operation, easy to use

2.2 Portable system

3. Technical Specifications

3.1 ACT machine having at least two test well

3.2 2 point clot detection facility to get accurate results (Optional).

3.3 Parameters- ACT (Mandatory) APTT & PT (Optional).

3.4 Shall use fresh blood at the bedside.

3.5 Shall require less than 3 cc of blood per sample

3.6 Digital Display on Screen of any size.

4. System Configuration Accessories, spares and consumables

4.1 System as specified-

4.2 ACT Tubes - 200 nos

5. Environmental factors

5.1 Shall meet 1EC-60601-1-2:2001(Or Equivalent BIS) General Requirements of Safety for Electromagnetic Compatibility. Or should comply with 89/366/EEC; EMC directive.

5.2 The unit shall be capable of being stored continuously in ambient temperature of 0 -50° C and relative humidity of 15-90%

5.3 The unit shall be capable of operating in ambient temperature of 20 -30° C and relative humidity of less than 70%

6. Power Supply

6.1 Should work on 180-270V AC as well as batteries. Mains adaptor to be supplied

7. Standards. Safety and Training

7.1 Should be US - FDA and European CE approved product

7.2 Manufacturer/Supplier should have ISO certification

8. Documentation

8.1 User/Technical/Maintenance manuals to be supplied in English.

8.2 Certificate of calibration and inspection.

8.3 Log book with instructions for daily, weekly. monthly and quarterly maintenance checklist. The job description of the hospital technician and company service engineer should be clearly spelt out.

8.4 Must submit user list and performance report within last 3 years from major hospitals

H. SPECIFICATIONS OF INVASIVE CARDIAC MONITORS(Qty. 6 Nos)

1. Description of Function

a. Capable of providing bedside monitoring of multiple parameters for adult, paediatric and neonatal patients.

2. Operational Requirements

a. Monitors should be IT ready for web based applications without requiring extra server, hardware and software

b. Monitor should be ready for networking (web based and wired) from the point of view of hardware and software.

c. Wired networking (cabling, connectivity and software) is required as standard supply and the networking includes bed to bed networking and bed to central station networking

d. Monitor should have a minimum of 72 hours of data storage, real time trend (graphical and tabular with intervals of 1, 2, 5, 10, 15, 30 minutes) and alarm logs

e. Monitor should have arrhythmia detection and arrhythmia logs

f. Customizable 6 or more screen layouts

g. Monitor should be ready for IABP interface

h. Monitor should be capable of integrating and communicating with clinical information management server and software without any up gradation.

i. One network color laser printer ready for print from any monitor

j. Module/hardware/software/cabling for the monitor to be used for dual/slave display of ventilation parameters, waveforms and loops of ICU ventilator Servo i

k. Ready to monitor following parameters

i. ECG

ii. Respiration

iii. SpO2 (conventional SpO_2 technology and Massimo Signal Extraction Technology both)

iv. Non-invasive blood pressure (NIBP)

v. Two invasive blood pressures (IBP) along with cardiac output module

vi. Core and skin temperatures

vii. End Tidal Carbon Dioxide ($EtCO_2$)

3. Technical Specifications

a. **Display specifications**

i. 17-21 inch or bigger color screen display

ii. Touch screen display with surface acoustic wave technology

iii. Rotary knob for navigation

iv. Rotary knob for navigation

v. 20 or more waveforms

vi. Wide visibility 150 degree or more

vii. Clear visibility from foot end of bed when monitor is placed at head end

viii. User selectable font size

ix. Ready for split screen display

x. Dust proof and without any fan

b. Specifications of essential parameters:

i. **ECG**

1. Should display 12 leads of ECG by connecting 6/5 ECG lead wires

2. Facility for display of 02 or more than 02 selected leads

3. Standard accessories as part of essential supply should include longest trunkcable and extension cable/flying lead.

ii. **Respiration**

1. Through both impedance method and capnography method

2. Standard accessories as part of essential supply

iii. **SpO2**

1. Should have the compatibility with conventional SpO_2 technology and Massimo Signal Extraction Technology (SET)

2. Standard accessories as part of essential supply for SpO_2 measurement by conventional as well as Massimo Signal Extraction Technology

3. Supply should include longest trunk cable and extension cable/flying leads for both conventional SpO2 technology and Massimo Signal Extraction Technology (SET)

iv. **Non-invasive blood pressure (NIBP)**

1. Oscillometric principle of measurement with stepwise deflation

2. Should have manual mode, stat mode or automatic mode

3. Automatic mode should have adjustable time intervals from 2-120 minutes or higher span

4. Standard accessories as part of essential supply (should include longest connecting cable and reusable antimicrobial coated cuffs - pediatric, small adult and medium adult).

v. **Invasive blood pressure (IBP)**

1. Ready for simultaneous monitoring of two invasive blood pressures as a standard configuration for central venous pressure and arterial blood pressure

2. Interface cable should be as per the user requirement depending upon the transducers currently in use

3. Standard accessories as part of essential supply should include longest trunk cable and extension cable

vi. **Temperature**

1. Simultaneous monitoring of core temperature and surface/skin temperature

2. Standard accessories as part of essential supply should include longest trunk cable and extension.

vii. **End Tidal Carbon Dioxide ($EtCO_2$)** through main stream sensor

- Standard accessories as part of essential supply should include longest trunk cable and extension **c. Central station**

Including cabling for 15/16 monitors with display two TFT screens of 18" or more with key board and mouse

4. System Configuration, Accessories, Spares and Consumables

a. License for 15/16 or more patients for bed-to-bed and bed-to-central station networking

b. Presence and details of ports and connectors of monitor

i. RS232, USB, RJ45 and DVI

ii. Others

c. Details of ports and connectors of central station

i. RS232, USB, RJ45 and DVI

ii. Others

5. Environmental factors

a. Temperature

i. Operating temperature from 4 to 40 degree or higher span

ii. Storage temperature from -15 to +50 degree or higher span b. Relative humidity (RH)

i. Operating RH from 10 to 90% or higher span

ii. Storage RH from 10 to 90% or higher span

6. Power Supply

a. Monitor should have computer memory to serve real time clock

b. Power input to be 220-240VAC, 50Hz. Power cable should be fitted with Indian plug and adapter.

c. Monitor should have backup battery for more than 15 minutes for processor and more than 5 minutes for display

7. Standards,Safety andTraining

a. Should have defibrillator and cautery protection

b. Conformity to standards for electrical safety

c. Conformity to standard drop test

d. Conformity to standard safety against water ingress

e. Onsite first 02 training sessions spreading over 06 months for about 50 nurses, 20 doctors and 05 technicians

f. Onsite 05 additional training sessions spreading over 05 years for about 50 nurses, 20 doctors and 05 technicians.

g. Product should be European CE / US- FDA approved.

8. Documentation

a. User manual (hard copy and soft copy) for monitor

b. User manual (hard copy and soft copy) for specific modules

c. User manual (hard copy and soft copy) for central station

9. Optional requirements with a condition that

(1) Monitor should be ready for future upgrades for the parameters mentioned below and

(2) Rates should be quoted in the financial bid with a condition that the rates would remain applicable for a period of 5 years or more.

- Module for continuous beat to beat arterial pressure monitoring through non invasive technique with complete technical details including standard accessories as part of essential supply.

b. Module for upto 4 channel EEG with spectral display with complete technical details including standard accessories as part of essential supply.

c. Module for thermodilution cardiac output including cardiac output kit and 05 disposable catheters with complete technical details including standard accessories as part of essential supply.

d. Module for PICCO cardiac output including cardiac output kit and 05 disposable catheters with complete technical details including standard accessories as part of essential supply.

e. Module for additional two IBPs like intra-abdominal pressure, pulmonary artery pressure etc. with complete technical details including standard accessories as part of essential supply

f. Modules/pods/other hardware/software for any other parameter (other than mentioned above) that may be required in the future with complete technical details including standard accessories as part of essential supply

g. Monitor interface including hardware and software from the available list of compatible and networkable monitors of own makes and others makes.

h. Accessories

i. Multi lead/multi measurement/ECG trunk lead (all lengths)

ii. Flying lead for ECG (all lengths)

iii. NIBP connecting cable (all lengths)

iv. NIBP disposable cuff (infant)

v. NIBP disposable cuff (pediatric)

vi. NIBP disposable cuff (small adult)

vii. NIBP disposable cuff (medium adult)

viii. NIBP reusable antimicrobial coated cuff (infant)

ix. NIBP reusable antimicrobial coated cuff (pediatric)

x. NIBP reusable antimicrobial coated cuff (small adult)

xi. NIBP reusable antimicrobial coated cuff (medium adult)

xii. NIBP reusable antimicrobial coated cuff (large adult)

xiii. Skin/surface temperature probe (all lengths)

xiv. Core/esophageal temperature probe (all lengths)

xv. Conventional SpO_2 trunk leads (all lengths)

xvi. Conventional SpO2 sensor (infant)

xvii. Conventional SpO2 sensor (paediatric)

xviii. Conventional SpO2 sensor (adult)

xix. Massimo SET Patient Cable for SpO2 (all lengths)

xx. Masimo SET Patient Cable (all lengths) for Total Hemoglobin (SpHb), Pleth Variabilit Index(PVI).

xxi. Masimo SET SpO2 sensor (infant/paediatric)

xxii. Masimo SET SpO2 sensor (adult)

xxiii. Masimo SET sensor (adult) for Total Hemoglobin (SpHb)

xxiv. Masimo SET sensor (adult) for Pleth Variability Index (PVI)

xxv. Masimo SET sensor (adult) for Masimo SET measurements of Oxygen Saturation (SpO_2), Pulse Rate (PR), Perfusion Index (PI)

xxvi. End Tidal Carbon Dioxide ($EtCO_2$) sensor

xxvii. End Tidal Carbon Dioxide ($EtCO_2$) airway adaptor

Note : Must submit user list and performance report within last 3 years from major hospitals.

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I. SPECIFICATION OF AUTOCLAVE(Qty.01 no)

HORIZONTAL HIGH PRESSURE CYLINDRICAL SINGLE DOOR STERILIZER WITH MICRO PROCESSOR.

1. Horizontal high pressure automatic steam sterilizer with internal capacity.
   a. Size: (500mmX900mm, Volume-Approx. 186 liters)
   b. Electrical Load:-20 KW
2. The unit should be provide microprocessor based control panel for controlling entire cycle of sterilization and steam pulsing automatically.
3. Sterilization chamber, doors and jacket should be made of high quality SS316.
4. The door should be manual hinge type door.
5. Two stage vacuum pump should be incorporated with the unit to create vacuum for total evacuation of the air for the chamber.
6. The cycles of sterilization should be programmable with the choice of different time & temperature (121/134 degree Celsius) setting with their corresponding pressure (1.2/2.2 kg/cm square).
7. The load after sterilization should be moisture free with post sterilization vacuum drying to ensure load is drying on unloading.
8. Stainless steel electric boiler should be provided with interconnecting steam pipes made of 304ss with good quality immersion heaters which should be able to sustain an electric load corresponding to the requisite capacity of the machine.
9. Power input to be 440 VAC, 3-phase, 50HZ.
10. Machine should have pressure switch and safety valve.
11. The machine should have a provision for automatic filling of water into the steam generator. Water consumption should be minimum preferably.
12. It should have mechanism to control and keep the pressure constant in the jacket.
13. The Digital display at front panel to show the temperature of chamber, pressure in the chamber, cycle number, batch number, time & date, alarm indicator(for high and low temperature),error code, water indicator/alarm etc should be provided on touchscreen.
14. Computerized recording device with inbuilt printer should be provided that will automatically and continuously monitor and record dates, times of day, load, and identification number and operating parameters.
15. **Bowie & Dick test** and **Leak test** will be available in PLC.
16. All control valve should be pneumatically operated.
17. Company should have IS-3829 (Part-1) marked.
18. Company should have valid **CE** certified.
19. Company should have valid ISO (9001-2008 & 2003-13485) certificate.
20. Company should have manufacturing experience more than 10 years.
21. Must submit user list and performance report within last 3 years from major hospitals.

J. SPECIFICATION OF DEFIBRILLATOR (Qty. 2Nos)

DEFIBRILLATOR WITH INTERNAL AND EXTERNAL PADDLES FOR

ADULT AND PEDIATRIC

1 Description of Function

1.1 Defibrillator is required for reviving the heart functions by providing selected quantum of electrical shocks with facility for monitoring vital parameters.

2 Operational Requirements

2.1 Defibrillator should be Bi- Phasic, light weight < 10kg with battery and latest model
2.2 Should monitor vital parameters and display them
2.3 Should print the ECG on thermal recorders.
2.4 Should work on both Manual and Automated external defibrillation (AED) mode
2.5 Should be capable of doing synchronized & asynchronized cardioversion
2.6 Can be operated from mains as well as battery
2.7 Should have defibrillator testing facility

2.8 Demonstration of the equipment is a must.

3 Technical Specifications

3.1 Should be a Low Energy Biphasic defibrillator monitor with Recorder, having capability to arrest all arrhythmia within a maximum energy of 200 Joules in Manual mode & for AED mode upto 150J

3.2 Should monitor ECG through paddles, pads and monitoring electrodes and Defibrillate through pads and paddles. Should have Automatic or Manual Lead switching to see patient ECG through paddles or leads

3.3 Should measure and compensate for chest impedance for a range of 25 to 125 ohms

3.4 Should have a built in 50mm strip printer/ thermal recorder

3.5 Should have charging time of less than 6 seconds for maximum energy. Charging indicator should be there.

3.6 Should have bright LCD / TFT display for viewing messages and ECG waveform of 4 seconds

3.7 Combined Adult and pediatric paddles should be available.
Internal paddles should also be available and price to be quoted separately."

3.8 Should have event summary facility for recording and printing at least 250 events and 50 waveforms. Patient data storage 90 mins of ECG and events.

3.9 Should have a battery capable of usage for at least 90minutes or 30 discharges.

3.10 Should be capable of printing Reports on Event summary, configuration, self-test, battery capacity etc

3.11 Should have facility for self-test/check before usage and set up function

3.12 Should have SPO2 measuring and display facility.

3.13 Should be capable of delivering energy in increments of 1-2 joules up to 30J and increments of maximum 50J thereafter.

3.14 Should have user friendly 1,2,3 color coded operation.

3.15 Voice prompts on AED mode

3.16 Printing reports of events summary configuration/set test/ battery capacity

3.17 Optional noninvasive pacing/ transcutaneous pacing

4 System Configuration Accessories, spares and consumables

4.1 Defibrillator -01

4.2 Combined External Paddles Adult/Paediatric (pair) -01

4.3 Paddles –Internal -02 pair each for both adult & pediatric

4.4 Patient cable -02

4.5 ECG Rolls -50

4.6 Disposable pads-10 nos.

4.7 Reusable SPO2 Finger Probe-Adult -02

4.8 Reusable SPO2 Paediatric Finger Probe - 02

4.9 Complete set of ECG Leads- 02

5 Environmental factors

5.1 The unit shall be capable of operating continuously in ambient temperature of 10 -400 C and relative humidity of 15-90%

5.2 The unit shall be capable of being stored continuously in ambient temperature of 0 -500 C and relative humidity of 15-90%

5.3 Shall meet IEC-60601-1-2: 2001(Or Equivalent BIS) General Requirements of Safety for Electromagnetic Compatibility.

6 Power Supply

6.1 Power input to be 220-240VAC, 50Hz

6.2 Resettable overcurrent breaker shall be fitted for Protection

7 Standards, Safety and Training

7.1 **Should be USFDA / European CE approved product**

7.2 Electrical safety conforms to standards for electrical safety IEC-60601-1 General Requirements and IEC-60601-2-25 Safety of Electrocardiograms. (OR EQUIVALENT BIS Standard)

7.3 Should conform to international test protocols on exposure to shock forces and to vibration forces. The standard should be documented.

7.4 Should meet IEC 529 Level 3 (IP3X)(spraying water) for enclosure protection, water ingress.

7.5 Should have local service facility. The service provider should have the necessary equipments recommended by the manufacturer to carry out preventive maintenance test as per guidelines provided in the service/maintenance manual.

7.6 Must submit User list and Performance report

8 Documentation

8.1 User Manual in English

8.2 Service manual in English

8.3 List of important spare parts and accessories with their part number and costing

8.4 Certificate of calibration and inspection from factory.

8.5 Log book with instruction for daily, weekly, monthly and quarterly maintenance checklist. The job description of the hospital technician and company service engineer should be clearly spelt out.

8.6 List of Equipments available for providing calibration and routine maintenance support as per manufacturer documentation in service / technical manual.

8.7 Compliance Report to be submitted in a tabulated and point wise manner clearly mentioning the page/Para number of original catalogue/data sheet. Any point, if not substantiated with authenticated catalogue/manual, will not be considered.

8.8 Must submit user list and performance report within last 3 years from major hospitals.

K. SPECIFICATION OF SURGICAL LOUPE (Qty. 2 Nos)

MAGNIFYING SURGICAL LOUPE

Specifications:

1. Magnification Approx : 2.5X – 4.0 X.
2. Adjustable or customized as per your requirement.
3. Optics should have superior resolution, field size and image brightness.
4. Configurations : TTL; Flip-up.
5. Field width & depth : 8 – 15 cm.
6. Weight: 60-90 grams.
7. Working distance: Customized between 25-60cm.
8. Waterproof, Hypo allergenic, Corrosion resistant.
9. Unique adjustable nose pad.
10. Lightweight, Unparalleled in strength.
11. Carrying case with engraving doctor's name on the box & temple.
12. It should have 3 year warranty.
13. It should be European CE and US FDA approved.
14. Demonstration of the product is must.
15. Must submit user list and performance report within last 3 years from major hospitals.

L. Consumables CPB ACCESSORIES (Cardiac Surgery and Perfusion)

1. AORTIC PUNCH (4mm & 5mm) : (no. 5 each)

· Blade should be able to float around the punch.
· Punch should be available with tapered cutting blade to increase visibility.
· Should be available in all functional sizes.

2. CORONARY ARTERY RETRACTION CLIPS SIZES: (no. 10 each)

3MM AND 5MM

· Should be designed to improve exposure to a coronary anastomosis site.
Should be able to small prongs and gently hold tissues away from the vessel to improve vision.

3. TEMPORARY PIGTAIL PACING WIRE: (no. 20)

· Should include unipolar atrial and ventricular pacing, pediatric unipolar pacing, and the bipolar pacing lead.

4. MIST BLOWER : (no. 10)

· Should have specialized nozzle utilizing a micro orifice for fluid delivery and a separate orifice for gas delivery. Should have the malleable shaft and on/off control on the hand piece.

5. ARTERIOTOMYSHUNTS(INTRA CORONARY SHUNTS): (3 set of all sizes)

Sizes: 1.0,1.25,1.5,1.75,2.0,2,5,2.5, 2.75 & 3.0mm.

· Should be beveled tip shunts with all sizes. Should have fully transparent body.

6. ACT CARTRIDGES: (No. 100)

7. L.V. VENT: (1 set of all sizes)

Left ventricular vent should consist of round tipped dual lumen tube with lateral eyes, suture collars & proximal funnel connectors used for emptying the Left Ventricle for clearer view during surgery. - **All sizes.**

8. ANTEGRADE OSTEAL CARDIOPLEGIA CANNULA - ALL SIZES: (1 set of all sizes)

Antegrade cardioplegia cannula should be made of soft 100% silicone conduit with distal bulbous end & should have luer lock connector at the proximal end for administration of cardioplegia solution into the coronary ostia.

Sizes: 3.5, 4, 4.5, 5, 5.5, 6 mm.

9. CARDIOPLEGIA CANNULA SIZE INFANT: (no. 4)

Cardioplegia cannula should be made of soft 100% silicone & should be tapered conduit with distal open tip having adjacent lateral eyes, followed by a flange for secure positioning. It should have proximal luer lock & a SS needle with hub.

Size: Infant.

10. ONE PIECE PEDIATRIC AORTIC CANNULA SIZE 6FR-16 FR VENTED: (no. 1 set of all sizes)

· Should be beveled with thin wall tips and should be elongated one piece.

11. 45^0 ANGLED TIP ARTERIAL CANNULA SIZED 8 FR -24 FR: (no. 2 set of all sizes)

· Should be beveled thin wall tips attached to tapered cannula bodies. Should have kink resistant wire wound bodies.

11. ARTERIAL CANNULA 45^0 ANGLE WITH DIFFUSED FLOW TIP : (no. 2 set of all sizes) SIZES 18 FR- 24FR

· Should be one piece wire wound body with integrated flutes for diffused flow.

13. FEMORAL ONE PIECE ARTERIAL AND VENOUS CANNULA KIT: (no. 1 set of all sizes Arterial & Venous)

SIZES 8- 21FR. ARTERIAL AND 8-29 FR. VENOUS CANNULA

· Should be one piece wire wound body.

14. STANDARD INSERTION KIT FOR FEMORAL CANNULATION : (nos. 2)

16. **CARPENTIER BI-CAVAL FEMORAL VENOUS CANNULA: (nos. 1 each) SIZES : 24/29 FR, 30/33FR**

· Should have wire wound kink resistant two stage design.

16. SINGLE STAGE VENOUS CANNULA WITH METAL TIP: (no. 2 set of all sizes)
SIZES 12-31 FR

· Should have kink resistant wire wound taper body with beveled metal tip.

17. SINGLE STAGE VENOUS CANNULA WITH RIGHT ANGLE : (no. 3 set of all sizes)
SIZES 12-40 FR

· Should have kink resistant wire wound taper body with tapered multiport tips. Should be right angled with plastic tip.

18. SINGLE STAGE STRAIGHT VENOUS CANNULA MALLEABLE: (no. 3 set of all sizes)
SIZES 12-40 FR

· Should have kink resistant malleable wire wound taper body with tapered multiport tips.

19. DOUBLE STAGE VENOUS CANNULA ROUND AND OVAL SHAPE : (no. 2 set of all sizes)
SIZES 28/36,36/46,32/46, 36/51, 32/40, 36/46 FR.

· Should be two stage cannula with oval body in various sizes. Should be two stage cannula with round body in various sizes. Should have cannula body with thin walled with depth markings.

20. AORTIC ROOT CANNULA : (no. 2 set of all sizes)
Sizes: 4 FR-11 FR

· Should have radiopaque tips attached to clear PVC bodies. Additional features: aortic root pressure monitoring and left heart venting. Can be used to aspirate air emboli as well administer cardioplegia.

21. AORTIC ROOT CANNULA WITH VENT LINE: (no. 2 set of all sizes)
Sizes: 5 FR-11 FR

· Should have radiopaque tips attached to clear bodies with separate vent line.

22. AORTC ROOT CANNULA PEDIATRIC NEONATAL: (no. 2)
Sizes: 4 FR

· Should be able to aspirate air from Aorta, Should have radiopaque tip and standard 5±0.5 in length or a shortened 2.5 in.

23. CARDIOPLEIGA NEEDLES: NEONATAL, PEDIATRIC AND ADULT : (no. 2 of all sizes)
Sizes: 5FR AND 8 FR

· Should have stainless steel tip with plastic depth stop, Needle should be attached to Flexible PVC tubing which should include a drape clamp and female luer.

24. SILICON OSTIAL CANNULA FOR CONTINUOUS PERFUSION: (nos. 4 each)
Sizes: 15 FR,17FR AND 20 FR

· Should have a silicon body with soft bulb shaped tips, should have a female luer connection site.

25. OSTIAL PERFUSION CANNULA WITH BASKET TIP AND SOFT CONVEX TIP: (nos. 4 each)
Sizes: 10 FR, 12 FR AND 14 FR.

· Should have flanged, radio-opaque basket tips/soft tips attached to malleable stainless steel shafts.

26. RETROGRADE CARDIOPLEGIA CANNULA WITH AUTO INFLATE: (nos. 4 each)
Sizes 13 FR & 15 FR

· Should have silicon/ PVC bodies with auto inflatable cuff and pressure monitoring lines; should have multiport tip/ integral stopcock.

27. MULTIPLE PERFUSION SET : (nos. 4 each)

· Should be able to allow simultaneous perfusion of the aortic root and up to three or more vein grafts, should have inlet ports with male or female luers and clamps attached to an adapter that can split into four or more legs.

28. LEFT HEART VENT CATHETERS: (1 set of all sizes)

Sizes 10FR,13FR,15FR,16FR,18FR,20FR,24FR

· Should be of PVC or silicon, could be used for direct and indirect venting, should have

perforated tip, malleable bodies with depth mark. Should have a choice of either PVC or Silicone. Along with straight body and with depth marking. Should have all vent terminate with a vented or non vented ¼ in connector.

29. PERICARDIAL SUMPS : (no. 5)

Sizes- 20 FR

· Should feature a fluted tip, should be encased in a stainless steel spring and should have weight at the end.

30. INTRACARDIAC SUMP: (no.5)

Size- 20 FR

· Should feature a perforated pool tip to maximize suction and minimize tissue trauma. The tip design should be ideal for atraumatic suction within the heart chambers.

31. SUCTION TUBE : (10 set of all sizes)

Sizes- 6 FR,10FR AND 20 FR.

· Should have variety of cardiac suction tubes, intra-cardiac suction tubes & rigid suction tubes.

32. MICRO SUCTION TUBES (no.10)

Sizes- 9 FR

· Should have a vacuum control port, malleable shaft, should equipped with a length of tubing and clamp terminating with a ¼ in (0.64cm) connector.

33. MACRO RIGID SUCTION TUBES SIZES 20 FR : (no. 10)

· Should have tip made up of stainless steel, should have fluted pool tip to maximize suction and minimize tissue trauma, should offer gentle suction.

34. TOURNIQUET SETS SIZES 12 FR, 16 FR AND 19 FR: (no. 4 set of all sizes).

· Should have color coded tubes with varying lengths for adults and pediatric, should have wire snares included with the tube set.

35. VESSEL CANNULA WITH AND WITHOUT VALVE SIZES: (no. 4 set of all sizes)

2MM,3MM, 4MM

· Should have clear and radiopaque bodies. These should terminate with a female luer. Should have tips in various sizes and shapes.

36. ARTERIOTOMYCANNULA SIZES: (no. 4 set of all sizes)

2MM,3MM,4MM,5MM,6MM

· Should have polyurethane tube with a bulb shaped tip connected to winged female luer.

37. RAPID PRIMING SET LENGTH @35CM AND @40CM : (no. 10 each)

· These should facilitate the transfer of fluid during the priming of the circuit. Should have large bore spikes attached to flexible tubing with a clamp. Should terminate with either an open end tube or a male luer.

38. RAPID PRIMING"Y" SET LENGTH AROUND 1 M : (no. 15)

· These should facilitate the transfer of fluid during the priming of the circuit. Should have large bore spikes attached to flexible tubing with a clamp. Should attach to a " Y" adapter with a length of tubing and another clamp.

39. SPECIFICATION FOR ADULT OXYGENATOR : (no. 15)

a. Priming volume should not be less than 300 ml.
b. Blood flow range should be 0-7 lts./min.
c. Oxygen transfer should be at least 400ml/min.
d. Heat exchange efficiency should not be less than 0.50.
e. Housing material should be of polycarbonate.
f. Surface area of the fibers should be from 1.8m2to 2.4m2
g. Heat exchanger should be made of stainless steel and surface area should be approx 20cm2
h. Blood inlet port (from pump) 3/8²
Blood outlet port 3/8²
Cardioplegia port 1/4²
Gas Inlet port 1/4²
Gas Outlet port 1/4²
Water Ports ½²
Maximum Pressure Blood inlet 1000mmHg

Water Inlet 42 PSI
i. Blood storage capacity of hard shell reservoir should be approx. 4000ml
j. Minimum operating volume of reservoir should be 200ml.
k. Hard shell reservoir should have cardiotomy filter and defoaming part
l. Hardshell reservoir should have venous filter with pore size 45±2mm
m. The hardshell reservoir should have
Venous blood inlet port ½²
Blood outlet port (to pump) ⅜²
Suction ports (six) ¼²
Vertical port to CR Filter
¼² Quick Prime port ¼²
Auxillary port ¼²-⅜²
n. Sustainable negative pressure should be 150±10mmHg.

40. SPECIFICATIONS FOR PEDIATRIC ARTERIAL FILTER WITH BYPASS LOOP: (no. 5)

1 The Arterial Filter should be for pediatric use.
2 Priming volume should not be more than 90ml
3 Filter pore size should be 40 micron.
4 The outlet and inlet blood posts should be 3/8².
5 The filter should allow maximum blood flow rate of 5.0L/min.
6 The filter should be provided with a bypass loop at the inlet and outlet port.

41. SPECIFICATIONS FOR CARDIOPLEGIA HEAT EXCHANGER (BCD): (no. 15)

1 It should have priming volume less than 50 ml. 2
Blood flow rate should be between 0-600 ml/min 3
Filter screen should be around 100 um.
4 Inlet connection should be ¼²and outlet connection should be 3/16².
5 Heat exchange surface area should be ≈.20m^2.
6 Heat exchange should be of stainless steel corrugated pipes.
7 Bubble trap should be integrated for highly efficient de-bubbling
8 Integrated by pass manifold for easy de-bubbling
9 Exchangeable water in /water out
10 Blood flow path bottom up
11 It should have a Stopcock Prime/ Perfusion for easy priming.
12 It should have tip in the surgeon pack so that it can be connected to cardioplegia cannula. 13 It should be available both in 4:1 and 1:4 configuration.

42. SPECIFICATION FOR PEDAITRIC HEMOCONCENTRATOR: (no. 5)

1 It should have priming volume approx 35ml.
2 Effective surface area of the Fibers should be approx 0.5m2.
3 Blood port should be ¼²with Luer locks.
4 Filtrate port should be ½².
5 Maximum Transmembrane Pressure should be 500mm Hg.
6 It should have tubing lines along with reservoir Bag.

43. SPECIFICATION FOR ADULT HEMOCONCENTRATOR. : (no. 10)

1 The priming volume should be 70 ml
2 Effective surface area of the fibres should be ≈1m2.
3 Blood port should be ¼² With Luer locks
4 Filtrate port should be ½² (1/4²adapter).
5 Blood flow range should be 100-500ml.
6 Maximum Transmembrane pressure should not be more than 500mm Hg.
7 It should have tubing with reservoir bag.

44. SPECIFICATION FOR NEONATAL HEMOCONCENTRATOR: (no. 2)

1 It should have priming volume less than 20 ml.
2 Membrane surface area should be ≈0.2m2.
3 Max Membrane pressure should not be more than 600mm Hg.
4 Capillary wall thickness should be ≈50um.
5 It should have inlet/outlet lines, male luer lock connections,filter safety cap, filtrate line and additional filtrate bag (200ml).

45. SPEICIFICATION FOR PEDIATRIC OXYGENATOR: (no. 5)

1 Priming volume should be less than 150ml.
2 Blood flow range should be 0.4±0.01ltrs/min.
3 Oxygen transfer should not be less than 250ml/min.
4 Pressure drop should be least-upto 100mmHg or less.
5 Heat exchange efficiency should not be less than 0.65.
6 Housing material should be of polycarbonate.
7 Surface area of the fibres should be approx 1.0m2.
8 Heat exchanger should be made of stainless steel and surface area should be approx 1300cm2.
9 Blood inlet port
3/8² Blood outlet Port
3/8² Cardioplegia port
1/4² Gas Inlet Port
1/4² Gas Outlet port
1/4² Water Port 1/2²
Maximum Pressure Blood inlet
1000mmHg Water Inlet 42 PSI
10 Blood Storage capacity of hard shell reservoir should be max 3000ml.
11 Minimum operative volume of hard shell reservoir should be 100ml.
12 Hardshell reservoir should have cardiotomy filter and defoaming part.
13 Hardshell reservoir should have venous filter with pore size should be 20mm
14 The hardshell reservoir should have
Venous blood inlet port 3/8² rotatable
Blood outlet port (to pump) 3/8²
Suction port(six) ¼²
Vertical port to CR filter
3/8² Quick prime port 1/4²
Auxillary port 3/8².

46. SPECIFICATION FOR CUSTOM TUBING PACK

1. Custom Tubing Pack **Adult: (nos. 15)**
Custom Tubing Pack with arterial filter with PVC tubing medical grade -6.
Filter/Tubing should be CE/USFDA Approved.
2 Custom Tubing Pack P**ediatric: (nos. 5)** With PVC tubing medical grade – 6
Filter/Tubing should be CE/US FDA Approved
3 Custom Tubing Pack with **Neonatal** arterial filter**: (nos. 2)** With PVC tubing medical grade-6
Filter/Tubing should be CE/USFDA Approved
4. Custom tubing pack with 3/16²arterial and ¼² venous line for **Small neonates: (nos. 2)**
Made from medical grade-6 PVC.
Filter/Tubing should be CE/USFDA approved.

47. SPECIFICATION FOR NEONATAL OXYGENATOR: (nos. 2)

1 Blood flow range should be 0.1 – 2 ltrs/min.
2 Priming Volumes should be around 40 ml.
3 Oxygen transfer should be minimum 100 ml/min.
4 Pressure drop should be least upto 100mmHg or less.
5 Heat exchange efficiency should not be less than
0.65. 6 Housing material should be of polycarbonate.
7 Surface area of the fibers should be ≈0.5m2 and material should be microporous polypropylene.
8 Heat exchanger should be made of stainless steel and surface area should be approx 0.035m2.
9. Blood inlet port (from pump)
¼² Blood outlet port ¼²
Luer port (for recirculation or blood cardioplegia) one luer lock on blood outlet
10. Gas inlet port ¼²
Gas outlet port 5/16²
Water ports ½²
Maximum pressure Blood inlet 1000mmHg
Water inlet 2Kgf/cm2
11. Blood storage capacity of hard shell reservoir should be 1000ml
12. Minimum operating volume of hard-shell reservoir should be 15ml
13. Hard-shell reservoir should have cardiotomy filter and defoamer

14. The hard-shell should have
15. Venous blood inlet port ¼²
Blood output port (to pump)
¼² Suction port (five) 3/16²
Quick prime port ¼²
Vent port ¼² Auxiliary
port ¼²-3/8²
16. Maximum sustainable negative pressure in reservoir -150mmHg.

48. **Disposable Bull dog Clamps (All sizes) : (5 set all shapes & sizes)**

Single use bulldog clamps are lightweight, cost-effective alternative to metal bulldog clamps. Unlike metal bulldog clamps (whose clamping pressure changes with use).

Single-use bulldog clamps offer preset tensions, ensuring consistent clamping pressure with each use.

Single Use Bulldog Clamps Features:-

*Two designs – straight and angled.

*Lightweight, cost-effective and plastic construction.

*A wide range of preset, consistent clamping pressures.

*Color-coded-by clamp size and pressure. *Single-use, sterile packaged.

*Atraumatic-Jaw designs *Radiopaque and Latex-safe

*Versatile-may be applied by hand or with the specially designed appliers.

* Size to be determined after demonstration of the product

49. Disposable Silicone Vessel Loops : (nos. 30)

Designed to assist surgeons in complicated surgical fields by providing retraction, occlusion and identification of arteries, veins & nerves .

*Unique design –provide access to complicated surgical fields.

*Versatile –can retract and occlude arteries, veins & nerves.

*Durable –retains preset tension.

*Radiopaque and Latex-safe.

50. Arterial Perfusion Cannulae. : (nos. 15)

Non-wire reinforced beveled tip.
Size 18Fr, 20Fr, 22Fr and 24Fr.
Overall lengthshould be approx.15cm with suture bump.

51. Arterial Perfusion Cannulae Pediatric: (nos. 5)

Sizes: 8Fr, 10Fr,12Fr,14Fr and 16Fr.
Non wire reinforced bevel tip.
Overall length 18cm with suture bump.
Thin Flexible wire reinforced straight open light house tip.

52. Venous Cannulae Single Stage: (nos. 5 each)

Overall length approx.28cm with ¼ acceptance
Size 12Fr, 14Fr and 16Fr.

53. Venous Cannulae Single Stage: (nos. 5 each)

Thin Flexible wire reinforced straight open light house tip.
Overall length approx. 35cm with ¼²and 3/8²
acceptance. Size 18Fr, 20Fr, 22Fr and 24Fr.

54. Venous Cannulae Single Stage: (nos. 5 each)

Thin flexible wire reinforced straight open light house tip.
Overall length 35cm with 3/8² acceptance.
Size 26Fr and 28Fr.

55. Venous Cannulae Single Stage: (nos. 5 each)

Thin Flexible wire reinforced straight open light house tip.
Overall length should be approx.40cm with 3/8² acceptance.
Size 30Fr, 32Fr, 34Fr,36Fr, 38Fr and 40Fr.

56. Venous Cannulae : (nos. 5)

Right Angled, wire reinforced , 90^0 angled, plastic tip, 10Fr.
overall length approx. 28cm and ¼² acceptance.

57. Venous Cannulae : (nos. 4 each)

Right Angled, wire reinforced, 90^0 angled, plastic tip,
12Fr, 14Fr and 16Fr.
Overall length should be approx. 33cm with ¼ th& $3/8^{th}$ acceptance.

58. Venous Cannulae : (nos. 4 each)

Right Angled, wire reinforced, 90^0 angled, plastic tip
18Fr and 20Fr.
Overall length should be approx. 35cm with $3/8^{th}$ acceptance.

59. Venous Cannulae: (nos. 4 each)

Right Angled, wire reinforced, 90^0 angled, plastic tip.
22Fr, 24Fr and 28Fr.
Overall length should be approx.38cm with $3/8^{th}$ acceptance.

60. Retrograde Cannula: (nos. 5)

self inflating catheter, smooth balloon with pre-shaped stylet and handle
14Fr. Overall length should be approx. 27cm.
Should have 18±2 mm sized smooth balloon.

61. Aortic Perfusion Cannulae: (no. 10 each)

wire reinforced, dispersion
tip Sizes: 21Fr and 24Fr
Overall length approx. 35cm and vent.

62. Dual Stage Venous Cannulae: (no. 10 each)

wire reinforced 32/40Fr and 36/51Fr.
Overall length should be approx. 40cm and1/2 acceptance.

63. Femoral Arterial Cannulae: (no. 2 each size)

wire reinforced,
Overall length should be 19.5±.2 cm with $1/4^{th}$ vented
connector Sizes: 8Fr,10Fr, 12Fr and 14Fr.

64. Femoral Arterial Cannulae: (nos. 2 each size)

Wire reinforced,
Overall length should be approx. 24cm with $3/8^{th}$ vented
connector Sizes: 16Fr, 18Fr and 20Fr.

65. Femoral Venous Cannulae : (nos. 2 each size)

wire reinforced
Overall length should be approx. 24cm with ¼thnon vented
connector. Sizes 8Fr, 10Fr, 12Fr and 14Fr.

66. Venous Femoral Cannulae: (nos. 2 each size)

wire reinforced
Overall length should be 75±2 cm with $3/8^{th}$ non vented
connector Sizes: 18Fr, 20Fr,22Fr, 24Fr and 28Fr.

67. Ante-grade Cardioplegia cannula: (nos. 15 each size)

With vent and without vent.

Sizes : 12/14/16 Fr.

68. Specification for ADULT OXYGENATOR: (no. 15)
(Integrated with arterial filter & heat exchanger):

1 Oxygenator should have integrated arterial filter with cardiotomy/ venous reservoir.
2 Should have integrated arterial filter with self venting technology.
3 Heat exchanger surface area should be no more than
0.2m2. 4 Venous filter should be< 50micro meter.
5 Priming volume should not be more than 300ml.
6 Blood flow range should be 0.5 to 7 LPM.
7 Heat exchange efficiency should not be less than 0.50 at max
flow. 8 Pressure drop should be minimum up to 110 mmHg or less.
9 Arterial filter should be <35micron meter. 10
Membrane surface area should be 2-2.5 m^2.

69. Specification for SMALL ADULT OXYGENATOR : (nos. 5) (Integrated Filter and Heat Exchanger):

1 Oxygenator should have integrated arterial filter with cardiotomy/venous
reservoir. 2 Should have integrated arterial filter with self venting technology.
3 Heat exchanger surface area should be no more than
0.14m2. 4 Venous filter should be <50micro meter.
5 Priming volume should not be more than 150ml 6
Blood flow range should be 0.5 to 5 LPM.
7 Heat exchange efficiency should not be less than 0.5 max flows @ 5
LPM 8 Pressure drop should be minimum up to 110 mmHg or less.
9 Arterial filter should be<35micro meter.

70. Specification for PAEDIATRIC INFANT OXYGENATOR: (nos. 4) (Integrated Filter and Heat Exchanger):

1 Oxygenator should have integrated arterial filter with cardiotomy/ venous reservoir.
2 Should have integrated arterial filter with self venting technology.
3 Heat exchanger surface area should be no more than
0.035m^2. 4 Venous filter should be<50micro meter.
5 Priming volume should not be more than 45ml.
6 Blood flow range should be 0-1.5Ltrs/min.
7 Heat exchange efficiency should not be less than 0.6 at max flow.
8 Pressure drop should be minimum up to 100mmHg or less @ 1.5 LPM
9 Arterial filter should be<35micro meter.

71. CARDIOTOMY VENOUS RESERVOIR :
ADULT : (nos. 15)
PAEDIATRIC: (nos. 4)
NEONATAL : (nos. 4)

72. DISPOSABLE CONNECTOR ALL SIZES; Y, STRAIGHT WITH AND WITHOUT LEUR LOCK: (nos. 15 each)

73. DISPOSABLE SINGLE TUBING ALL SIZES (1/2, 3/8th,1/4th,3/16^2): (nos. 10 each)

74. WIRE ENFORCED ARTERIAL CANNULA (6 FR TO 20 FR) : (nos. 2 each

Note:

- CE should be mentioned on each product.
- Product should be of high quality and standard.
- All products should be in a pre-sterilised packing.
- All products should be **European CE and USFDA** approved. Copy of certificate is to be enclosed with bid.

- Demonstration of all products is must for evaluation.
- Must submit user list and performance report **within last 5 years from major hospitals**
- Manufacturer should ISO certified. Copy of certificate to be enclosed.
- Bidder should quote for all the products.

N. External Pacemakers(Qty. 4 Nos)

Dual Chamber – External Pulse Generator

1. Must have Constant Current Driven Output from 0.1 mA to 20 mA
2. Must have Pacing continuation after battery removal for at least 30 seconds
3. Must be able to pacing in following Modes : DDD, DOO, DDI, AAI, AOO, VVI, VOO
4. Must have sensitivity Atrial 0.4 - 10 mV &Ventricle 0.8 - 20 mV
5. Must have basic pacing rate between 30 -200 ppm
6. Must have Atrial Overdrive pacing upto 800 ppm
7. Must have minimum Battery life of 7 Days.
8. Should be provided with pacing cables and other accessories.
9. Must have easy to find and replace AA Batteries.
10. Should have local service facility.
11. Must submit User list and Performance report in the last 3 years from major hospitals should be enclosed.
12. User Manual in English.
13. Service manual in English.
14. List of important spare parts and accessories with their part number and costing
15. Must be European CE certified and US FDA approved.

O. Intra Aortic Balloon Pump (IABP) – (Qty.02)

Specification of IABP (Intra Aortic Balloon Pump)

1 Description of Function

1.1 Intra-aortic balloon pump (IABP) is a mechanical device that is used to decrease myocardial oxygen demand while at the same time increasing cardiac output. By increasing cardiac output it also increases coronary blood flow and therefore myocardial oxygen delivery.

2 Operational Requirements

2.1 Microprocessor / microcontroller based system. System should be complete with Display Control system and pneumatic drive unit.

3 Technical Specifications

3.1 Pneumatics:
Drive system: Stepper motor driven bellows
Drive gas- Helium (Available with disposable canister or refillable cylinder. Pumping Volume: 0.5 cc-50 cc Counter pulsation rate: 40-200 pulsations per minute

3.2 In Automatic Mode: System should be capable of automatically selecting appropriate trigger i.e. ECG or Pressure and also accurately select the inflation and deflation points, in automatic mode. In automatic mode of operation user should be in control of the deflation point. In Automatic mode Advance software should automatically adapt the timings for various rhythms and rate variations, without any user intervention. In Automatic mode it should automatically identify Arrhythmias and adopt R wave deflation mode for better patient support, without any user intervention In Manual mode the system allows user control of most of the pump functions.

3.3 Should be able to trigger on 7 mm Hg of Pulse pressure when used in Pressure Trigger mode

3.4 Single key start-up to make it fast, user friendly and easy to use

3.5 Should be able to display at least 3 wave forms as ECG, Invasive Pressure and Balloon Pressure wave forms

3.6 Large display for brighter and very good visibility from a distance in lighting conditions

3.7 On screen indication for Helium level in the cylinder and battery level for timely intervention and correction.

3.8 ECG inflation marker to indicate inflation period on ECG which can be useful when arterial pressure form is not available.

3.9 On screen indication of standby time and should give alarm after 15-30 minutes, to draw user's attention on the system being on standby

3.10 Optical Blood leak detect for early indication of blood coming into the balloon lumen due to IABC leak

3.11 Should have extensive Help Text available during start-up to make the system easy to use even for new users.

3.12 Should give extensive Help messages to correct the alarm conditions that are specific to the alarm condition. This should help the user to overcome the alarm problems immediately and with ease.

3.13 Should be capable of removing condensation automatically without user intervention and should be maintenance free.

3.14 Should have Peripheral Vascular Doppler for detecting limb ischemia, which is attached to the main equipment

3.15 Should have automatic Altitude correction to make it safer for the use during Air Transport

3.16 Should have software which allows the user to monitor the IABP from any remote location via a modem

3.17 In-built Comprehensive Service Diagnostics to help the technician to locate the fault immediately

3.18 Should have capability to connect on the Hospital network

3.19 Integrated Printer OR Chart recorder to print the reports.

4 System Configuration Accessories, spares and consumables

4.1 System as specified-

4.2 System should be supplied with the following:
ECG cable with Refillable Helium cylinder compatible with the IABP system Qty: 3 Nos.

4.3 Intra Aortic Balloon Catheter for Adults, Size: 40 cc Qty: 2 Nos.
Reusable Invasive Blood pressure transducer system with pressure flush device system. Qty: 2 Nos.

5 Environmental factors

5.1 Shall meet IEC-60601-1-2:2001(Or Equivalent BIS) General Requirements of Safety for Electromagnetic Compatibility. Or should comply with 89/366/EEC; EMC directive.

5.2 The unit shall be capable of being stored continuously in ambient temperature of 0 -50deg C and relative humidity

5.3 The unit shall be capable of operating continuously in ambient temperature of 10 -40 deg C and relative humidity of 15-90%

6 Power Supply

6.1 Power input to be 220 V AC, 50Hz fitted with Indian plug

6.2 On line UPS of suitable rating with voltage regulation and spike protection for 60 minutes back up.

7 Standards, Safety and Training

7.1 Should be US-FDA and European CE approved product (Copy has to be enclosed)

7.2 Manufacturer/Supplier should have ISO certification for quality standards.

7.3 Must submit user list and performance report within last 3 years from major hospitals

8 Documentation

8.1 User/Technical/Maintenance manuals to be supplied in English.

8.2 Certificate of calibration and inspection.

8.3 Log book with instructions for daily, weekly, monthly and quarterly maintenance checklist. The job description of the hospital technician and company service engineer should be clearly spelt out.

8.4 List of Equipments available for providing calibration and routine maintenance support as per manufacturer documentation in service / technical manual.

8.5 List of important spare parts and accessories with their part number and costing.

Group-B

Trauma Centre Emergency & Orthopaedics

A; ARTHROSCOPY SYSTEM- Qty.01

General Specifications:

1. Should be USFDA and/or European CE Certified.

2. All the Electronic equipments should comply with Electrical safety conforms to standards for electrical safety.

3. All the equipment's power input should be 220-240 V AC, 50Hz fitted with Indian plug.

4. Compatible make instruments/extra instruments in individual sets may be coated but are to be highlighted.

Arthroscope

1. **Wide Angle Forward-Oblique Telescope 30°**, enlarged view, diameter 4 mm, length 18 cm, autoclavable, and fiber optic light transmission incorporated. **(Two Pieces)**
2. **High Flow arthroscopic Sheath with** snap in coupling mechanism diameter 6,5mm working length 13.5 cm, two stopcocks, rotating, for use with telescopes 0°, 30°, 70° with Obturators blunt **(one each).**

Camera

Three-Chip, Camera should be HD, resolution of 1920X1080 pixels full HD progressive Scan which displays 50-60 frames/sec 16: 9 / 16: 10 format

Monitors

Full HDTV Medical grade Monitor 26" Monitor,
Resolution 1920 x1080p
Full HD wide view monitor with aspect ratio of 16:10
To accept DVI-D, DV and SDI video inputs

Light source

LED light source with lamp life of>20000 hours with extra long optic cable.

Video-cart

Rust free of same manufacturer Video cart to house the arthroscopic instruments with high quality castors, customizable and central power supply.

Fluid management System with all accessories and tubes.

1) Electronically controlled irrigation pressure and flow rate
2) User friendly display of operating parameters and actual performance.
3) Memory to retain preselected pressures and flow rates
4) Foot switch

Arthroscopic shaver system

1. Stable torque throughout high speed shaver at least 1000-12000 RPM.
2. Oscillation mode 500-3000 RPM
3. Hand control, footswitch and by LCD touch screen with different display modes.
4. Clockwise, counterclockwise rotation
5. Autoclavable, quick coupling of blades
6. Pre programmed memory of the system.
7. Shaver hand piece of 7000 RPm
8. Shaver Unit should be supplied with Footswitch.
9. Aggressive Shaver Blades Qty 6 no's
10. Multifunction hand pieces with Jacobs chuck (keyless) up to a diameter of 6.5mm, sagittal saw with attachment with blades no.6, pin driver and Synthes driver and connecting cable for FMS pump.

Radiofrequency Ablation system

1) Controls on hand piece
2) Multiple distinct power levels

3) Impedence detection technology
4) User friendly display
5) Powerful generator with output of 400 watts.
6) Bendable probes with various tips

ACL Zig and Instruments

1. ACL Zig
2. 5mm, 6mm and 7mm femoral aimer - **One Each,**
3. 6mm,7mm,8mm, 9mm, 10mm and11mm Femoral Reamer 3-Fluted - **One Each**,
4. 4mm, 5mm Cannulated Drill - **One Each**
5. 6mm to 10mm graft sizing gauge- **One Each**
6. Tunnel Notcher,
7. 2.5mm femoral eye loop guide wire 18 inch -**05 pieces**
8. 2mm tibial guide pin 9 inch- **05 pieces**,
9. 1.5 mm guide wire 14 inch- **05 pieces**,
10. 3.5mmHex screw driver cannulated,
11. Bone plug splitting block,
12. Depth Gauge,
13. ACL graft workstation,
14. Tendon stripper, graduated, closed 5.5mm length 30 cm.
15. Tendon stripper, graduated, closed 7 mm length 30 cm.
16. Tendon stripper, graduated, open 7.5 mm length 30 cm.
17. Tendon hook
18. Thread clip-2
19. Tissue forceps – 2
20. Graduated scale measurement of graft
21. Metal mallet with plastic head
22. Arthroscopic leg holder with all round padding, 360 swivel and rotating, height adjustable with appropriate clamp to fit into the side rail of table.
23. ACL Instrument Sterilization container

Manual Hand Instruments

1. **Punch,** through-cutting, cutting width 3.4 mm, straight jaws, sheath diameter 3.5 mm, straight, handle with cleaning connector, working length 12 cm
2. **Punch**, through-cutting, cutting width 3.4 mm, curved jaws, 15° upwards, sheath diameter 3 mm, straight, working length 20 Cm
3. **Punch**, through-cutting, cutting width 3.4 mm, curved jaws, 90° left, sheath diameter 3 mm, straight, working length 13 cm
4. **Punch**, through-cutting, cutting width 3.4 mm, curved jaws, 90° right, sheath diameter 3 mm, straight, working length 13 cm
5. **Scissors Punch**, cutting width 0.5 mm, straight jaws, sheath diameter 3 mm, straight, working length 13 cm
6. **Scissor Punch**, cutting width 0.5 mm, straight jaws, sheath diameter 3 mm, 10° curved to left, working length 13 cm
7. **Scissor Punch**, cutting width 0.5 mm, straight jaws, sheath diameter 3 mm, 10° curved to right, working length 13 cm
8. **Grasping forceps**, spoon-shaped jaws, jaw width 4.5 mm, straight jaws, sheath diameter 3 mm, straight, working length 13 cm
9. **Foreign Body Grasping** Forceps, aggressive, straight jaws, sheath diameter 3 mm, straight, working length 15 cm
10. **Foreign Body Grasping Forceps**, aggressive, with ratchet, straight jaws, sheath diameter 3.5 mm, straight, working length 20 cm
11. **Suture grasping forceps**, straight jaws, sheath diameter 3 mm, straight, working length 15cm
12. **Meniscus Retractor**, with serrated jaws, with teeth and ratchet, straight jaws, straight sheath, working length 13 cm
13. Sterilization Instrument container

General Instruments

1. **Probe**, graduated, length of hook 3 mm, diameter 1.5 mm, working length 18 cm
2. **Probe**, graduated, length of hook 3 mm, diameter 1.5 mm, working length20 cm angled downward 10 degrees.
3. **Curette**, oval, large, curved, 30° upwards, working length 13 cm
4. **Curette**, oval, small, curved, 30° upwards, working length 13 cm

5. **Rasp**, narrow, straight, fine, working length 13 cm
6. **Rasp**, narrow, curved, coarse, working length 13 cm
7. **Obturator**, sharp, for use with Cannula
8. **Irrigation Cannula**, with LUER-Lock and stopcock, diameter 4.5 mm, working length 7 cm, for use with Obturators
9. **Obturator**, sharp, for use with Cannula
10. **Suction Tube**, diameter 5 mm, working length 15 cm
11. **Endoscope Holder**, for mounting to the instrument table, for secure and optimized storage of endoscopes up to diameter 5 mm
12. **Suction Tube Holder**, for mounting to the instrument table, for secure and optimized storage of suction tubes
13. Sterilization Instrument container

CERTIFICATION:

Should be USFDA and/or European CE Certified

WARRANTY:

Warranty must be three years. After installation, three years comprehensive onsite warranty of the equipment, inclusive of all parts/components including batteries of UPS, should be provided by the Principals, with free up gradation with newer software technology, as and when evolved. The supplier shall separately quote annual CMC rates (inclusive all parts as above) in continuity after the warranty period with year wise break up.

B; O T Table for Ortho & Neuro Surgery –Qty.03

Description of Function:

1. Operating tables provide an elevated surface that supports the patient's body during surgical Procedures, stabilizing the patient's position and providing optimal exposure of the surgical field.
   C - Arm compatibility with electro-hydraulic operation table.

2. **Essential Technical Specifications**:

1. The Electro-Hydraulic driving mechanism assures smooth and quiet movements of the table top
2. Radio - Translucent Table Top for use with "C" Arm image intensifier.
3. All the movements of the table including Height, Trendelenberg, Reverse Trendelenberg, Lateral Tilt, Height Adjustment, and Back Section Adjustment are precisely and smoothly controlled by Portable Hand Control Unit / Remote with feather touch symbolic buttons.
4. Built-in Kidney Bridge.
5. Head and Leg section are detachable and manually operated by means of Ratchet system.
6. Base and Column covers are made of Stainless Steel for easy cleaning and hygiene.
7. Stainless steel side rails with clamps accept all standard accessories.

3. Standard Accessories

1. L-shaped Anesthetic Frame 1PC
2. Shoulder Support with pad: 1Pair
3. Adjustable Arm Support with cushion 1Pair
4. Arm board with S.S. Top: 2PC
5. Lateral Support with pad: 1Pair
6. Wrist Strap: 1Pair
7. Knee Crutches Goepel type 1Pair
8. Water proof Rubber 1 set

4. Orthopaedics Accessories

1. Orthopaedic Leg Traction Device
2. Orthopaedic Hand Traction Device
3. Hip Nailing Support (INNER THIGH REST WITH PAD)
4. Tibia Support L-Shaped Knee Rest with pad
5. Steinmen Pin Holding Clamp
6. Raised Arm Rest with pad
7. Hand Operating table with Mattress

5. **Neuro-Surgery Accessories (preferably C-Arm Compatible)**
   1. Neuro-Surgical Attachment for Prone/Sitting Up-position Head-Rest
   2. S.S. Skull-Clamp for micro-neurosurgery/ Mayfield Skull clamp with necessary adaptors
   3. Sugita Head Clamp
   4. 'M' type face Head Rest / Neuro-Surgery Head Rest
   5. Spine Surgery using Spinal Bridge
   6. Connecting Brackets.
6. **CERTIFICATION:**
   Should have ISO and CE certification for quality standards.
7. **WARRANTY:**
   Warranty must be three years. The supplier shall separately quote annual CMC rates in continuity warranty of the equipment, inclusive of all parts/components including batteries after the three years warranty period with year wise break up.

C: C-Arm - Technical Specification-Qty.02

The system should have the following essential
features: 1. Generator and X-ray Tube:
Generator should be **high frequency generator**, **with power output of 2KW or more** with the following modes**:**
The range of KV should be at least 40-110 KV for each mode. The
Generator should be capable of providing Pulse Fluoroscopy
[redacted]ilable
[redacted]ay tube should have a:
Stationary anode/Rotating anode, Minimal value of focal spot:0.5/1.5mm
(Specify the focal spot sizes)
2. Focal spot of nominal value suitable for Fluoroscopy and Radiography.
3. Nominal X-ray tube voltage 100 KV.
4. Please mention filters available.
5. Automatic Dose Control.
6. Heat storage capacity should be 35 KJ or more. Minimum of 20 minutes of continuous Fluoroscopy should be possible.
7. Mention thermal protection device of the tube available
[redacted]
1. Shutters/Diaphragm for radiation free collimation and 360^{o} rotation.
[redacted]
2. C-Arm:
[redacted]lly counterbalanced C-Arm movement with integrated cables and electromagnetic brakes Give details of:
[redacted]Arc to provide a large imaging space.
[redacted]Arm depth should be 60 cm or deeper to provide a large imaging space and C-Arm clearance around the patient and the imaging table.
[redacted]Arm should have a manual rotation of +/- 1800 to allow the imaging chain to accomplish angled projections.
3. X-ray image intensifier
[redacted]ray image intensifier with field sizes of 23 cm (9”) or more should be available
[redacted]d be 1lp/mm
[redacted]
(**Prefered 1Kx1K pixels**) Specify the make, model and name of manufacturer.
[redacted]nage rotation and top/bottom and left/ right reversal should be possible
4. Image viewing
[redacted]
Specify the make, model and name of the manufacturer
[redacted]he display system should have a minimum brightness of 550cd/m2
[redacted]nage memory at the control console and last image hold capability should be
[redacted]vailable Storage and transfer pen drive should be available.

5. Essential Accessories:

[redacted]

[redacted]ield: 8 Nos

[redacted]Arm, X-ray tube.

[redacted]

6. CERTIFICATION:

[redacted]**uipment should be CE /AERB and BIS or USA FDA approval standards**. **7. IMPORTANT INSTRUCTIONS**:

i). All information in the tender document must be supported by original product data sheets. Computer generated data sheet shall not be accepted.

ii). All information asked for must be provided in the compliance statement under the headings given above.

iii). Supplier must ensure the availability of 'expertise service' and maintenance Spare parts and repair for the next 10 years must be ensured.

iv). Application Specialist should be available for on-site training

8. INSTALLATION:

Installation, including networking, shall be free of cost and shall be the responsibility of the supplier. All accessories like cables, ports and spares etc as necessary for complete, smooth and breakdown-free functioning of the entire system shall be the responsibility of the supplier.

9. AFTER INSTALLATION WARRANTY:

After installation, three years comprehensive onsite warranty of the equipment, inclusive of all parts/components including X-ray tube, batteries of UPS, should be provided by the Principals, with free up gradation with newer software technology, as and when evolved. The supplier shall separately quote annual CMC rates (inclusive all parts as above) in continuity after the warranty period with year wise break up.

10. The supplier shall give a commitment for 98% up time of the equipment.

11. The C-Arm should be matched with the existing OT Table

d; <u>POWER DRILL(Battery Operated)-Qty.02</u>

Drill and Reamer Hand piece:

- Selection of Drilling and Reaming with the built in Switch option DRILL/REAM in same hand Piece
- Selection of the drilling and reaming with the same attachment
- Should have dual trigger for forward/ reverse and oscillation mode
- Maximum speed of 1200 rpm in drilling, 270 RPM in reaming
- Should have variable speed control on the hand piece
- Should deliver maximum torque of 150 in/lbs
- Drill torque should be 35 in/lbs
- Should have DC brush less motor for low maintenance
- With appropriate adaptors for drilling, reaming and pin placement and wire placement
- Future up gradation compatible for Navigation interface for Joint replacement surgeries
- Micro processor controlled Hand piece can be calibrate for the consistence performance
- Weight of hand piece with battery should be not more then 3.5
- Fully Cannulated 4.0 mm hand piece
- Should have Pistol grip Hand piece
- Tool less 360 degree attachments insertion
- Should be autoclavable
- Dedicated forward and Reveres switch with safe mode
- Can be calibrating for the consistence performance

Sagital Saw Hand piece:

- Should have two speed controls with standard and fast mode. Free speed of 10000 - 12000 cycles per minute
- Micro processor controlled Hand piece can be calibrate for the consistence performance
- Saw Noise level should not more than 89db
- Weight of hand piece with battery should be not more than 3.5 lbs
- Blade mount should be adjustable to different angles with 360 degree rotation
- Should have tool less mounting of accessories
- Should have DC brush less motor
- Should be autoclavable
- Should have safe mode

Reciprocating Saw Hand piece:

- Should have Safe Mode
- Should have minimum 13500 CPM
- Weight of hand piece with battery should be not more than 3.5 lbs
- Micro processor controlled Hand piece can be calibrate for the consistence performance
- Should have DC brush less motor for low maintenance.

• Should have Pistol grip Hand piece
• Should have tool less mounting of accessories for all blades or attachments. .
• Saw noise level should not more than 93db
• Should be autoclavable.
• With different blades it should have maximum speed of 13500CPM

Drill and reaming Attachments:
• 1/4 inch Jacobs Drill Attachment with key
• Keyless Chuck
• Quick Connect attachment
• Reamer Attachment
• Hudson Modified Trinkle attachment
• Pin Collet Attachment
• K Wire Collet Attachment

Battery Charger:
• 220-240 volts charger and should have the feature to count the charging cycle for a particular Battery,
• Should have capability to identify the worn out battery
• Should have to charge four batteries at a time
• Should have an indicator to provide battery status for charging.
• Should be able to check over autoclaved battery cycles (Number of Time and Total time)

Battery Kit:
• NiMh/Ni Cd/ **Lithium batteries** – 4
• Should have a run time of minimum 17 minutes
• Should include Autoclavable outer housing
• Shield to protect battery from the housing
• Opening of battery housing for easy insertion of battery
• Should have option for autoclavable batteries

Sterilization Case:
• Should be accommodate all hand piece, attachment and accessories for autoclave

CERTIFICATION:
System should be USFDA Certified or European CE Certified

WARRANTY:
Warranty must be three years. The supplier shall separately quote annual CMC rates in continuity Warranty of the equipment, inclusive of all parts/components including batteries after the Three years warranty period with year wise break up.

E: General Instrument

SL	Particulars
1.	Forceps Bayonet Plain Length 7"(Ad son)
2.	Retractor Self retaining Hinge Semi Sharp Length 12" 4 4
3.	Retractor Self retaining Hinge Semi Sharp Length 13" 4 4
4.	Nerve root Retractor st Length 9"
5.	Nerve root Retractor Right angle Length 9"
6.	Nerve root Retractor 125^0 Length 9"
7.	Bone Nose pliers with wire twister
8.	Bone cutter curve 11"
9.	Bone Pliers with K- Wire cutter
10.	Bone nibbler Duckbill Length 9"
11.	Bone nibbler Straight Length 9"
12.	Bone nibbler curve Length 9"
13.	Disc Rongeure Length 6" width 2mm St., Upward, and Downward (One each)
14.	Disc Rongeure Length 6" width 3mm St. Upward, and Downward (One each)
15.	Disc Rongeure Length 6" width 4mm St. Upward, and Downward (One each)
16.	Ring Curette St. Length 10"
17.	Ring Curette Angle Length 10
18.	Kerri son Punch Up cut 7"angle 130 Deg Tip 1mm, Tip 2mm, Tip 3mm,Tip 4mm (One each)
19.	Kerri son Punch Up cut 7" angle 90 Deg Tip 1mm, Tip 2mm, Tip 3mm,Tip 4mm (One each)
20.	Needle Holder Micro Straight Length
21.	Penfield Dissector set of five
22.	Dura Hook Sharp Length 5"
23.	K- Wire cutter 1mm to 4mm
24.	Mono Orthofix/ Mono-Dynafix Set LONG and SHORT (Extenal Fixteur)
25	Extenal Fixteur Sets for Emergency
26	Burrs
27	Wire Passer
28	Self centering foceps with thread lock fixation for smoll and large fragment (Bone clamp)
29	CÓBBS Elvator
30	Mini-plate holding forceps

CERTIFICATION:
Instruments should be USFDA Certified or European CE Certified
WARRANTY:
Warranty must be three years.

2. General Instruments For Neurosurgery

1. Self Retaining Retractor Scalp Contour 13.5 cm
2. Self Retaining Retractor Anderson Adson 19 cm
3. Self Retaining Retractor Weitlaner 11 cm
4. Self Retaining Retractor Adson 14 cm
5. Self Retaining Retractor Cloward with plug in blades.
6. Self Retaining Retractor Beckman Eaton 32 cm
7. Self Retaining Brain Retractor with fixation base, Flexible Arm, support for flat brain spatula, Support for spatula with round shaft. Assortment of spatula.(Lyela System)
8. Self Retaining Brain Retractor with fixation base, Flexible Arm, support for flat brain spatula, Support for spatula with round shaft. Assortment of spatula.(Lyela System). With fixation to operating table. Ball and Socket Joint, Holding rod, coupling head ,Flexible arm, support of brain spatula with round shaft.
9. Yasargill Microscissor Bayonet shaped, 20cm
10. Yasargill Microscissor Bayonet shaped, 24.5 cm.
11. Yasargill Micro Forcep Bayonet shaped, 22.5cm
12. Yasargill- Samii Micro tumor Forcerp Bayonet shaped, 3mm/22cm
13. Samii Tumor knife 2.0mm/23 cm, 5.0 mm/23cm
14. Caspar Microdissector 20cm/ 23 cm
15. Cloward's / Inge Vertebral spreader.
16. Kerrison punches, cutting upward 130 /90 Degree 18 / 23 cm 2mm/ 3mm/ 5mm
17. Caspar Rongeur straight/ angled upward/ angled down ward 2mm/4mm 22 cm/ 30cm

18. Mayfield Head Fixation device system.
19. Still Luer Echlin Duckbill Rongeuer 6mm bite 23 cm
20. Frazier suction tip Angular with working length
21. Bone Rongeur Stille 230 mm.
22. Bone Ronguer Leksell stille 240 mm
23. Bone Rongeur Bohler 155 mm.
24. Hudson Perforator (Cushing) 14 mm.
25. Hudson Burr Dia 16 mm
26. Hemi Laminectomy Retractor Left/Right.
27. Long micro foreseps.
28. Yasargil exploration Hooks.
29. Micro dissectors for Neurosurgery (Acoustic Neuroma) upword curved/Downward curved.
30. Assortment of Pituitary instruments:
    - Currette.
    - Blunt hook
    - Spoon
    - Enucleator.
    - Implant fork
    - Raspatory.
31. Bipolar coagulation forceps with slender jaw, higher spring tension.
32. Assortment of Fergusson/Frazier suction canulla with finger cutoff.
33. Durogrip needle holder Hegar/Mayo 150mm/260 mm.

CERTIFICATION:

Instruments should be USFDA Certified or European CE Certified

WARRANTY:

Warranty must be three years.

GROUP – C: R.I.O.

A. Vitrectomy Machine with LIO-Qty-01

Phaco Equipment — Specifications
1. Phaco system with inbuilt vitrectomy and diathermy unit.
2. Venturi system with appropriately rated compressor.
3. Gravity fed irrigation system.
4. Aspiration flow rate from lcc/min to 40cc/m in.
5. Vacuum range from 5 to 500 mmHg.
6. The reflux should be continuous flow from irrigation source.
7. Fluid and air vents.
8. Linear and non-linear ultrasound power with 40 KHz power band width.
9. The ultrasound hand piece should be of 4 /6crystal, light weight piezoelectric all titanium type.
10. Continuous, pulse, micro pulse and burst ultrasound modes.
11. The irrigation/aspiration should have linear flow rate and vacuum control.
12. Bipolar wet field for coagulation.
13. At least 4 programmable user presets.
14. Dual linear foot switch to control phaco power and vacuum simultaneously.
15. LCD display(preferred touch).
16. To operate from 200 to 240 V AC, 50 Hz input supply.

Vitrectomy Specifications

7000 Cuts / Minute or
more Venturi pump

Vacuum :1. Facility to generate direct venture vacuum of up to 600 mmHg or more through cassette system .
Cutter :1. Ability to drive vertical guillotine pneumatic vitrectomy cutter to 7000 cuts/minute or more.
2. Linear control vacuum and cut-rate simultaneously in vitrectomy mode.
IOP Control : 1. The capacity to monitor infusion pressure constantly.
2. The capacity to compensate the infusion pressure constantly which results in a more stable I0P.

Illumination

1. The system should have at least dual port Xenon/LED illumination.
2. The color coding of different gauges should be there.
3. The system should show the probe connected and automatically load the settings.

MIVS

1. The capacity to support MIVS options like 23 G and 25 G.
2. A single entry
system. Laser Facility
1. 532 green laser facility with 2
filters. Other Features
1. Automated Silicon Oil Injection Capability
2. Auto Fluid / Air Exchange.
3. Pre filled syringe (SF6,C2F6 and C3F8).
4. Fully programmable footswitch with the facility to change procedural modes through footswitch.
5. The facility to digitally control the infusion pressure and the facility to toggle between a regular infusion pressure and a higher alternate pressure (to achieve tamponade effect) with the help of footswitch.
6. Facility for the extrusion of sub-retinal fluid.
7. Facility of voice re-confirmation.
8. Programmability to store various parameters.
9. Facility of fragmentations with the help of 4 crystal ultrasound hand piece.
10. Phacofragmatome handle

Should have safety certificate from a competent authority European CE / FDA
(US). Additional Accessories / Consumables
1. Phaco probe — Two.
2. I/A probe — Two.
3. Phaco tips 30
4. Phaco sleves 60
5. Casettes with tubing (phaco pack) 150.

b: Operating Microscope High End:Qty.01

Technical Speciation

1. This should be a high end system with which High resolution view of anterior Segment (Wide angle and high Magnification view) is possible facilitating cataract surgery and recording of the same.
2. Main Microscope with motorized zoom: Motorized: 4.2 x – 21 x (0.42-2.1) with automatic reset.
3. Focusing: Motorized with 55 mm travel and automatic reset.
4. XY Coupling: Motorized with 60 mm movement range and automatic reset Base : 33"X 31"X 10"with 5 dual locking casters.
5. IIIumination: Light source: 12 v 100 w rated at 2,000 hours Minimum IIIuminated fiels: 1882.9 mm.
6. Pupillary distance: 50 mm -75 mm.
7. Maintains a consistently stable, high quality red reflex regardless of pupil size centration lens tilt or patient eye movement.
8. Unprecedented detail recognition and contrast in every phase of cataract surgery .
9. Grater depth of focus with an approximately 60 mm longer focal length that maintains equivalent working destine
10. XY Communication system: At- a- glance to unique parameters, such as XY and focus position full color. Touch screen display for simplified control and customization.
11. Programmable wireless/ wired foot pedal control.
12. XY Position: Allows constant confirmation of positioning within the XY field .
13. Focus position : Enables awareness of excursion point.
14. True magnification : Useful for evaluating procedures and gaining feedback.
15. Provides a true 3D stereo assistant scope (Optional).
16. 3D ASSISTANT Visualization: Does not take light form surgeon's optical pathway (Optional).
17. Allows 180° swivel for postioning convenience.
18. Features an independent magnification changer.
19. Objective: wd =165 mm or wd=175 or wd=190 or wd=200 mm
20. Binocular Tube: 0° -200° or more inclinable: f=170 mm
21. Eyepieces: 12.5 X with widefield telescoping eyecups.
22. Floor stand: Spring-adjusted articulatin arm, Horizontal reach: Arm=47"End of optics=50"Vertical reach: 28" Rotational angle: 320°
23. Speed adjustable for focus, zoom & XY.
24. Reset of focus zoom & XY position with a single push of a button
25. Saves settings for future use: Pupillary distance, initial focus point, magnification level and more mandatory Accessories to be provide along with operating microscope.
26. CCTV camera in the Microscope for recording and documentation.
27. Video adapter with c-mount, fine focus, iris and XY adjustment.
28. HD Systems for ceptu8re & Recording.
29. 36" LED TV Monitor for Display.
30. Biom with lenses with inverter
31. USB functionality for video and still image capture.
32. Video Recorder and other accessories needed for recording of high resolution video of surgeries through the microscope
33. 2 sets of Autoclavable Silicone cover for all the adjustment knobs of the microscope
34. Should operate from 110-240 V: 50 – 60Hz
35. All equipment should have safety certificate form a competent authority CE/ FDA (US) / STQC CB certificate / STQC S certificate of valid detailed electrical and functional safety test report from ERTL. Copy of the certificate / test report shall be produced along with the technical bid.
36. 2 KVA online UPS with 30 min back-up needed.

Additional Offer during Negotiation

1. UV and IR notch filters with AR coating
2. Sterilizable covers for all knobs – 1 set extra

C: Phaco Emulsification System - 01

Technical Specification

1. Should have 4 crystal Hand pieces which is slim, light weight and autoclavable.
2. Should have the ability to drive high performance four crystal hand pieces: 30-40 KHz. Piezoelectric.
3. Should have the facility to drive Torsional/Transversal/Longitudinal ultrasound hand pieces or any other equivalent advanced technology.
4. All hand pieces should be compatible with tips like standard. Micro tip and curved/bent tip.
5. Should have facility of ultrasound power control in various sub modes like continuous pulsed, brust and bimodal application.
6. Should have a modality of hyper Pulses from 1 to 40 Pulses/ sec or more with selectable variable on and off time.
7. Should have micro brust setting range from 5 ms to 500 ms.
8. Should have the facility to use vacuum level of up to 500 mm hg or better and aspiration flow rate up to 50 cc/min or better.
9. Should have facility of dynamic rise time.
10. Should have the facility of custom pulse where in on time and off time can be varied simultaneously with the foot switch depression, with decreasing and increasing on time setting and decreasing off time setting variables.
11. Voice confirmation during mode changes.
12. Automated IV Pole controlled via footswitch, remote control and front panel.
13. Should have an ability to drive Pneumatic Guillotine cutter for anterior Virectomy with cut rates up to 3000 cuts or more per minute with 23 gauges virectomy probe.
14. Should have a wireless remote control.
15. Should have a programmable footswitch.
16. Should have an adjustment for footswitch to accommodate for varying lengths of the foot.
17. Flat Screen, Colour LCD Display with touch screen, tiltable and rotable.
18. Bipolar coagulation capability accessories to be provided in addition to the standard accessories.
19. Phaco hand pieces confirming to the specs mentioned earlier -2 Nos.
20. Phaco tips, Curved or bent tip and other tips – 10 Nos.
21. Anterior Virectomy packs including cutters and other disposable – 10 Nos.
22. Cassettes/Tubing and other switch disposable needed – 10 sets
23. Stand table with wheels for the Machine on which it can be kept and moved around.
24. Should operate from 200-240 Vac, 50 Hz input supply.
25. All equipments should have safety certificate from a competent authority CE/FDA(US)/STQC CB certificate or valid detailed electrical and functional safety test report from ETRL. Copy of the certificate/test report shall be produced along with the technical bid.

Training

1) Training for Two surgeons.

Additional Accessories

Phaco Sleeves Pack (2.8mm): 15 Nos.

1) Disposable Cassettes : 40 Nos.
2) Bi Manual I/A Set: 1 Nos.

Group – G: Cardiology

a:- Cardiac Cath Lab. (MECHANISED SINGLE PLANE SYSTEM) - Qty.01

State of the art single plane cardiovascular system with flat detector technology digital imaging system for diagnostic procedures and interventional cardiovascular procedures, valvuloplasty , vascular Angiography, pediatric interventional cardiology and online DSA. The system must include all package for Cardiac applications.

1.0 **Single Plane Gantry system**

1.1 The system should have slim design ‗C' arm gantries: one ceiling suspended providing full body coverage. Both gantry movements should be rapid, motorized & collision proof. Manual override by the operator should be possible.

1.2 It should be possible to pre-programme the gantry and table for multiple/several user defined examination positions

1.3 Gantry should have fast speed for angulations and positioning. The frontal system should have a speed of at least 15 degree/sec. for all positions.

1.4 Head to toe coverage with Single plane without repositioning the patient should be available.

2.0 Table

2.1 Table should be floor mounted long table with carbon fiber table top with easy patient transportation capability.

2.2 Table should have at least +/- 15 deg head up/down table tilt and table pivot/ rotation facility

2.3 It should support patient load of min 160 kg or more

2.4 Table should have a Radial procedure compatibility arm/accessories as part of standard.

3.0 X-Ray Generator:

3.1 100 KW or more high frequency generator compatible with high resolution imaging

4.0 X-Ray Tube:

4.1 X-Ray tube should be with fine focal spot (small & large) with high cooling rate to ensure continuous operation, capable of pulsed fluoroscopy on both focal spots. The large focus power output should be 80kW or more. The Pulsed Fluoroscopy should be offered with pulse rate of 3.75 frames /sec to 30 frames/sec.

4.2 The X-Ray tube should have Anode heat storage capacity of at least 2.4 MHU or more to run continuously for 6-8 hours without shutting off.

4.3 X-Ray tube must be capable of long fluro time of at least 2 min at one go as occurs in CTO case without getting heated.

5.0 Radiation protection:

5.1 The system should have integrated computer controlled (preferably automatic) X-Ray Beam filtering with copper filters of various sizesfor soft radiation filteration in both fluoro and acquisition mode .

5.2 The system should have positioning of collimator blades without radiation.

5.3 The system should have monitoring and display of X-ray dose during the patient examination. It should be possible to create a DICOM based dose report of the patient.

5.4 System should meet all National & International safety standards & comply with BARC & AERB guidelines.

6.0 Digital imaging System:

6.1 It should have flat panel detectors 30 cm X 30 cm to max of 30cmX 40cm.Optimal for both coronary and peripheral work. Atleast one detector could be peripheral and one coronary].

6.2 Option for 3-4 zoom fields with smallest of atleast 6‖ or 15-16 cm in diagnol in both planes.

6.3 System should have acquisition and processing in 1024xl024 matrix up to 25/30 fps

6.4 System should have cine loop replay facility & Last image hold facility during fluoroscopy

6.5 System should have image storage capacity of at least 1,00,000 images in 1024 x 1024 matrix.

6.6 System should have capability of ECG display on the live image monitor and archive the ECG display along with angio images on CD, during the acquisition.

6.7 System should have on-line & off-line validated coronary analysis and ventricle analysis program. The software should have Auto calibration facility for stenosis measurement with geometrical and densitometry calculations. The analysis should be possible from table side in the examination room and from the control room and review station possibly.

6.8 The system should have table side control operation with touch screen for complete acquisition and post processing capabilities.

6.9 The system should have on-line DSA capabilities in 1024 x 1024 matrix with acquisition frame rate of 1 frame/sec to 7.5 frames/sec. 6.10 It should be possible to have digital rotational angiography and rotational DSA facility

6.11 The system should have facility for storage of fluoro loop scene of last fluro run (as long as the run). 6.12 The system should have auto image transfer to PACS facility in background mode 6.13 The system should be quoted with 3D modeling/analysis of coronary arteries.

6.14 The latest complete software and hardware for visualizing stent with extra high-resolution from table side control.

6.15 It should be possible to do angle and distance measurements.

7.0 Monitors / Display :

7.1 The monitor display system in examination room should be ceiling suspended and it should be possible to position it on the left or right side of patient table. The monitor should be a single high resolution monitor of at least 56‖ and 8 megapixel resolution with PIP facility to display live and reference image from each plane, patient hemodynamic monitoring, 3D image and CT imaging or IVUS images.One medical grade back up monitor to be provided in console room and one in review station (outside the lab)

7.2 High resolution medical grade TFT/LCD monitors for live image of both planes in control room and monitor to display 3D image

8.0 Digital Archiving

8.1 System should have facility of image archiving on CD/DVD in 512X512 matrix.

8.2 Networking for auto Image transfer during procedure from cathlab in background mode without affecting the system operation into distant review stations.[2 in no]. One in seminar room and one in HOD office.

8.3 All review station to have high end medical grade monitors.

9.0 3D Acquisition and Cross-Sectional Imaging :

9.1 The system should have cross-sectional CT like imaging based on rotational angiography.

9.2 System should have software/hardware package for guidance of valve implantation in TAVI procedure from rotational angiography data

9.3 It should be possible to have 3D image reconstruction of vascular structure , Left atrium of heart and aortic arch from rotational subtraction angiography data. The cross-sectional & 3D images should have processing capabilities in the examination room and control room with dynamic 3D roadmaping

9.3 System should have facility of auto positioning of C Arm depending upon 3D image . It should be possible to differentiate between devices like stent and artery in 3D image .

9.4 System should have 3D fusion of cardiac CT data on live fluro for optimized performance in Chronic total occlusion (CTO)cases.

10.0 **IVUS and FFR**

10.1 IVUS and FFR system should be offered with Intravascular Ultrasound (lVUS) with virtual histology (VH-IVUS) with motorized pullback to be integrated to the main laboratory and be able to display in main monitors, It should have both online &offline analysis.

10.2 IVUS coregistration with angio images simultaneously must be possible.

10.3 FFR software and hardware must be integral part of the system (preferably cordless).

11.0 CATHLAB RECORDING SYSTEM (**Electro-Physiology and Hemodynamic Recorder)**

11.1 The following features should be available in the recorder • 12 Lead ECG Amplifier with floating input • At least 2 pressures with floating inputs • Time and amplitude measurement with electronic calipers • Laser Printer with minimum 16 MB memory with minimum 1200 dpi 11.2 The patient connection box should be easy to install at the patient table in the examination room 11.3 18" color wave form monitor with programmable layout and digital monitoring readout – Two No in control room should be offered 11.4 Display on large 56‖ display in exam room should be offered 12.0 UPS 12.1 System should be offered with suitable online full back up UP Swithatleast 30 min. battery backup for complete Cath Lab including cine and fluoroscopy. Emergency lighting should also be on UPS 13.0

ACCESSORIES to be supplied:

13.1 State of the art High Pressure Injector – One (table mounted)

13.2 Lead Glass 150 x 120 cm. (as per international radiation protection standard)

13.3 Good quality, light weight Lead Aprons skirt top types with hangers - 6nos and wrap around 12 nos. (as per FDA standard)

13.4 Thyroid Guard - 12 nos. (as per international radiation protection system)

13.5 Ceiling suspended radiation protection - 1 no. (as per international radiation protection system) 13.6 Table mounted radiation protection - 1 no. (as per international radiation protection system) 13.7 Integrated two way communication system between control room and examination room. 13.8 Light music system in the lab.

14. Latest model ROTABLATOR console to be supplied along with.

15.It should be CE & US FDA Approved

B: 2 D Color Doppler echocardiography-03

State of the art, fully digital, 2D echocardiography color Doppler system for both adult and pediatric patients including all basic and specialized cardiac and vascular applications.

1. System should have following display modes, covering all basic and specialized cardiac and vascular applications.
    a. M-mode should also have angular / anatomical M-mode (any axis M-mode) facility, with up to 3 M-mode omnidirectional cursors. M-mode should also show quantitative segmental wall motion scanning facility.
    b. 2D with facility for real time contrast studies.
    c. Colour doppler, pulse wave Doppler, HPRF, fully steerable continuous wave Doppler.
    d. Should have tissue harmonic imaging capability with quantification.
    e. Contrast harmonic imaging with quantification facility should be present.

f. Should have ECG gating with possibility of online as well as offline TDI and myocardial velocity with protocol templates for WM scoring and reporting with segmental wall motion analysis software for quantification of endocardial segmental motion.

g. Color coded tissue doppler must be available with quantification for myocardial thickness, strain and strain rate imaging with facility for real time and off line calculation of velocity of myocardial segments. Should preferably be displayed after intracardiac cycle in one single image.

2. Transducers should have broadband harmonics and compound array probes. System to be offered with phased array cardiac probes for adult, pediatric and neonatal probes and a linear probe for peripheral vascular studies along with TEE probes for adult and pediatrics applications.
   a. All probes should be multi frequency.
   b. 1.5-5 MHz electronic phased array for adult cardiac study.
   c. 3.75-7.5 MHz electronic phased array for neonatal / pediatric applications.
3. Should have at least 19" high resolution LCD color display.
4. Should have Scanning depth of 30 cms or more.
5. Should have minimum 3 active ports.
6. Should have high frame rates of more than 500 FPS.
7. Comprehensive measurement and analysis packages and report pages for all routine and advanced cardiac application.
8. Cine loop memory of at least 10,000 frame / 200 sec.
9. 1000 patient data memory should be available.
10. System should have algorithms to improve 2D image quality including optimization for spatial and temporal resolution.
11. At least 60 GB onboard HDD for storage.
12. Should have integrated hard disk for image storage / recall with complete image management and post analysis on stored images.
13. Should have full Dicom support inbuilt, ready for connecting to remote server / laser camera.
14. Able to transfer images and clips to CD & DVD as AVI files.
15. Direct compatibility to attach inkjet / LaserJet printer along with a CD-RW must be available.
16. Should be quoted with B/W thermal printer with 100 rolls with facility for color print.
17. Image management system with latest computer-Pentium-IV dual core, 120GB, HDD, DVD writer, CDR W and colour laser.Appropriate on line UPS with 30 minutes backup
18. **It should be CE and FDA approved.**

C: <u>Intra Aortic Balloon Pump (IABP) – 01 No.</u>

Technical Specification for IABP (Intra Aortic Balloon Pump)

1) The system should be the latest generation of pumps used for hemodynamic stabilization of sick patients in cardiogenic shock.
2) The IABP system should be compact and easily transportable to places on castor wheels.
3) Fast pneumatics to provide accurate and reliable ventricular support enhancing augmentation and improved afterload reduction. Preferably compressor based system for better drive gas shuttle speed.
4) Should have three modes of operation
   i) Automatic
   ii) Semi-automatic
   iii) Manual
5) System should be capable of automatically selecting appropriate trigger of ECG, pressure, or pacing spike and also accurately select the inflation and deflation points in automatic mode.
6) In automatic and semiautomatic mode, single ECG trigger should able to track various ventricular and atrial arrhythmias including ventricular extra-systole, bigeminy, trigeminy, couplets etc. and atrial fibrillation without any user intervention and continues to give optimal performance.
7) System should be able to trigger on 3-7 mm Hg of pulse pressure when used in pressure trigger mode.
8) Single key start-up with auto zeroing on start-up. Capability of zeroing manually whenever required.
9) Should able to display at least three waveforms at a time (ECG, Invasive BP at balloon tip, and Balloon pressure waveforms are must).
10) System should have large TFT display for brighter and very good visibility from a distance in any lighting conditions. Preferably should have touch-screen display.
11) System should have on screen indicator for Helium level in the cylinder and battery level for timely intervention to ensure continuous pumping.
12) System should be compact in such a way that Helium cylinder and other tubing's and fittings are positioned inside the system so that it does not occupy enough space and easy to maneuver.
13) On screen indication of standby time and should give alarm after 10-20 minutes to draw attention of user on the system being on standby.
14) System should have optical bleed back detection for early indication of blood coming in to the balloon lumen due to balloon leak.
15) Should have battery backup for at least 3 hours.
16) Peripheral vascular Doppler probe should be attached with/tethered to the main equipment for checking limb ischemia.
17) System should be supplied with the following accessories
   i) ECG cable with lead wires: 1 set
   ii) Invasive blood pressure transducer: 1 no.
   iii) Refillable Helium cylinder compatible with the system: 3 no.

iv. Ballones of different sizes for patient use 10 no.

V. 7-8 Fr. Sensor catheter.

18. The same machine must have been installed in India earlier and its satisfactory working certificate has to be attached.

19. System should be US FDA approved or CE marked.

20. Manufacturing company has to give undertaking regarding maintenance of the system and avaibility of accessories and spare parts for next ten years.

21. Latest authorization certificate in original should be attached with the quotation, failing which their tender application will be rejected. Photocopy/Xerox copy of authorization certificate will not be accepted.

22. The machine should come with required electrical stabilizer and should be computable with standard India electrical sockets.

21. It should have standard electrical safety norms

24. The spare parts should be easily available and the technical staff should be available in Delhi.

25. Demonstration to the department staff at the site will be required.

26. The system should come with the required log book and user manual in English

27. Demonstration of the complete system is must if required in two weeks time.

28. Price of all accessories including ballones should be quoted separately and the price should freez for at least three year from the time of installation.

Group - D: Neurosurgery

A: Operating Microscope – 01No.

Operating Microscope Unit for Micro-Neurosurgical Operation.

1. Description of Function

Surgeons use microscope to magnify minute structures (eg. Nerves, blood vessels, lesions etc.) in operating field.

2. Operational requirements

Operating microscope should be equipped with features that enable the surgeon to concentrate on the surgery rather than on manipulation of microscope, Such as powered focusing and zooming, magnification capabilities as well as eye piece tubes that permit the surgeon to see the field from a vertical perspective, while keeping head erect.

3. Technical specification

(1) Motorized zoom magnification 6.1 ratio

(2) Magnification from 1.6x to 18.5x

(3) Variable working distance from 200mm (+/- 25 mm) to 510 mm (+/- 25mm) through motorized multifocal lens working distance

(4) Pair of wide field eye pieces for spectacle wearer. 12.5x magnification with magnetic locks. Diopter setting from -8D to +5 D.

(5) Ergonomic handles with buttons for motorized controls of focus, zoom, axis movement, video control and still photography with programmable keys.

(6) Facility for adjusting speed of focusing motor to adapt for different magnifications.

(7) 300 watt xenon illumination with 300 W xenon backup in same illumination module through fiber optic cable with semiautomatic lamp change over facility.

(8) Inclinable binocular tube. Inclinable minimum over range of 0-180 degree.

(9) Facility for auto laser spot focus illumination.

(10) Floor stands with electromagnetic brakes with freedom of movement in all axes.

(11) system should be compatible for neuronavigation.

(12) Complete auto balance with single push of one button. Intra operative auto balance.

3.1 Essential Accessories

(1) Stereoscopic co observation for second observer with tilt able eye pieces. Minimum 0-180 degree. Remain fixed when tilting main microscope.

(2) integrated dual beam splitter.

(3) Integrated 3 chip CCD camera with mount for connecting with microscope.

(4) Integrated digital video recording with appropriate video editing software.

(5) Riteloscope face to face attachment

(6) Full multifunction foot switch.

(7) Digital still camera for attachment with Microscope.

4. System Configuration Accessories, spares and consumables

Spare xenon lamp 300 W (2 Nos.)

5. Environmental factors:-

The unit shall be capable of being stored continuously in ambient temperature 0-50 degree C and relative humidity of 15 percent.

The unit shall be capable of operating in ambient temperature 20-30 deg C and relative humidity of less than 20 percent.

6. Power Supply

Power input to be 220-240 volts AC, 50 Hz. Fitted with Indian plugs. Resettable over current breaker shall be fitted for protection.

Voltage corrector stabilizer of appropriate rating meeting ISI specification (Input 180-280 Volts and output 220-240 volts and 50 Hz).

Suitable UPS with maintenance free batteries for minimum two hours backup should be supplied with the system.

7. Standard safety and training:-

Manufacture/ supplier should have ISO certificate to quality standard.

Should be complaint with IEC 61010.1 (or any other international equivalent egg. EN UI61010covering safety requirements for electrical equipments for measurement control and laboratory use.

Should be FDA, CE or BIS approved product.

Comprehensive training for lab staff and support services till familiarity with the system.

8. Documentation:-

User technical maintenance manual in English.

Certificate of calibration and inspection.

List of equipment available for providing for calibration and routine maintenance support as per manufacturer documentation in service. Technical manual.

List of important spare parts and accessories with their part numbers and their costing.

Log book with instruction to daily, weekly, monthly and quarterly maintenance checklist. The job description of hospital technician and company service engineer should be clearly spelt out. Compliance report to be submitted in tabulated and point wise manner clearly mentioning the page/para nos. of original catalogue/ data sheet. Any point if not substantiated with authenticated catalogue/ manual will not be considered.

Group – F: E.N.T.

(A) ENDOSCOPIC SINUS SURGERY-Qty.01

1. **Nasal Rigid Endoscope. – One**

   Straight forward telescope,0 degree enlarged view, size: 4.0 MM

   rod lenses system ,Length:18-19 cms, Autoclavable, Fiber optic light transmission incorporated.

2. **Nasal Rigid Endoscope. – One**

   Forward oblique 30 degree enlarged view, size: 4.0 MM rod lenses system, Length:18- 19 cms, Auto clavable, Fiber optic light transmission incorporated.

3. **Nasal Rigid Endoscope. – One**

   Wide Angle Lateral Telescope 70°, enlarged view, size: 4.0 MM

   rod lenses system ,Length:18- 19 cms, Auto clavable, Fiber optic light transmission incorporated.

4. **Holder – one each**

   Telescope Handle, flat, standard model, length 11 cm, for use with Straight Forward Telescopes 0° with diameter 4 mm and length 18 cm

   Telescope Handle, flat, standard model, length 11 cm, for use with Straight Forward Telescopes 0° with diameter 4 mm and length 18 cm

5. **Laryngoscope (with handle). – One**

   Tele-Laryngoscope, with integrated Lateral Telecsope 70°, angle of view 50°, Rod Lenses System diameter 5.8 mm, length 19 cm, autoclavable. Fiber optic light transmission incorporated including one Handle, for use with Tele-Laryngoscope.

6. **High Definition Endoscopic Camera.with Endoscopic Image Processor – one**

   Full High Defination Endoscopic Camera with integrated, innovative visualization technology for surgery/video endoscopy by shifting the color spectrum and via homogeneous illumination and contrast enhancement.

   The system should be truly Digital HDTV endoscopic video camera. The system should have the maximum Resolution of 1920 X 1080 pixels, progressive scan and the consistent use of 16: 9 formats for Input & Output to guarantee genuine HDTV.

   <u>The system should have Special Features:</u>

- Visibly Improved Imaging: CCD sensing chip should optimizes image quality & Digital Source Sampling thus maximizing hi-fidelity image transmission.
- **Optimizes to Any Size: The system should have** Optical Zoom with 2x parfocal zoom lens to enhance the quality of Image size & cross specialty standardization of the camera system, regardless of the telescope used.
- **Plug and Go:** The system should automatically optimize all settings. The system should be ready- to- use as soon as it is connected to the camera control unit.
- **Color Spectrum:** Compatible with systems with integrated, innovative visualization technology for surgery/ Video endoscopy by shifting the color spectrum and via homogeneous illumination and contrast enhancement.
- **USB Port for Capturing FULL HD Videos/ HDStill Pictures**: Captured digital images in format 16:9 can be displayed on WideView monitors in the same full HD format without being converted. This prevents a loss if image quality caused by image stretching.
- Integrated digital imaging processing module for a 5 level brightness regulation and 2 electronic anti-moirée filter for fiberscopes.
- Parallel live display of visualization modes besides white light mode (picture-in-picture).
- Up to three different camera modules can be connected to the FULL HD video processor module.
- Side-by-side live display of visualization mode next to white light image (picture-in-picture).
- Integrated picture-in-picture mode of two different camera modules in five different display sizes available.

- Primary and secondary signal source change in picture-in-picture mode can be performed easily via camera head button.
- In combination with a compatible three-chip FULL HD camera head the following modes can be activated without special light sources or filters:
- Color inversion by spectral color shift.
- Brightening of dark areas in the endoscopic image.
- Dynamic contrast enhancement.
- Changes in visualization modes, device control, digital zoom, brightness, video capture, still image capture and direct print orders, picture-in-picture mode, image direction, white balance and setup settings can be performed in sterile area via camera head buttons.
- Backward compatible with selected existing three-chip FULL HD camera heads.
- Short learning curve due to familiar handling, short starting time and customizable parameter adjustment.
- Grid and pointer can be displayed for improved orientation and communication during surgery.
- Grid and pointer can be displayed individually and together.
- 2 x digital zoom, adjustable in 5 levels.
- Possibility of 180° image rotation.
- Possibility of vertical and horizontal image mirroring.
- Storage of up to 20 individual presets.
- Storage of up to 20 individual patient data.
- System overview is individually configurable and setup status can be directly displayed with intelligent icons.
- Parameter setup can be adjusted during surgery.
- Number of menu icons can be customized individually for optimal system adjustment for the user.
- **Modular design: Digital FULL HD camera module should be compatible for use with video flexible endoscopes.**

Camera system should be compatible with Communication Bus system for remote controlled operation of the various features of the camera along with other equipment like digital light source and Insufflators.

Technical Specifications:

Image sensor:	**3X1/3'' CCD-Chip.**
Pixels	1920 x 1080
AGC:	Microprocessor controlled
Lens:	Integrated Zoom Lens f = 15-31 mm (2x optical zoom)
Minimum light sensitivity:	1.17 Lux (f = 1.4 mm).
Control buttons:	3 (2 of them freely programmable).
Video output:	2 x DVI-D output, 1 x 3G-SDI output, 3 x camera input for communication with compatible camera modules, LAN connection, 4 x USB connection (2 x front, 2 x back).
Input:	Keyboard input for character generator. 5-pole DIN socket.
Power Supply:-	100-240 VAC 50/60 Hz
Certified to : to MDD, protection class1/CF	IEC 601-1, 601-2-18, CSA 22.2 No. 601, UL 2601 and CE according

7. **Monitor – one**
   The monitor should have:

   HDTV display in original 16: 9 HDTV

   format. 1080 p/ 50 & 1080 p/60 displays

   possible. LED crystal display.

   Max. Resolution of 1920X1080.

Screen diagonal – 26” / 27”

Desk top with pedestal.

Should have the facility of PIP mode.

Specifications

HD TFT Flat Screen Monitor with stand size 26",

Aspect Ratio 16:9 HD format

Brightness: 500 cd/m2

Maximum viewing angle : 178° vertical

Contrast ratio: 1400 : 1

Reaction Time – 8ms

Rated power : 115 watts

Power Supply 100-240 VAC

Screen Dimensions : 643 x 396 x 87mm

Video Inputs : 2* DVI-D , 2* 3G SDI, 1* S Video , Composite 1* RGB/VGA , 1* RS 232 , 1* RJ 45 Interface

Output: 1* DVI , 1* 3G SDI, 1* S-Video

Accessories External 24VDC Power Supply, Mains Cord, Pedestal.

Certified to : EN 60601-1, protection class IPX 1

8. Light Source - one

High intensity Xenon light source with spare Xenon lamp SPECIAL FEATURES:

High light intensity with 300watt Xenon Lamp.

High colour temperature – more than 6000 K corresponds to brightness of sunlight resulting in high visual and photographic clarity for colour retention.

Monitoring of lamp function.

UNIT SHOULD BE COMPATIBLE WITH COMMUNICATION COMPUTER SYSTEM FOR REMOTE CONTROLLED OPERATION OF THE VARIOUS FEATURES ALONG WITH OTHER EQUIPMENT. SO AS TO FUNCTION AS AN INTEGRAL PART OF THE DIGITALLY CONTROLLED OPERATING ROOM UNDER THE COMMAND OF THE OPERATING SURGEON.

TECHNICAL SPECIFICATIONS:

Lamp type - Xenon lamp, 300 watt

Colour temperature - approx. 6000 K

Light outlets - 1

Light intensity adjustment - continuously adjustable from 0 to 100% either manually or Automatically by the camera video-output signal.

Certified to - IEC 601– 1, CE label according to MDD, protection class 1/BF

9. **Fiber Optic Cable – one**
   Thickness 4.8mm Length 300 cm. Extremely heat resistant.

10. FESS Device Carrying Trolley
    a. Made of Stainless Steel / Epoxy coated metal.
    b. Portable on 4 antistatic dual castors, 2 with locking brakes.
    c. Required number of shelves for housing all the units of the set.
    d. One drawer unit with lock and key.
    e. Cable Manager.
    f. Power box with concealed wiring for providing electrical connections of proper rating to all the units.

ALL THE ABOVE ITEMS PREFEBLY BE FROM THE SAME MANUFACTURING COMPANY FOR BETTER SYSTEM COMPATIBILITY AND THE CORE ITEMS LIKE TELESCOPES, CAMERA SYSTEM AND LIGHT SOURCE WITH CABLE SHOULD BE USFDA APPROVED.

Manufactured, designed, developed and marketed under FDA/European CE certification

(B) DIAGNOSTIC MICROSCOPE ENT

Apochromatic Optics with magnification Range 0.4x-2.5x or more;
Working distance f=200mm
Fine focusing range up to 40 mm motorize or manual

180 degree tiltable tube f=170mm or Straight binocular tube f=170 mm interpupillary distance adjustment from 55 mm to 75 mm
Pair of widefield push-in eyepieces 10x with sleeves and magnetic locks, diopter setting from –8D to +5D Handgrips
Coaxial fiber optic illumination system. With proper backup. Dual lamp system with quick change over
Continuously lamp intensity adjustment by control knob near to the surgeon
Stable and sturdy floor stand on four lockable castors, column (height: minimum 1.7 m) spring-balance articulated arm, carrier arm, power supply unit, light guide 2 m, power cable
Sterilizable rubber caps for all knobs, dust cover.
Stereo Co observation system with 45º incline binocular with PD adjustment scale
Manufactured, designed, developed and marketed under FDA/European CE certification

(B) COBLATION SYSTEM FOR ENT SURGERY

Technical specification of Coblation system for ENT Surgery

- Controlled ablation of tissues based on low temperature bipolar radiofrequency technology in electrolytic solution like normal saline. The machine should have no need for secondary patient earthing pad.
- FDA approved
- Operating temperature –between 40-70 degree .There should integrated saline pump for continuous irrigation .
- The Generator should have facility for food switch.
- There should be facility for coblation and coagulation.
- The generator should be able to take old different probes for open and minimal invasive ENT procedure probes like ; probes for tonsillectomy turbinate reduction, adenoid , soft palate, laryngeal , tongue and related applications.
- The coblation probe should have multiple electrode technology to allow uniform production of plasma. The probe should have integrated cable.
- Should have tungsten electrode.
- Probe should have malleable shaft. Bending tool should be available for bending the probe.
- Suction probe should have integrated IV tubing.

Probes with dual function of coblation and shrinkage should have depth identification marks on the shaft.

- Laryngeal probes should have at least six inches of working length and the tip diameter less than 4mm.
- Articulating instruments (forceps) for ENT

  Can be used for surgical procedure for examination and treatment of nasal , paranasal, ear, nose and throat tissues.

  Articulating though cutting forceps vertical jaws and articulating grasping forceps vertical jaws should have more than 200 degrees of articulation with many distinct locking positions should have multiple tip configurations.

Manufactured, designed, developed and marketed under FDA/European CE certification

(b) <u>TECHNICAL SPECIFICATION OF AUDIOMETER</u>

Channels : Two Independent Channels
Pure Tone – Frequency Range:

Channels 1 and 2: Air Conduction: 125 Hz to 12,000 Hz

High Frequency: 8,000 Hz to 20,000 Hz (8 kHz, 9 kHz, 10 kHz, 11.2 kHz, 12.5 kHz,14 kHz, 16 kHz, 18 kHz and 20 kHz)

Full Frequency Range: 125 Hz to 20,000 Hz
Bone Conduction: 250 Hz to 8,000 Hz
Sound Field: 125 Hz to 8,000 Hz

Paired Inserts: 125 Hz to 8,000 Hz
Frequency Accuracy: ±1%

Total Harmonic Distortion:

< 2% (earphones and paired insert phones)

< 5% (bone vibrator)

Intensity Range:

Air Conduction (TDH 50P): -10 dB HL to 120 dB HL): -10 dB HL to 120 dB HL

High Frequency: -20 dB HL to 100 dB HL

Bone Conduction:

- Mastoid: -10 dB HL to 75 dB HL or more
- Forehead: -10 dB HL to 70 dB HL or more

Sound Field:

-10 dB HL to 85 dB HL or more (basic speakers)

-10 dB HL to 95 dB HL or more (high performance speakers)

-10 dB HL to 100 dB HL or more (high performance speakers and external booster amplifier) **Paired Inserts:** -10 dB HL to 110 dB HL

Masking Intensity Range (Calibrated in effective masking)
Narrow Band Noise: Maximum dB HL is 15 dB below
tone White Noise: Maximum dB HL is 30 dB below tone

Signal Format:

Steady: Tone continuously present.

Pulsed: Tone pulsed 200 msec ON, 200 msec OFF
FM: Modulation Rate: 5 Hz, Modulation depth +/-
5% Pulsed/FM: Pulsed and Modulated
Paediatric Noise and Paediatric Noise Pulsed

Speech – Channels 1 and 2:

Microphone: For live voice testing and communications

INT/EXT A & INT/EXT B: Can be utilized for internal wave files or recorded speech material from an external digital device

Intensity Range:

Air Conduction: -10 dB HL to 100 dB HL for TDH
50P Bone Conduction

Mastoid: -10 dB HL to 50 dB HL or more
Forehead: -10 dB HL to 35 dB HL or more
Sound Field: -10 dB HL to 80 dB HL or more
Paired Inserts: -10 dB HL to 95 dB HL or more

Masking Intensity Range:

Speech Noise:

Air Conduction: -10 dB HL to 95 dB HL (TDH
50P) Bone Conduction:

-10 dB HL to 50 dB HL (mastoid) or more -
10 dB HL to 35 dB HL (forehead) or more
Sound Field: -10 dB HL to 80 dB HL or more

White Noise:

Air Conduction: -10 dB HL to 95 dB HL (TDH 50P)
Bone Conduction:

-10 dB HL to 50 dB HL (mastoid) -10
dB HL to 35 dB HL (forehead) Sound
Field: -10 dB HL to 80 dB HL

Special Tests:

ABLB or Fowler: Tone alternating between Channel 1 and Channel 2: Channel 1 is 400 msec ON, 400 msec OFF followed by Channel 2, 400 msec ON, 400 msec OFF.

SISI: An intensity increment is added to a tone in the selected channel for 200 msec, every 5 seconds. The HL increments are in 1, 2 or 5 dB.

High Frequency: Pure tone testing in the frequency range of 8,000 Hz to 20,000 Hz using circum-aural headphones.

TEN: TEN masking noise will be presented to the test ear. Pure tone stimuli between 500 Hz and 4000 Hz may be used at 1, 2, or 5 dB increments to obtain TEN thresholds.

Quick-SIN: Six (6) sentences with five (5) key words per sentence are presented in four-talker babble noise. The sentences are presented at pre-recorded signal-to-noise ratios. The SNR's used are 25, 20, 15, 10, 5, and 0. **BKB-SIN**: contains 18 List Paris. The sentences are presented at prerecorded signal-to-noise ratios that decrease in 3-dB steps. Each list in the pair is individually scored, and the results of the two lists are averages to obtain the List Pair score. Results are compared to normative data to obtain the SNR Loss.

PC Enabled/Stand Alone;

Transfer data to connected PC with an E-Record Solution Software
Print complete report directly to a compatible USB printer

Special Tests (user defined):

MLB
Lombard test
Pure Tone Stenger
Speech Stenger
SAL
Doerfler - Stewart Test

Communications and Monitoring;

Talk Forward: Permits the tester to speak through the test microphone into the selected transducer at approximately the intensity level set by the front panel controls.

Talk Back: Allows the tester to listen to comments from the patient in the testing booth.

Monitor: The monitor headset or monitor speaker built into the instrument housing can be used by the tester to listen to Channel 1, Channel 2, Aux intercom, and/or Talk Back signals.

Aux Intercom: The built-in Auxiliary Intercom and Assistant headset allows the tester to speak directly to an Assistant without the patient hearing the conversation and allows the assistant to hear what is being presented to the patient.

On-Board VRA Control: The built-in VRA controls facilitate fast and simple activation of VRA systems.

Optional Accessories
Wireless keyboard and mouse
Gooseneck microphone

Manufactured, designed, developed and marketed under FDA/European CE certification

(B) TECHNICAL SPECIFICATION OF TYMPANOMETER

GENERAL SPECIFICATIONS:

Test Types: Tympanometry, Acoustic Reflex Threshold, Reflex Decay, Eustachian Tube Function (Intact and Perforated)

Protocols: Diagnostic, Screening, Multi-component Tympanometry, Auto Sequence and User Defined Display: Internal Color Touchscreen and optional eternal HDMI monitor

Interface: USB (keyboard, mouse, Flash

Drive, PC communications) Printout: External Deskjet printer Probe Tone:

• 226 Hz (85 dB SPL ± 1.5 dB) 678 Hz

(72 dB SPL ± 1.5 dB) 1000 Hz (69 dB SPL ± 1.5 dB)

• Accuracy: ± 1%

• Harmonic Distortion: Less than 1%

ADMITTANCE MEASUREMENTS:

Range: 226 Hz (-10 to + 10 mmho)
678 Hz (-21.0 to +21 mmho)1000 Hz
(-32.0 to +32 mmho)

Sensitivity Scale: Auto Scales to Appropriate Range, Manual selection also possible in Reflex Modes only

Accuracy (226 Hz):

• Tymp Mode: ± 5% of reading or
± 0.1 mmho, whichever is greater

• Reflex Mode: ± 5% of reading or ±

0.02 mmho, whichever is greater

PRESSURE MEASUREMENTS:

(load volume of 0.2 to 7.0 ml)

Range: Normal = +200 to -400 daPa Wide = +400 to -600 daPa

Accuracy: ± 10% of reading or ± 10 daPa, whichever is greater

Sweep Rate: 12.5, 50.0, 200, 600 and 600/200 daPa/sec.

Sweep Accuracy: 10% of nominal rate

Maximum limits (in 0.5cc cavity): -800 daPa and +600 daPa

REFLEX MEASUREMENTS:

Stimuli: 250, 500, 1k, 2k, 4k, BBN, LBN, HBN, Click, External Input, Non-acoustic
Frequency Accuracy: ± 3%

Harmonic Distortion (THD): Less than 5% (measured
acoustically) Noise Signals: (3 dB bandwidths)

Low Band: 400 -1,600 Hz
High Band: 1,600 -4,000 Hz
Broad Band: 400 -4,000 Hz

Intensity Range: 35 to 120 dB
HL Step Size: 5 dB, 1 dB and 2
dB Calibration Accuracy: ± 3 dB
Step Accuracy: ± 0.5 dB
ON/OFF Ratio: 70 dB minimum

ACCESSORIES SUPPLIED:

Probe Assembly (including contra lateral insert
phone) Ear tips (1 pkg. each standard, screening)

Calibration Test Cavity, Cleaning kit, Probe Mount Kit (shoulder, clip, wrist band), User Quick Guide, Reference Instruction Manual

QUALITY SYSTEM:

Manufactured, designed, developed and marketed under FDA/European CE certification.

(C) TECHNICAL SPECIFICATION OF BERA ADVANCE

GENERAL SPECIFICATIONS:

Test Types: AEP, ECochG, Cortical AEP, AMLR, EABR, ASSR, Distortion Product Otoacoustic Emissions, Spontaneous OAE, Input/Output DPOAE

Transducers: Insert earphones, TDH Headphones, Bone vibrator, Loudspeaker
Stimulus Specifications:
Stimulus Types: Click, tone burst, tone pip
Stimulus Polarity: Condensation, Rarefaction and Alternating
Masking Types: Absolute or stimulus relative
I Intensity: 0 to 130 dB SPL
Repetition rates: 0.2 – 100 depending on modality
High Pass Filtering: RC or Digital Butterworth
Low Pass Filtering: Butterworth or Digital linear phase
Amplifier:
Interface To Main Unit: Proprietary high-speed, serial digital
Number of Channels: 2 Isolated (type BF) for patient safety
Electrode inputs: Differential
Input Impedance: >1000 MW
Frequency Response: 0.2-10,000 Hz

ASSR

Display: ASSR Thresholds, Estimated Audiogram, Results Summary, Trials Done
Stimulus Specifications:
Stimulus Types: AM/FM
Masking Types: Absolute or stimulus relative
Intensity: -10 to 130 dB HL
Carrier Frequency: 250 – 8000 Hz
Modulation Frequency: 20 – 200 Hz depending on carrier frequency
AM Modulation: 0 – 100%
FM Modulation: 0 – 15%
Relative Angle: 0 – 359 degrees
GSI Audera Amplifier:
Dimensions: 3.93"(W) x 7.48"(D) x 1.57"(H)
Weight: .94lb
Interface To Main Unit: Proprietary high-speed, serial digital
Number of Channels: 2 Isolated (type BF) for patient safety
Electrode inputs: Differential
Electrode connectors: 5 DIN 42802 safety connectors
Input Impedance: >1000 MW
Frequency Response: 0.2 – 10,000 Hz

OAE (Otoacoustic emission)

DPOAE Stimulus Tones:
Frequency: 500 – 12, 000 Hz
Level: 20 – 80 dB SPL, in 5 dB steps
Accuracy: ± 3 dB
Harmonic Distortion: <_ 1.8% at 80 dB SPL, IEC 711 coupler, 500 – 12,000 Hz
Dynamic Range: 85 dB SPL, IEC 711 coupler, 500-12,000 Hz, F1 & F2 = 65 dBSPL
Octave Ranges: 500-1000, 1000-2000, 2000-4000, 4000-8000, 8000-12000 Hz
Points per Octave: 1 – 12 points
F2/F1 Ratio: 1.1 – 1.8

MAIN UNIT:

Computer Interface: USB - Type I

Trigger Controls Input/Output: Standard TTL logic level

Mains Power Supply:230V

Isolated Power:

a) Main unit includes isolation transformer/ power supply which provides isolated mains power only for supported notebook computer and inkjet printer models.

b) Main unit provides isolated power to Amplifier/Digitizer or ProbeUnit.

CPU RECOMMENDATION:

Operating System: Windows 7 Professional

Processor: 1 THz

Minimum RAM: 2 GB

Storage: 11 GB Hard Drive

Additional Storage: CD R/W drive

USB Ports: 2

Graphics: 1024 x 768 pixels

ACCESSORIES:

Main Unit
Reference Manual
2-Channel Amplifier with 9' cable
AEP/CAEP Software Application or Licensing key to activate AEP/CAEP User's Manual
Insert Earphones with 9' cable Loop-back cable
Electrodes, 6mm cup, 12 pk
Electrodes, 10mm cup, 12 pk Electrode Linker
Disposable side snap electrodes, 25 pk Electrode Leads, Snap, 5 pk
NuPrep Gel, 4 oz. tube
Ten 20 Paste, 4 oz. tube
Infant eartips, 3.5mm, 20 pk
Infant eartips, 4.0mm, 20pk 3A
foam eartips, 10mm, 100pk 3A
foam eartips, 13mm, 100pk
OAE Probe/Pod with Test Cavity
OAE Calibration CD
DPOAE Software Application or Licensing key to activate DPOAE User's Manual
Shoulder Mount Kit

QUALITY SYSTEM:

Manufactured, designed, developed and marketed under under FDA/European CE certification.

(D) TECHNICAL SPECIFICATION OF OAE AND ABR HEARING SCREENER

- Improved backligt and panel that is easier to read
- Probe holder for safer handling

Impoved algorihms for faster test
times Storage capacity for up to 300
records Wireless data transmission

software for easy data processing and
printing Choice of configuration

- OAE/ABR combination
including TE OAE and DP OAE

DPOAE and TEOAE available for complete
OAE screening

Automatic Operations for quick and easy
screening
- Probe fit and calibration
- 5 frequency pair available DPOAE
- 5 frequency bands available TEOAE
- Pass criteria set to NIH 2000 protocol
(configurable)

Programmable test frequencies for more
highly trained personnel (i.e. audiologist)

Set the environment to Noisy, Normal or Quiet to get the most accurate results Real-time graphic test progress is available for accurate reporting
All test information is saved and stored for easy retrieval

ABR configuration

Automatic Operations for quick and easy screening
- Impedance test
- Probe fit and calibration
- Testing of up to 8 stimulus conditions per test
- Pass criteria set to NIH 2000 protocol
(configurable)

Ability to create a latency intensity
function Manual peak V scoring
Manual threshold search

Real-time graphic test progress is available for monitoring
Click and tone pip stimulus available

Stimulus rate of 32 to 62 stimuli per second
Stimulus level of 0 to 98 Dbspl

QUALITY SYSTEM:

Manufactured, designed, developed and marketed under FDA/European CE certification.

Group –F: Nephrology

a. Hemodialysis Machine –Qty.03nos.

TECHNICAL SPECIFICATION OF HAEMODIALYSIS MACHINE	
HAEMODIALYSIS MACHINE	The HEMODIALYSIS UNIT SHOULD BE MICROPROCESSOR CONTROLLED AND CAPABLE OF PROVIDING THE FEATURES;-
1.1	ACETATE & BICARBONATE DIALYSIS
1.2	VOLUMETRIC ULTRA FILTRATION (UF)
1.3	VARIABLE SODIUM & BICARBONATE
1.4	SINGLE AND DOUBLE NEEDLE TREATMENT
1.5	ADJUSTMENT DIALYSATE FLOW
1.6	PROFILLING OF SODIUM BICARBONATE AND UF
1.7	ISOLATED UF
1.8	HAEMODIA FILTRATION
	TECHNICAL SPECIFICATION
1	**BLOOD CIRCUIT**
1.1	VASCULAR ACCESS
1.1.1	SINGLE NEEDLE,SINGLE PUMP/SINGLE NEEDLE, DOUBLE PUMP
1.1.2	DOUBLE NEEDLE
1.2	BLOOD PUMP
1.2.1	RANGE SHOULD BE BETWEEN O AND 20 TO 500ML/MIN. WITH ACCURACY OF
	+/- 15
1.2.2	THE PUMP SHOULD BE EASY AND SAFE TO THREAD THE BLOOD TUBING
1.2.3	AN EMERGENCY HAND CRANK SHOULD BE PROVIDED TO TURN THE BLOOD
	PUMP AND THE PATIENT WHEN ELECTRICAL POWER IS LOST. THE DIRECTION OF
	ROTATION IS LIMITED VISUALLY INDICATED TO PREVENT INCORRECT MANUAL
	ROTATION .
1.2.4	ACCUMULATED BLOOD VOLUME SHOULD FVE APPROX 0 . 327 LITRS(+-15%)
1.3	**HEPARIN PUMP**
1.3.2	INFUSION RATE SHOULD VE APPROX .0/0 5-10ML/H WITH A ACCURACY OF
	1MAL.
1.3.2	POSITIVE AND NEGATIVE EXTRACORPORIAL CIRCUIT PRESSURE SHOULD NT
	AFFECT INFUS
1.3.3	STOP TIME; HEPARINIZATION STOP TIME (BEFORE END OF TREATMENT) 0.00-
	4.00
1.3.4	ACCUMULATED HEPARIN VOLUME SHOULD VE PROGRAMMABLE
1.4	**PRESSURE ,MONITORING AND ALARMS**
1.4.1	VENOUS PRESSURE MONITORING MONITORIONG RANGE SHOULD BE APPROX .-
	700 TO +750 MM HG
	ACCURACY+-5 MM HG OR +- 10% WHICHEVER IS GREATER
1.4.2	**VENOUS PRESSURE ALARM**
	HIGH AND LOW VENOUS PRESSURE ALARMS
	ALARM SETTING SHALL BE NON OVERLAPPING AND WITHIN RANGE OF THE
	PRESSURE MORE.
1.4.3	**ARTERIAL PRESSURE MONITORING**
	IT SHOULD VE APPROX. 700 TO 750 MM HG
1.4.4	THE ALARM LIMITS AROUND VENOUS PRESSURE AND TMP SHOULD BE

	AUTOMATICLY
	ADJUSTED TO BE PRESENT LIMIT AT A TOUCH OF BUTTONS.
1.5	**AIR DETECTION**
1.5.1	SENSITIVITY; AN ALARM SHOULD VE HIVEN FOR>0.5ML AIR PER MINUTE AT
	AFLOW 300ML/MIN
1.5.2	ON DETECTION OF EXCESSIVE AIR THE BLOOD PUMP SHALL BE STOPPED AND AN

	AUDI ALAFRM ACTIVATED AN THE VENOUS BLOOD RETURN LINE SALL BE CLAMED AT APPOL THE AIR DETECTOR.
2	**DIALYSTATE CIRCUIT**
2.1	TREATMNTS FACILITIES
2.1.1	**IT SHOULD BE CAPABLE TO PROVIDE ACETATE AND BICARBONATE DIALYSIS**
2.1.2	IT SHOULD HAVE THE FACILITY OF ADJUSTABLE VARIABLE BICARBONATE CONCENTRATION
2.1.3	IT SHOULD HAVE THE FACILITY OF ADJUSTABLE VARIABLE SODIUM CONCENTRATION
2.1.4	IT SHOULD HAVE VOLUME METRIC ULTRA FILTRATION CONTROL
2.1.5	IT SHOULD HAVE THE FACILITY OF USER PRESETABLE INDEPENDENT ISOIATED ULTRA FILTER
2.2	**CONDUCTIVITY CONTROLAND ALARMS**
2.2.1	THE DIALYSIS CONDUCTIVITY SHOULD BE ADJUSTED BY SETTING THE SODIUM FOR ACUTE DIALYSIS MODE, AND SODIUM WITH BICARBONATE FOR BICARBONATE DIALYSIS MODE
2.2.2	THE SET CONDUCTIVITY SHOULD BE AUTOMATICLLY REGULATED BY VARIATION THE CONC.
2.2.3	IN ACETATE DIALYSIS, SODIUM CONDUCTIVITY/ CONCENTRATION SHOULD BE ADJUSTABLE.
2.2.4	IN THE BICARBONATE DIALYSIS, SODIUM /BICARD CONCENTRATION SHOULD BE ADJUSTABLE.
2.3	**ADVANCED BICARBONATE DIALYSIS** THE MACHINE SHOULD BE CAPABLE OF ON-LINE PREPARATION OF BICARBONATE DIALYSIS FILTER. A CARTRIDGE OF DRY POWER BY USING R.O WATER
2.4	DIALYSIS FLOW RATE.
2.5	**IT SHOULD BE APPROX. 100TO 500- 700 ML/MIN. ACCURATE TO WITHIN+-10ML/MIN**.
2.5	TEMPRATURE CONTROLAND ALARMS.
	CONTROL RANGE SHOULD BE BETWEEN APPROX.+30.0CTO +-40.0
2.6	BLOOD LEAK DETECTION
2.6.1	DETECTION METHOD SHOULD BE
2.6.2	INFRARED LIGHT DETECTOR; MICROPROCESSOR CONTROLLED REPEATED FUNCTION CHEKE
2.7	ULTRA FILTRATION (UF) CONTROL
2.7.1	VOUMETRIC CONTROL

2.7.2	CONTROL RANGE SHOULD BE BETWEEN APPROX. 0.00-4 LITRES PER HOUR GIVEN BY TREATMENT TIME UF VOLUME SHOULD BE ADJUSTABLE ACCURACY SHOULD BE BETWEEN +- 50ML /H OR+-1%
2.7.3	**PRESETABLE ISOLATED ULTRA FILTRATION** THE ACQUIRED UF VOLUME AND THE TIME FOR ISOLATED ULTRA FILTRATION TREATMENT PRESET ABLE SO THAT THE DESIRABLE UF RATE AND UF VOLUME CAN BE AUTOMATIC A CONTROLLED, MONITORED AND ACHIEVED DURING THE ISOLATED ULTRA FILTRATON MODE.
3.	TABLE FOR THE PARAMETER RECORDES
3.1	THE HAEMODIALYSIS MACHINE SHOULD PROVIDE A GRAPHIC INFORMATION DISPLAY AND / OR INSTANTANEOUSLY . THE FOLLOWING PARAMETERS IN FORMS OF BAR-GRAPH, NO. AND TEXT
3.1.1	**BAR-GRAPH**.
3.1.1.1	VENOUS PRESSURE
3.1.1.2	HIGH & LOW LIMITS FOR VENOUS PRESSURE
3.1.1.3	PRESENT BLOOD FLOW
3.1.1.4	ACTUAL BLOOD FLOW
3.1.1.5	BLOOD FLOW GUARD

3.1.1.6	PRESENT DIALYSATER TEMPERATUE
3.1.1.7	ACTUAL DIALYSATE TEMPRATUE
3.1.1.8	HIGH & LOW LIMIT OF DIALYSIS TEMPRATURE
3.1.1.9	PRESENT DIALYSIS CONDUCTIVITY
3.1.1.10	ACTUAL DIALYSIS CONDUCTIVITY
3.1.1.11	HIGH & LOW LIMITS OF DIALYSIS CONDUCTIVITY
3.11.12	MEASURED TMP
3.1..113	HIGH& LOW LIMIT OF TMP
3.11.14	PRESENT PATIENT WEIGHT LOSS
3.1.1.15	REMOVED UF VOLUME
3.1.1.16	CALCULATED UF RATE
3.1.1.17	ACTUAL UF RATE
3.1.1.18	REMAINING TREATMENT TIME
3.1.2	**NUMBER AND /OR TEXT INFORMATION**
3.1.2.1	VENOUS PRESSURE
3.1.2.2	HIGH AND LOW LIMIT OF VENOUS PRESSURE
3.1.2.3	PRESET BLOOD FLOW
3.1.2.4	ACTUAL BLOOD FLOW
3.1.2.5	BLOOD FLOW GUARD.
3.1.2.6	PRESET DIALYSATE TEMPERATURE
3.1.2.7	ACTUAL DIALYSATE TEMPERATURE
3.1.2.8	HIGH AND LOW LIMIT FOR TEMPRATURE
3.1.2.9	PRESET DIALYSATE CONDUCTINITY
3.1.2.10	ACTUAL; DIALYSAT CONDUCTIVITY
3.1.2.11	HIGH AND LOW LIMIT OF DIALYSAT CONDUCTIVITY
3.1.2.12	MEASURED TMP
3.1.2.13	HIGH AND LOW LIMITS OF TMP
3.1.2.14	PRESET WEIHT LOSE
3.1.2.15	REMOVED UF VOLUME
3.1.2.16	CALCULATED OF RATE
3.1.2.17	ACTUAL OF RTAE
3.1.2.18	SINGLE NEEDLE DATA
3.1.2.19	REMAINING TREATMENT TIME
3.1.2.20	HEPARIN INFUSION RATE, STOPPED TIME AND ACCUMULATED VOLUME.
3.1.2.21	ATTENTION ALARM IN INFORMATION IN TEXT FORMAT
3.1.2.22	TECHNICAL ALARM INFORMATION IN TEXT FORMAT (THE ABOVE MENTIONED DATA S ON LCD/ CRT MONITOR MAY ALSO BE ACCEPTIC)
4.	**SAFETY**
4.1	THE MACHINE SHOULD AUTOMATICALLY PERFORM A COMPLETE FUNCTIONAL AND SAFETY TEST AT EACH START UP
4.2	THE MACHINE SHOULD COMPLIES WITH THE FOLLOWING INTERNATIONAL STANDARD
4.2.1	IEC 601-1 AND IS PROTECTED AGAINST ELECTRICAL SHOCK ACCORDING TO CLASSIFICATION.
4.2.2	ICE 601-2-16 PARTICULAR REQUIREMENT FOR HEAMODIALYSIS EQUIPMENT
	DISINFECTION AND CLEANING
5.1	FACILITY OF CHEMICAL AMD HEAT DISINFECT ION MUST BE AVAILABLE
5.2	SODIUM HYPOCHLORITE FORMALDEHYDE OXALIC ACID 2% AND PARACETIC ACID SHOULD BE AVAILABLE IN THE CHEMICAL DISINFECTIONS PROGRAMME.
5.3	AUTO- HEATING DISINFECTIONS AS WELL AS WITH CITIC ACID (20%)AND AUTO-

	RINSING & DRAIN SHOULD BE PRESET AUTOMATIC START OF MACHIN FOR HEAT DISIFNFECTION AND RINSING IN PRESET TIME.

b. R. O. System - 01

Equipment Technical Specifications for Water Treatment System (R O System) for Haemodialysis Machines:

1 **Description of Function**

1.1 Water Treatment system is required to produce pure water for dialysis.

2 **Operational Requirements**

2.1 The system should be sufficient for online operation of 15-20 machines with pure water capacity of 1000-1200 litres per hour.

3 **Technical Specifications**

3.1 The system should comprise of pre treatment modules such as sand filter, activated carbon filter, water softener, 5-micron particulate filter and deionizer before the reverse osmosis unit and post R.O Bacterial Filters (1 micron) and UV light Disinfection for yielding high purity water.

3.2 All pre treatment modules should have programmable back wash and regeneration facility. These stages should be designed to handle water flow of **1500-2000 litres/hour**.

3.3 R.O. Unit should be compact in sleek cabinet, housing two R.O. membranes of equal output connected in parallel for being used alternately every two- three hours by automated valves, a high pressure pump and bypass mechanism. The control unit should be microprocessor/ microcontroller controlled. A 5-micron filter should protect the membrane.

3.4 The entire unit should have adequate monitoring of input and output water conductivity, feed water pressure and rejection flow rate.

3.5 The system should have protection alarm against low feed water, high output conductivity and high temperature of pump motor.

3.6 The system should include online water distribution to 10-to 12 machines in loop so that the unused water may be fed back to treatment unit, thus saving on water rejection.

3.7 The unit should have programmable and automatic rinsing/flushing facility, at regular intervals, when system is not in use, to prevent drying of filter media and R.O. Membrane.

3.8 The system should have programmable disinfection /de-calcification facility using commonly available disinfection / decalcification chemicals.

3.9 The system should accept feed water with TDS upto 1500 mg/litre and hardness up to 1 dH with 0.5% rejection of TDS & hardness and 99% rejection of bacteria and endotoxins.

3.10 The unit should be designed for maximum saving of raw water, with efficiency of 60-70%.

3.11 The water distribution loop, booster pump and storage water tank should be made up of PVC(High quality). Storage water tank should have capacity of at least2000 litres with water level controller, outlet valves and easy cleaning provisions.

4 **System Configuration Accessories, spares and consumables**

4.1 System as specified-

4.2 The vendor should provide a system on a turnkey basis including all civil and electrical works including two booster pumps in parallel for providing water delivery. The vendor should inspect the

site for this purpose.

4.3 The vendor should supply adequate filter cartridges, media or resins to last for at least 3 years. The vendor may visit the site and check the water quality.

4.4 The vendor should provide preventive maintenance which includes chemical checks, bacterial and pyrogen checks periodically during the warranty period.

4.5 The hospital will provide vacant space, water outlets and electrical points as specified by the vendor. Other plumbing works and civil works will have to be undertaken by the bidder. Vendor should ensure that there is no environmental damage of any kind takes place.

4.6 **Power Supply**

Power input :220-240V/ 50 Hz AC Single phase or 380-400V AC 50 Hz Three phase fitted with appropriate Indian plugs and sockets.

4.7 Output water quality should match AAMI (Association for the advancement of Medical Instrumentation) standards for Haemodialysis Water(Al < 0.01 mg/L; Ca < 2 mg/L; BACTERIA< 200 CFU/ml)

Should be FDA / CE / UL or BIS approved product.

The service provider should have the necessary equipments recommended by the manufacturer to carry out preventive maintenance test as per guidelines provided in the service/maintenance manual.

User/Technical/Maintenance manuals to be supplied in English.
Certificate of calibration and inspection.

List of Equipments available for providing calibration and routine Preventive Maintenance Support. as per manufacturer documentation in service/technical manual.
User list to be provided with performance certificate.

The unit shall be capable of being stored continuously in ambient temperature of 0 -50deg C and relative humidity of 15-90%.

The unit shall be capable of operating continuously in ambient temperature of 10 - 40deg C and relative humidity of 15-90%

Group - H: Medical; College
(Equipment / Instruments for F M T, Pharmacology and Physiology deptt.

FMT deptt.

1.	Laboratory deep freezer	Vertical deep freezer, -80°C, Volume:- 270 Litre, volume: - 60 Cu ft, Inner chamber size (HxWxD) 900x500x600, Touch key pad/LED display, Microprocessor controlled Alarm type: - audible & visible Refrigerant: - CFC free refriferant Construction: - Double walled w/PUF insulation Door: - Solid door Inner doors: - Double doors w/tempered glass Cabinet housing: - MS w/powder coating Inner chamber: - Stainless steel (304) Outer chamber stainless steel 304 grades Caster wheel Voltage stabilizer Power supply:- 220—240 Volts, 50 Hz. Single phase Certification: - ISO and CE mark	Qty.01
2.	Hot plate electrical	Body made up of thick MS/SS, Top plates over hands by supporting ceramic beeds, Selection caste iorn/ ss plate, Maximum surface temp about 300°C controlled by energy regulator, Long last nichrome element. Work on 230 V AC.	2nos
3.	Elevating grossing station with accessories	Grossing work station all stainless steel on al surface, the main dissection area to have maximum space, safety zone, it should have circulating exhaust system with filter to guarantee a safe work area from toxic formaldehyde fumes. Plumbing fixtures. The entire control panel should be on eye level for quick easy excess to lighting fan and switches.	1no
4.	Water bath	With temperature uniformity as tight as +/- 2 Degrees at Room Temperature. Digital Display of Temperature.	1no
5.	Microtome with knife	Slice thickness range:- 0-60µm Setting value: - from 0—2 µm in 0.5 µm increment, form 2—10 µm in 1 µm-increment, from 10—20 µm in 2 µm increment, from 20—60 µm in 5 µm increment. Horizontal specimen stroke:- 28 mm Vertical specimen stroke: - 60 mm Slide precision ±5% Maximal slice section: - 50x 45 mm Approx Dimension : - 17¼" x 21¼" x 11½" (440 x 540 x 290 mm) • One-hand operated universal cassette clamp • Completely new knife holder design with red colored knife guard • Precise lateral knife holder adjustment with click stop settings • Spacious and easy-to-clean section waste tray • Wide range of accessories • Compact, ergonomic design • Ergonomically designed handwheel handle • Smooth-running handwheel with integrated quick-lock mechanism for safety • Enclosed micrometer feed mechanism • Low-maintenance cross-roller bearings • Two forward and backward coarse feed speeds •Alternate trimming and sectioning modes, as indicated on the display •Speed control through the cutting window for enhanced efficiency • Automatic, variable specimen retraction, depending on sectioning speed	1no

		• Section thickness totalizer and section counter • Intuitive control panel • Integrated communication display • Precise specimen orientation with zero point reference • Section thickness setting range : 0, 5 – 100 µm • Setting values: from 0,5 µm – 5 µm in 0,5 µm-increments from 5 – 20 µm in 1 µm-increments from 20 – 60 µm in 5 µm-increments from 60 –100 µm in 10 µm-increments • Trimming section thickness setting range: 1 – 600 µm • Setting values: from 1 – 10 µm in 1 µm-increments from 10 – 20 µm in 2 µm-increments from 20 – 50 µm in 5 µm-increments om 50 – 100 µm in 10 µm-increments from 100 – 600 µm in 50 µm-increments • Object feed: 28 mm ±1 mm, feed motion via step motor • Vertical specimen stroke: 70 mm • Sectioning modes: 4 Specimen retraction: in manual operation: 5 – 100 µm in 5 µm-increments, can be turned off in motorized operation: varying with the sectioning speed, can be turned off Electric coarse feed: 300 µm/s und 900 µm/s Sectioning speed: 0,5 – 420 mm/s ± 10% Maximum specimen size (L x H x W): 50 x 60 x 40 mm Specimen orientation: horizontal: 8°, vertical: 8° Nominal supply voltages: 100 / 120 / 230 / 240 V AC ±10% Nominal frequency: 50/60 Hz Power draw: 340 VA Dimensions basic instrument Width (including hand wheel) 413 mm Depth (including waste tray) 618 mm Height (with storage area on cover): 305 mm Weight (without accessories) approx. 37 kg, approx. 81 lbs Dimensions control panel WxDxH: 121 x 166 x 50 mm Weight: approx. 0.66 kg, approx. 1.45 lbs (Certificates: CE, c-CSA-us)	
6.	Automatic tissue processing machine	Semi-enclosed tissue processor, Gentle specimen processing and maximum safety at all stages of processing, Carousel type with 12 stations, Configurations: Basic instrument, Vacuum function with fume control system, Option: two basket loading, Tissue baskets made of metal with varying capacities of up to 80 cassettes, Ergonomic control panel with foil-protected keyboard and LCD,Infiltration time separately Dimension (WxDxH): - 32.5”W x 32.5”d x 23.5” h (31”h fully extended) Weight:- about 133 lbs Maximum cassette capacity: - 100 (200 with two baskets) Paraffin temperature range 45°C to 65°C Reagent temperature range:- ambient Delayed end time (up to 9 days) Number of paraffin station 2 (3 optional) Paraffin bath volume: - 1.8 Lit	1no

		Fume control system Display LCD	
7.	Tissue embedding Station	Depth x Height x width: - 25" x 32"x 11" Paraffin reservoir capacity about 3.8 Litres Parraffin reservoir temp:- about 50—70 °C Warming oven temp:- 62°C Tissue holding tank temp: - 50—70 °C Work surface temp: - 50—70 °C Cold plate temp: - -8°C to ambient Weight about 115 Kg Power: - 100—120 VAC, 50/60 Hz, 8 Amp Microprocessor based controller, Programmer timer Self paraffin draining system Infra red activated dispenser or foot switch. Dual power magnifying glass Electronic forceps	1no
8.	Slide warming table	Top surface stainless steel (SS-304 grade) The surface temperature controlled from ambient to 70°C. Supplied complete with pilot lamp, cord and plug without thermometer. To work on 220/230 Volts A.C. Supply Heating plate size: - 600x150mm MOC: - M.S. Sheet duly powder coated Top plateform: - Stainless steel sheet Temperature controller: - Microprocessor based PID digital temperature indicator cum controller Electric supply: - 220/230 V AC, 50/60 Hz	1no
9.	Slide cabinet	Block and slide storage facility mixed, Metal make, vertical with groove, 20000 slide storage capacity.	1no
10.	C-ARM MOBILE IMAGE with Accessories	**I. X-RAY GENERATOR** i. Type: High Frequency minimum 14 Khz. ii. Fluoroscopy anode potential: 40 to 110Kvp iii. Fluoroscopy mA range: Normal mode : upto 7 mA iv. Power: 15 Kw **II. X-RAY TUBE** i. Type: Stationary anode ii. Focal spot: 0.6/1.5 mm **III. IMAGE INTENSIFIER** i. Input field size: 9" (Dual field) ii. Grid on the entrance field with grid ratio 8:1. iii. IRIS Collimator **IV. TV CAMERA SYSTEM** i. Type: CCD **V. TV monitor** i. Two 15" or more medical grade LCD/TFT/CRT monitors. ii. One for LIH and one for memory display **VI. C-ARM CART** i. SID: 880mm ii. Orbital Travel: 125º iii. C-arm Angular rotation: ±180º or more iv. Horizontal Travel: 200mm v. Vertical Travel: 400mm vi. Panning Movement: ±12.5º vii. Depth of C-arm: 600mm or more **VII. OTHER SPECIFICATONS** The unit should have the following facilities i. Automatic KV and mA technique selection and manual mode.	**1no**

		ii. Cumulative exposure timer for fluoroscopy. iii. Should have Automatic dose control iv. 360 º rotations of images should be possible for LIH image after fluoroscopy. v. Image vertical and horizontal reversal should be possible on the LIH image after fluoroscopy. vi. Should have 2x and 3x zoom function. vii. Should have at least 20cm distance between the focal spot and skin for radiation safety. viii. Should have a steering wheel with 180º rotation. ix. Two sets of sterile drape for the X-ray tube assembly, Image intensifier and C-arm and clips to hold the drape on the c-arm should be provided. x. Cassette holder should be supplied. xi. The quoted model should be AERB type approved for usage up to 7mA. Relevant copies of the certificate should be attached with the bid. **VIII. POWER REQUIREMENTS** i. Single phase, 230 Vac, 50Hz ii. Suitable stabilizer should be provided along with the unit.	

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11	Weighing machine for foetus/Newborn • Display device: - LED of high contrast • Scale bright, easy to read and clear • Operating brightness: 250-300 LUX • Powered by batteries as well as adaptor • Display resolution 1 gram • Weighing capacity 5 Kg • Pan: polished SS material • Capacity of Pan 4—5 litres • Compact and space saving • GLP/GMP compliance ISO certified.	01
12.	Weighing machine for organs • Display device: - LED of high contrast • Scale bright, easy to read and clear • Operating brightness: 250-300 LUX • Powered by batteries as well as adaptor • Display resolution 1 gram • Weighing capacity 5 Kg • Pan: polished SS material • Capacity of Pan 4—5 litres • Compact and space saving • GLP/GMP compliance ISO certified.	01
13.	Centrifuge machine (Electric Operated) Table top model with swing out rotor head 16 tubes of 15 ml glass tubes	01

	• Digital speed indicator with 60 min. count down timer • Speed 4000rpm & RCF2750 with rotor head • Dynamic breaks, Imbalance detector, cut off in case of uneven load • Step less speed regulator & safety lid interlock to prevent lid opening during operation	
14.	Balance chemical	01
15.	Brain Knife stainless steel 10” Size	04

Pharmacology deptt.

Instruments for Department of Pharmacology			
1.	Actophotometer (Digital)	Acto Photometer with digital read out for evaluation of spontaneous activity in small animals. The Cage is provided with top cover & a sliding tray at the bottom to clean the excrete of the animals. 4 Digit Electronic Activity counter start reset and stop functions 12 (6 Pairs) photoelectric activity sensors. 4 digit seconds timer 30cmX30cm animal cage	01
2.	Open field test-Automated	The apparatus consists of a square arena 96 x 96 cm^2 with 60 cm high walls. The walls and the floor are painted white. The floor is divided into 25 squares.	01
3	Rotary Evaporator, Diagonal Glassware	• consists of motorised lift with provision of automatic lift in case of electricity failure. • Vertical condenser • Rotation speed : Rotation speed 20 to 280 rpm or better • Integrated/ non-integrated Digital display of all parameter i.e. rotation speed, bath temperature, vacuum, vapour temperature (both set and actual) etc. Control unit should be inbuilt / separate. • Evaporating flask: 500ml, 1000ml, 2000ml should be supplied. • Receiving flask: 1000ml • Heating bath capacity: 4.5 lit or above • Heating (maximum)180 deg C or above • Automatic over heat cut-off protection • Must have USB Interface for data management with software • Must be supplied along with woulff bottle. • AUTO easy Function should have capability to find boiling point and perform distillation automatically/Integrated solvent database of solvents for convenient setting of distillation conditions. • Should be able to program the required vacuum change in a ramp • Must have 'timer function' which can allow unattended operations.	01
4	Student Physiographic	The system should have:- -A high speed USB 2.0 interfaced 4 channel data recorder with inbuilt bio-amplifier & isolated stimulator with a recording range of 2mV to 10V & a sampling rate of 100KHz on each channel. -The software should have a pre-configured, ready to use experiments with background information and step-by-step instructions for a wide range of experiments including human, animal physiology, pharmacology, exercise physiology, psychophysiology and medical case laboratories studies. -Must upgrade experiment free of cost for 5yrs -only software controlled filtering for pre and post data recording/analysis -**Transducers and accessories:-** Pulse Transducer, Respiratory Belt Transducer, Sphygmomanometer, Push button switch, Cardio Microphone, Hand Dynamometer, Dry earth strap, EEG Flat electrodes, Reusable ECG/Electrodes Disposable ECG Electrodes, Temp & wireless heart rate kit. -The system should be supplied with single channel Isolated tissue setup including peristaltic pump based organ bath with isometric force transducer and Nerve and muscle bath. - The unit must be approved to the IEC 60601-1 patient safety standards, making them safe for use with human subjects and should comply with other safety standards. -Desktop computer with 17" TFT Monitor, 4GB RAM, 380 GB HDD, DVDR/W, Laser printer & UPS.	01

5	Pulse Oximeter	• Patient Range: Adult, Pediatrics and neonatal patients
		• Digital SpO2:-
		  • Range 0 - 100%
		  • Resolution 1%
		  • Accuracy 70% to 100%: ±2%
		  • Refreshing rate < 13 seconds
		  • Pitch Tone Yes
		• Pulse Rate
		  • Range 25 - 250 bpm
		  • Resolution 1 bpm
		  • Accuracy ±2% or ±1 bpm, whichever is the greater
		  • Refreshing rate < 13 seconds
		• Display Type 2.4" color display 320 x 240 pixels Parameter Digital SpO2 , Pulse Rate, Pleth bar & SpO2 waveform
		• Alarm Audible alarm, audible button tone Supports Pitch Tone and multi-level volume Alarm tones meet the requirement of IEC 60601-1-8
		• Appearance Dimension 123mm (H) x 58.5mm (W) x 28mm (D) Weight < 200g
		• Data Storage
		  • Display -Trend table
		  • Trend interval 2 seconds to 30 minutes
		  • Trend parameter PR, SpO2
		  • Trend data spot-check mode: ID from 1 to 99, 300 records for each ID
		• Battery
		  • Type 3 AA Alkaline batteries or NI-MH rechargeable battery (optional) or Lithium ion rechargeable battery (option)
		  • Runtime 14 hours standard use
		• Nellcor SpO2 probe-compatible
		• Safety Standards
		  • CE classification: IIb
		  • Type of protection against electric shock: II, with internal power device
		  • Degree of protection against electric shock: CF
		  • Degree of protection against ingress of liquid: IPX1
			01

6	Electrocardiograph (12 channel & tracer paper)	• Compact in size, easy and direct operation, portable
		• Accurate pace pulse identification and automatic analysis function
		• Four working modes: Manual / Auto / Physical Examination / Storage
		• 12 leads simultaneous waveforms display
		• 800 x 480 graphic 7 inch color screen with Alphabet keyboard for input (only for 12-CK)
		• 800 x 480 graphic 10 inch color touch screen (only for 12-CT)
		
		  • 215mm, 12 channel format recording
		  • Built-in USB, RS232 interface, ECGNET software optional
		  • Adapt to 110-230V, 50/60Hz AC power supply
		  • Advanced [Freeze] function
		  • Built-in rechargeable Li-ion battery
		  • 250 patients information storage (Extendable)
		  • USB interface allows net transmission, USB flash disk and USB printer connected
			01

		• High accuracy thermal printing, adapt to 215mm roll paper and 210x140mm Z-fold paper	
7	TMT Machine	**PC Based Stress Test System with Optional Bluetooth Capability** • PC based cardiac workstation combines Resting & Exercise ECG in one unit. • Digital Signal Acquisition Module eliminates noise & gives distortion free ECG signal. • Full disclosure of all 12 leads for beat-to-beat analysis & extended documentation. • User configured Multiple Report Format for Resting & Exercise ECG. • The final report includes information on Blood Pressure, Heart Rate, Treadmill Speed/Grade, ST Trends relating to stage wise & recovery phase. • Simultaneous acquisition & display of 12 lead Raw ECG during the resting & exercise ECG mode. • Time based METS calculation. • Online Linked Median printing. • F1 to F8 shortcut keys for important functions. • Treadmill Soft Stop option for stopping the treadmill after 20 seconds in Recovery Mode. • Customized Lead Sequence for Display. • 6 Choice of displaying Lead with Maximum ST Level Depression or Elevation in the Average Complex. • Identity Card ECG printout. • Choice of 4 fonts for printouts. • Web enabled software allows sending images via email. • Facility to get system generated Auto Statement Report.	1
8	Cardiac monitor	14.4cm (5.7") STN Blue LCD with backlit display Non fade soild traces of graphical ECG waveform on the LCD Screen Real time ECG on the fist channel and frozen / delayed ECG on the Second channel Auto ECG freeze on alarm condition 1mV calibration pulse indicator LED blinking for every delected QRS complex Standared frequency responese and high common mode rejection ratio Built-in rechargeable battery	1
9	Digital Spiro meter	**PC Based Spirometer** **Directly connected to a USB port turns any PC into a spirometer** • Full Spirometry testing (FVC, SVC, MVV, Pre-Post). • Bronchial Challenge test (Metacholine and bronchial dilator). • Automatic diagnosis according to ERS/ATS standards and COPD diagnosis (GOLD). • Advanced software, patient database, diagnosis, real-time tests, professional prints, trends. • Digital turbine flowmeter validated by LDS Hospital (ATS Standards).	1
Manikins for Department of Pharmacology			
1.0	Blood	• **Features include**	

	Pressure Simulator	• Redesigned and durable control unit • Palpable radial pulse • Simple calibration procedure • External speaker • Control unit allows instructor to • Select systolic and diastolic settings • Turn auscultatory gap on or off • Easily caliberate unit for use with any sphygmomanometer • Adjust volume • Adjust pulse rate • Students • Use normal procedure to place cuff on arm • Check palpable pulse at the radial site • Pump cuff • Pressures are activated at release valve • Read pressures on sphygmomanometer • Auscultate Korotkoff sounds with any stethoscope through a speaker in the arm • Amplifier/Speaker system 30 watt amplifier reproduces sounds with extreme clarity. For group presentations. Complete with speaker and wire connections. AC. Sh. Wt. 11 lbs (4.99 kg)
11.	Advanced Venipuncture and Injection Arm	• Adult Vein Puncture and different types of Injection Training Arm • Complete venous access for • Basilica vein • Cephalic vein • Digital vein • Dorsal metacarpal V. • Median Basilic V. • Accessory Cephalic V. • Extensive venipuncture system • Flexible Fingers and wrist • Intradermal Injections • Intramuscular Injections • Median Antebrachial V. • Median Cephalic V. • Median Cubital V. • Replaceable Skin and Veins • Thumb Vein
Experimental Pharmacology		
12	Soxhlet apparatus	Manual, Stirrer bar, Still pot, Distillation path, Thimble, Solid, Siphon top, Siphon exit, Expansion adapter, Condenser, Cooling water out, Temperature range:- 50^{0} C to 350^{0} C
Models of Pharmacology		
13		1. Anti muscarinic drugs 2. Antiadrenergic agents 3. Anticholinesterase agents 4. Antihypertensive drugs and site of action. 5. Antithyroid Drugs 6. Autonomic Nervous System 7. Cough reflex arch with site of action of antitussive agents. 8. Drugs acting on heart. 9. Ganglion blocking agents. 10. Innervation of iris & drug acting 11. Life history of ascaris lumbricoides and antihelmenthic drugs 12. Life history of entamoeba histolytica and anti amoebic drugs 13. Life history of leishmania donovani and leishmanicidal drugs 14. Life history of malarial parasite and anti – malarial drugs. 15. Mechanism & site of action of chemotherapeutic agents for

				neoplastic diseases.
			16.	Mechanism and site of action of Oral Contraceptives
			17.	Mechanism of vomiting & site of action of antiemetic agents
			18.	Motor end plate (Pharmacology)
			19.	Neural pathways in regulation of muscle tone
			20.	Normal absorption, metabolic pathways & excretion of iron
			21.	Pathway of Pain and Analgesics
			22.	Responses of effector organs to autonomic nervous system
			23.	Sino-Aortic mechanism
			24.	Site of action of diuretics.
			25.	Site of action of oral contraceptives
			26.	Site of action of Parasympathomimetic drugs.
			27.	Site of action of sympathomimetic drugs
			28.	Site of application of local anaesthetics
			29.	α Adrenergic blocking agents
			30.	β Adrenergic blocking agents

Animal House in Pharmacology:

14	Animal sliding trolley with 25 Rat cages	SS rack and Castor's with PP Moulded cages for Rat. (size : 440X280X160 MM Moulded, PP having solids and 250ml water feeding, Bottle arrangement)	1
15	Animal sliding trolley with 25 Mice cages	SS rack and Castor's with PP Moulded cages for Mice (size : 295X225X140 MM Moulded , PP having solids and 250 ml water, feeding Bottle arrangement)	1
16	Rabbit Holder	Rabbit restrainer-wooden box-type, front top lid opening, air-window push system with metallic head holder (14"x6"x7")	4
17	Trolley/Rack to hold 12 S.S. Guinea Pig Cage	All S.S. Size : 18X12X12 (LxHxB) Inch with water feeding, Arrangement and removable feaces SS Tray.	1
18	Rabbit Cage with portable trolley (4 standard cages & one trolley)	S.S. Size : 24X18X18 (LxHxB) Inch with water feeding, Arrangement and removable feaces SS Tray.	1

Physiology deptt.

1			
		24 Hour Ambulatory BP monitor should based on Oscillometry method (Specification)-01	
	-	Should be able to measure the BP b/w 25 - 260 mmHg and HR b/w 40 - 200 bpm	
	-	Should have atleast 3 adjustable time periods and time intervals b/w 5 mins to 120 mins	
	-	Should be supplied with Windows based Software to provide the following:	
		Statistics	
		Histogram	
		Nocturnal dipping	
		White coat analysis	
		Automatic interpretive summary based on JNC7/ESH	
		Hourly averages	
	-	Should be provided with pouch, belt and USB cable to connect to computer	

	-	Should be light weight and compact, not more than 300 gms (including batteries)	
	-	Should work with not more than 2 AA size batteries and should be capable of indicating the battery voltage when inserting	
	-	Should have flash memory to keep the data unaffected even without the battery and should store atleast 250 measurements	
	-	Should be supplied with cuff (non 'D' ring type) which will be in the position for 24 hours or even more to provide comfort and accuracy	
	-	Should have atleast 4 cuff sizes from 18 - 46 cm arm circumference and should be easily washable	
	-	Cuff should be easily or self wearable by the patient with artery marker	
	-	Should have Independent hardware over-pressure circuit and redundant software overpressure algorithm to limit cuff pressure to less than 280 mmHg	
	-	Should have Independent hardware timing circuit and redundant software timer algorithm to limit the duration of a blood pressure cycle to less than 180 seconds	
	-	Should have option to upgrade the software in future (if available)	
	-	Should be certified by FDA and CE	
	-	Should be Clinically validated by ANSI/AAMI SP10:2002, British Hypertension Society (A/A rating) & European Soceity for Hypertension	
	-	Should have option to customize the report from single page to detailed report	
	-	Should have option to provide the stats for user defined time windows (E.g. early morning hours, driving hours etc.)	
	-	Should have option to analyse data upto 52 hours	
	-	Should have option to compare the studies	
	-	Should have option to get the report in PDF format	
	-	Should be user friendly for the patients with one touch operation	
	-	Should have option to calculate the paediatric threshold automatically	
	-	Should have option to disable the keys and display	
	-	Should have option for the patient to initiate BP if any event is occurred	
		**********	