राजेन्द्र आयुर्विज्ञान संस्थान
(झारखण्ड सरकार का एक स्वयतशासी संस्थान)
राँची–834009 (झारखण्ड)
दुरभाषः 0651–2541533, फैक्सः 0651–2540629,
E-mail: rimsranchi@rediffmail.com

RAJENDRA INSTITUTE OF MEDICAL SCIENCES
(An Autonomous Institute under Govt. of Jharkhand)
Ranchi-834009 (Jharkhand)
Phone: 0651-2541533, Fax: 0651-2540629,
Email : rimsranchi@rediffmail.com

Tender notice no. RIMS/Stores/ME(4)/ 13277(1) CTVS Dated 06.12.2016

Final Tender paper for instruments, Machine, Equipment & Disposables of CTVS department, RIMS, Ranchi

Issued to

M/s _____

_____

_____

_____

Against money receipt number ……/RIMS, dated : ……

Cashier
RIMS, Ranchi

Tender for supply & installation of instruments, machine, equipment & consumables of CTVS department of RIMS, Ranchi

To,

M/s _____

_____

_____

_____

Dear Sir,

Director, Rajendra Institute of Medical Sciences, Ranchi invites you to tender for supply & installation of instruments, machine, equipment & consumables of CTVS department as mentioned hereunder including civil / mechanical / electrical works (if any) required for installation of these equipments on turnkey basis.at RIMS, Ranchi.

The conditions of contract which will govern any contract made are as under. Any special conditions attached in tender will also be part of the conditions

If you are in a position to quote for supply & installation in accordance with requirements stated in tender notice & tender form, you must also furnish all the information called for, along with your tender.

This tender is non transferable.

All legal matter in respect to this tender will be subject to jurisdiction of Hon'ble Jharkhand High Court, Ranchi.

The last date of submission of tender paper by registered posts / speed post only, is 16.02.2016 latest by 4:30 p.m.

Note :- The list of equipments or items with required specification is ecnsloed with this tender document.

The bidders have to submit tender document fee @Rs. 5000/- without tender fee the tenders will not be entertained. Similarly the bidders have to enclose the EMD in form of Demand Draft of Rs. 5,00,000/- (Five Lakhs) only in favour of Director, Rajendra Institute of Medical Sciences, Ranchi. The bids should be submitted in separate sealed envelops (in two bid system) Technical Bid & Price Bid. Both the sealed bids must be sealed in one envelope.

Yours faithfully

Sd/-
Director
Rajendra Institute of Medical Sciences,
Ranchi

General Terms & Conditions

1. The terms and conditions mentioned in tender notice no. 13277(1) dated 06.12.2016.
2. The tender should be submitted in duplicate complete with specification, literature, leaflet along with catalogues etc. leaving no room for back references.
3. Bids are to be submitted in two parts viz. (A) Technical Bid containing complete technical aspects including original EMD, Affidavit etc., except price bid & (B) Price Bid containing price elements only.

   Note : The tenderers have to submit separate sealed technical & price bids for each department. The envelops must be superscribed as technical bid for tender no. ..... dated ..... for department of ..... & similarly price bid envelopes should be superscribed. All the envelops of one department should be sealed within one envelop.
4. Technical Specification should be in the proforma / format given below :

A. Technical Specification Proforma for department of .... (for Major Equipments)

Sl. No.	Required technical specification as mentioned in tender form	Tenderer's detail technical specification of the equipment for which they are quoting	Remarks or any other extra advantaves of the quoted model or attachments (if any)

B. Tenderers Technical Details of turn key works

i. **Civil /Electrical/Mechanical / furnishing etc works to be done (if any) by the bidders under turnkey project.**

Sl. No.	Tenderer's detailed item list/work list	Quantity offered by the tenderer

ii. Electrical works : (If any required under turnkey)

Sl. No.	Tenderer's detailed item list/work list	Quantity offered by the tenderer

Note :
1. All the electrical items including Air conditioning & earthing will have to be supplied & installed by the tenderer

iii. Furnitures works : (If any required to run the machines under turnkey)

Sl. No.	Tenderer's item list	Quantity offered by the tenderer

1. Before quoting the tender & before participating in the meeting the tenderers must have to visit the sites & they have to discuss with authority for location & confirmation of site.
2. Before finalization of the tender, if needed by the technical committee, the tenderers have to arrange on site practical demonstration of their quoted machines (major equipment) to the members of technical committee on any of their pre installed sites on tenderer's own cost.

Full signature of the
tenderer with seal
Designation : .....
Dated : .....

5. **Price Bid Proforma : (Price of every item must be in separate sealed envelops)**

A.

Sl. No.	Technical specification of the main machine	Unit Price in Indian Rs.	Mention clearly the excise duty charges, or any other charges, sales tax etc. in Indian Rs.	Price FOR destination with installation charges, training to staff/ Doctors on turn key basis with all taxes. (INR)

B. Essential accessories supplied by the firm free of cost with main machine to run the machine smoothly.

Sl. No.	Name of accessories	Technical specification in details with manufacturer name.	Quantity	Remarks (if any)

C. Optional accessories (if any for major equipments)

Sl. No.	Name of accessories	Detail technical specification with make & model	Qty	Unit price in India Rs.	Mention clearly the excise duty charges, or any other charges, sales tax etc. in Indian Rs.	Price FOR Destination with installation charges, training to staff on turn key basis with all taxes.

D. Essential consumables required to run the machine such as papers, cartridges, chemicals etc. supplied by the firm free of cost with main machine to run the machine smoothly.

Sl. No.	Name of consumables	Technical specification in details with manufacturer name.	Quantity	Unit Rate	Remarks (if any)

E. Rate for essential civil, electrical works & furnitures for smooth running & installation of the machine. (Tenderers have to give details of civil (including furnitures) & electrical works to be done for smooth running of machine were ever required for installation & functioning of the system). Rs. ..... (in words Rs.....)

(Total amount of the complete equipment set on turn key basis i.e. A+B+C+D+E = Rs. .....)
(in words Rs .....) with five years comprehensive guarantee/warranty with all accessories, spares, manpower & turnkey maintenance works.

6. Price of Comprehensive maintenance contract with all spares after expiry of guarantee period for five years :- (for machine & equipments)

Year	C.M.C. Rate in Indian Rs. (per year)
1st Year	
2nd Year	
3rd Year	
4th Year	
5th Year	

Note :
(1) For machine & equipments Price of C.M.C. for five years will also be considered during price comparative evaluation without CMC, the tender will be rejected at the time of evaluation.

(2) Warranty as well as CMC will cover (inclusive of) all spares, accessories & turnkey works and it will also cover :-

i. X-ray & C.T. tubes & high tension cables
ii. Helium replacement
iii. Any kind of motor
iv. Plastic & glass parts
v. All kind of sensors
vi. All kind of coils, magnets, probes, transducers, cuffs, paddles, cables, chart recorders, patient circuits, tube, bulbs, electrodes, humidifiers, sensors, cassettes, printers & images, UPS including the replacement of batteries, Air-conditioners, fuses, transformers, monitors, cameras, stabilizers, furnitures, aprons, badges, radiation accessories, software & Hardware, chambers, phantoms & other accessories (if any) will be supplied & installed by the bidders without charging any extra cost under warranty & C.M.C.

Full signature of the
tenderer with seal

Sd/-
Director
Rajendra Institute of Medical Sciences
Ranchi

Name
(in capital letters)

Designation

7. List & specifications of equipments :- Separate list is enclosed herewith this tender documents. All the bidders have to get it confirmed at the time of purchase or during downloading of tender documents.
8. The tenderers have to mention clearly the names and technical specifications of the relevant accessories which they will supply along with the main equipment, free of cost in their price bid.
9. The price should be inclusive packing, carriage & installation cost.
10. The total cost of each equipments should be quoted in figures and words.
11. The price quoted should be valid for at least two years from the date of opening of tender.
12. The intending tenderers should produce the copy of manufacturing registration certificate. In case of authorization – original authorization certificate issued by the manufacturer in the name of Director, RIMS, Ranchi. The authorization must be valid at the time of tender opening.
13. The tenderer must enclose registration certificate of Jharkhand Sales tax/JVAT along with update respective clearance certificate or If the bidding agency is not registered under Jharkhand Sales tax department then they must give an undertaking through notary affidavit that "They will supply & install the equipment/items at fixed destination after payment of JVAT/Jharkhand Sales tax on their own & they will make their own arrangements for customs clearance in case of imported equipments. They shall not demand any document from Director, RIMS for clearance or duty exemption/waiver/relief in this regard."
14. The tenderer should furnish the warranty / guarantee period of the complete system.
15. The tender without EMD & without tender cost will be ignored straightway.
16. Incomplete tender will be summarily rejected.

17. The EMD will be refunded in full to the unsuccessful tenderers after finalization of tender and in case of successful tender, the EMD will be refunded only after expiry of warranty / guarantee period.

18. The full EMD shall be forfeited in case of backing out of the offer after acceptance.

19. The successful tenderer have to supply the items in accordance with the specification as finalized and approved by the purchase committee.

20. If there is any need then the bidders have to do the construction or modification works by their own including all mechanical & electrical wroks as per requirement of their quoted equipments for fully functioning of the complete project including all the equipments or for all the machines under the turnkey project. They have to quote accordingly. No consideration regarding extension of work or escalation of rates will be made after finalization of tender.

Full signature of the tenderer
With seal and date

Designation.

21. Contractor Form 'A'

Telegraph Address :- .....
Telephone No. : .....
Telex No. : .....
Fax No. .....

From

_____
_____
_____
(Full name and address of the tenderer)

To

The Director
Rajendra Institute of Medical Sciences,
Ranchi.

Sir,

1. I / We hereby offer to supply the stores detailed in the schedule here to such position thereof as you may specify in the supply order at the price given in the said schedule and agree to hold the order (offer) open till it is opened. I/We shall be bound by communication of acceptance within the prescribed time.

2. I / We have understood the instructions to tenderers and terms conditions of contract for contract concluded by Director, RIMS as contained in schedule & tender notice. We have thoroughly examined specification drawing or pattern quoted in the schedule here to and am/are fully aware of the nature of the stores required.

3. The following pages have been enclosed to and from part of this tender's technical bid ....

Yours faithfully

Signature of tenderer

Address .....
Dated .....
Seal.....

22. All documents duly completed, signed and sealed should be enclosed with your tender offer failing which your quotation will be treated as incomplete.

Technical compliance report duly filled and signed with seal of the bidder.

The bidders must fill all the rows/columns of this compliance report. This report will be inspected & evaluated by purchase committee and accordingly documents will be verified on the concerned page numbers.

Sl. No.	Enclosures required	Have you enclosed it? write clearly Yes or No	If yes then on page no. of this bid.
1.	Photocopy of JVAT (Sales tax) Registration certificate in Jharkhand State.	Yes or No	Page No. .....
2.	Photocopy of JVAT/Sates tax clearance certificate of Jharkhand State, valid at the time of opening of technical bid. **OR** If the bidding agency is not registered under Jharkhand sales tax department, then they must give an undertaking through notary affidavit that "They will supply the equipment/items at RIMS, Ranchi after payment of JVAT/Jharkhand Sales tax on their own & they will make their own arrangements for custom clearance in case of imported equipments. They shall not demand any document from RIMS for JVAT/custom clearance/duty exemption / waiver/relief in this regard".	Yes or No	Page No. .....
3.	(i) Whether manufacturer or authorized dealer	Yes or No	On Page No. .....
	(ii) If authorized dealer then write names of the original manufacturers and enclose the authorizations issued to you. e.g.	Yes or No	On Page No. .....
	a. Authorization letter of M/s	Yes or No	On Page No. .....
	b. Authorization letter of M/s ..... and so on	Yes or No	On Page No. .....
4.	Income Tax PAN No. (e.g. XYZA1234G) also mention clearly that PAN No. of proprietor or PAN no. of Company	Yes or No	On Page No. .....
5.	EMD in form of Demand Draft No. ..... dated ..... issued by (name of bank) ..... amount Rs. 5,00,000.00 (Five Lakhs) only in favour of Director, RIMS, Ranchi. **(Note :- The bidders also have to submit Rs. 5,000/- for tender papers.**	Yes or No	On Page No. .....
6.	Affidavits through first class magistrate / Notary Public, mentioning that – (a) "Our company has not been black listed or convicted in the past by any Hospital Organization or by any Government / Semi government organization / P.S.Us / C.B.I / C.C.I & free from all kind of litigation/allegations, (b) That the firm has no vigilance case/CBI/FEMA/CCI case pending against him/supplier (Principal) (c) That the firm is not supplying the same item at lower rate quoted in the tender to any government organization or any other institute".	Yes or No	On Page No. .....

7.	Technical specifications with catalogue & dimensions of equipment, accessories & details of turnkey works. The bidders have to provide complete layout plan of the constructions & electrical works (if any) required and to be done by the bidder within their offer for installation & functioning of the complete system.	Yes or No	On Page No. .....
8.	I.T. return certificate & balance sheet of the bidders for last three financial year having minimum turnover of Rs. 1,00,00,000/- (Rupee One Crore only) in any one year within last three years.	Yes or No	On Page No. .....
9.	Bidders acceptance letter/undertaking that they shall provide five years comprehensive warranty & then after five years comprehensive maintenance contract with all spares, accessories & labour charges for all the equipments.	Yes or No	On Page No. .....
10.	ISO/CE/BIS/FDA certificate in the name of equipment manufacturing company. It must be shown in the certificate that this certificate is for particular product.	Yes or No	On Page No. .....
11.	For price justification all the bidders have to enclose the order copy/copies issued by any govt./semi govt./PSUs for the same equipment model in th bidder offer. **Note : In the technical bid the bidders shall enclose the order copy without price i.e. after deliting the prices but in their price bids all the bidders must have to enclose the previous order copies with their price value.**	Yes or No	On Page No. .....
12.	The bidders have to enclose/confirm the list of institutions regarding supply, installations and functioning of the same make & model equipment within last three years. The purchaser or technical committee may verify or confirm the bidders documents from the concerned institutes. (Not mandatory for consumables)	Yes or No	On Page No. .....

Note : If any of the quoted equipment required any accessories or disposable repeatedly then the bidder must have to mention the list of such items with their prices in the bid. The average life of that very item of no of its uses also be mentined clearly. The price of such items will be compared in the price evaluation. If there will be no such offers in the bid then it will be assumed that the quoted rates of the equipment are with all accessories to run the machine for 10 years.

Note :

1. Sales tax form JVAT-504 G / Road permit / Entry tax etc. of Govt. of Jharkhand will not be issued by authority. It will be responsibility of the bidders to arrange JVAT form 504-G or any other documents related to sales tax / entry tax on their own.
2. If any of the above enclosures are of more than one page then in the page number columns write clearly on page no. ..... to page no. .....
3. Without filling the compliance report the offer will be rejected directly at the time of technical evaluation.
4. All the bidders have to provide soft copy of their technical specifications (same as they have submitted in hard copy of technical bid) in PEN drive also. PEN drive must be submitted by all the bidders at the time of opening of technical bid in front of purchase committee.

Certificate of Compliance

I Mr. / Mrs. / Miss ..... on behalf of M/s (Name of firm / company) ..... do hereby confirm that I have verified the above compliance report, it is duly filled. Our technical bid consists of total (No. of pages) ..... (in words .....)

Signature of the Bidder
with date & seal of the firm / company

23. Please enclose photocopies of your complete registration certificate with DGS&D / NSIC ./ DGQA, (if any) as applicable, which should be valid on the date of tender opening.

24. Price bid of technically acceptable offers would only be opened for which either the respective firm would be invited through telephone / fax or the same may be opened with display in the notice board in case telephone message can not be passed on.

25. The following information should be given in the offer by tenderers :-
    a. Complete configuration of the main equipments.
    b. Relevant (must) accessories should be supplied with the equipment, if it is required for running the complete system.
    c. Optional accessories, if any.

26. In case of late job completion / installation / completion of the full complete project from the stipulated time frame, the liquidated damage charges / panalties shall be incorporated / charged on the bidders as follows :-
    (i) @0.5% of the total contract value after 07 (seven days) from the stipulated date of job completion and subsequently 0.5% on every seven days (weekly) maximum upto 04 weeks.
    (ii) After 04 weeks @1% of the contract value on every 07 days and upto further 04 weeks (i.e. upto toal 08 weeks after stipulated date of job completion)
    (iii) After 08 weeks @2% of the contract value on every 07 days and upto further 04 weeks (i.e. upto total 12 weeks after stipulated date of job completion)
    (iv) After 12 weeks of security money and EMD will be forfeited by RIMS & the amount will be deposited in RIMS account & will be utilized for institute's development / treatment of patients. The same panalties will be incorporated during warranty as well as CMC period.

27. Guarantee For Equipments : All quotees firms shall confirm guarantee of the complete equipments as well as for the turnkey works done by the bidder under this tender for 5 years of trouble free working from real date of handover, installation & functioning. During warranty as well as CMC period they will undertake repairs if needed within 07 days of intimation. Failing which penalty will be implemented as above. The bidder shall also indicate in their technical bids, how many precautionary physical check-up would be carried out by them during guarantee period

28. The successful tenderer shall have to submit security deposit equal to 10% of the value of the contract in form of Bank guarantee pledged to Director, RIMS, Ranchi. The bank buarantee shall ve valid for minimum period of 68 months.

29. Tenders / Quotations are to be submitted in duplicate. Number of pages, leaflets / pamphlets, catalogue drawings etc. should be tied separately and marked original / duplicate. However, the tender inquiry document issued by RIMS should be attached with original copy of tender / quotation.

30. Technical bids & Price bids should be kept sealed separately superscribing the envelope **"Technical Bid" & "Price Bid"** and Tender Notice No. & Tenderers name with full address & telephone numbers.

31. The tenderers shall give a clear and guaranteed delivery period for completion of supply & installation and functioning of the complete system in their bid and they have to maintain the time frame.

32. Tenderers are required to answer all the question mentioned in the schedule & should return the same duly signed and filled along with form "A"

33. The tendering firms shall note that the supplies will be made in accordance with the specification mentioned in the tender.

34. Nevertheless, the purchaser shall be liable for price variation after final approval by purchase committee.

35. The tenderer has to mention clearly the quality, specification, names of companies for consumables like films & others to be used in the machines for optimum quality results. The tenderer has to assure in written about the local availability of consumables in their tender.

36. If the supplier, having been called upon by the purchaser to furnish security deposit (S.D.), failed to furnish the same within the period provided it shall be lawful for the purchaser to forfeit the E.M.D. and to cancel the contract.

37. The purchaser shall be entitled and it shall be lawful on his part to forfeit the amount of security deposit in whole or in part in the event of any default, failure or neglect on the part of the supplier in the fulfillment of performance in all respect of the contract under references or any other contract with the purchaser or any part thereof to the satisfaction of the purchaser.

38. The security deposit shall remain in full force and effect during the period that would be taken for satisfactory performance and fullfitment of in all respects of the contract i.e. since final acceptance of the goods/equipments or any other by the consignee and be valid upto guarantee period of the equipments to be purchased.

39. After complete installation of the equipment the supplier shall inform the technical committee or the concerned authority in writing for inspection & functioning of the equipments. If the inspecting officer finds that pre-inspection of the consignment is not as required then the consignment is liable for rejection.

40. Contractor / Seller hereby declare that the goods / stores / articles sold / supplied / installed to the purchaser under this contract shall be of the best quality and workmanship and new in all respects and shall be strictly in accordance with the specification & particulars mentioned in the contract.

    The contractor / seller hereby guarantees that the said goods / articles would continue to confirm to the description and quality aforesaid for a period of Five years from the date of final installation.

    a. Warranty to the effect that before joining out of production for the spare parts they will give in adequate advance notice to the purchaser of the equipment so that the later may undertake the balance of the life time requirements.

    b. Warranty to the effect that they will make available the blue prints of drawings of the spares if & when required in connection with the main equipment.

41. The following clauses are required to be confirmed :-

    c. Free routine servicing (at least 2 visits of their engineers at site in one year) will be carried out by the firm till guarantee period.

    d. The firms will make available full engineer support package (ESP) including essential maintenance and recommended spares for maintenance of the equipment for further 05 years after the guarantee period.

    e. The following set of documents in respect of the equipments are also required to be supplied by the firm :-

Literature		Distributions	Quantity
(i)	Operation instructions	With each equipment	2 sets each
(ii)	Wiring diagram	Inspecting authority (Concerned authority)	2 sets
(iii)	Maintenance service manual	Inspecting authority	2 sets
(iv)	Spare parts lists indicating cost	(Concerned authority)	2 sets

f. The tenderers should quote the latest models. Quotations for out dated models of equipments will not be entertained.

42. Payment terms as follows :

A) for imported goods (through letter of credit)

(i) 75% against shipment

(ii) 25% after job completion including operational training.

B) for Indigenous goods : 100% after job completion

C) No advance shall be payable to any bidder in normal cases. In emergency, after demand from the supplier party/parties for any releaf in any of the above terms of payments, the matter will be put infront of RIMS purchase committee for decision and then the decision of purchase committee will be kept infront of RIMS governing body for final decision.

43. Price bids and technical bids should be separately sealed, covers duly superscribed. Both the bids should be in duplicate. Both these sealed bids should be put in another main envelope duly sealed & mentioning following informations.

Tender notice no. RIMS/Store/ME(4) 13277(1) dated 06.12.2016. for the department of CTVS

Date & time of opening : 17.02.2016 at 12.30 P.M.

Sd/-
Director
Rajendra Institute of Medical Sciences,
Ranchi

Signature of Tenderer
Name (in block letters) : _____
Capacity in which tenderer is signed : _____
Address in full : _____
Dated : _____ Seal _____

राजेन्द्र आयुर्विज्ञान संस्थान
(झारखण्ड सरकार का एक स्वयतशासी संस्थान)
राँची–834009 (झारखण्ड)
दुरभाषः 0651–2541533, फैक्सः 0651–2540629,
E-mail: rimsranchi@rediffmail.com

RAJENDRA INSTITUTE OF MEDICAL SCIENCES
(An Autonomous Institute under Govt. of Jharkhand)
Ranchi-834009 (Jharkhand)
Phone: 0651-2541533, Fax: 0651-2540629,
Email : rimsranchi@rediffmail.com

Tender notice no. RIMS/Stores/ME(4)/ 13277(1) Dated 06.12.2016

NOTICE INVITING TENDER

FOR SUPPLY AND INSTALLATION ON TURN KEY BASIS VARIOUS NEW EQUIPMENT OF (1) CTVS DEPARTMENT (2) C.T. MRI ETC. OF RADIOLOGY (3) EQUIPMENT & APPLIANCES OF KITCHEN (4) EQUIPMENTS OF SURGERY, PAEDIATRIC SURGERY, ORTHOPAEDICS, OBST. & GYNAECOLOGY, OPHTHALMOLOGY AND OTHER DEPARTMENTS AT RIMS RANCHI.

Open tenders are being invited through sealed offers in two bid system (Technical bid & Price Bid) by speed post / Registered post only, from original equipment manufacturer or authorized dealer for supply and installation of medical equipments of (1) CTVS Department (2) C.T. MRI etc. Of radiology (3) Equipment & Appliances Of Kitchen (4) Equipments of Surgery, Paediatric Surgery, Orthopaedics, Obst. & Gynaecology, Ophthalmology and other departments at RIMS, Ranchi. Tenders will not be accepted by hand or any other agency.

A.	**Important dates for Tenders**	
1.	Date of uploading of sample tender paper on RIMS website www.rimsranchi.org for attending pre-bid meeting	On 20.12.2016
2.	Pre bid meeting for discussion on various technical issues	On 04.01.2017 & 05.01.2017 at 12:30 P.M at RIMS. All the intending bidders must attend the pre-bid discussion meeting for clarification of their queries & requirements of RIMS. No claims will be considered after finalization of tender paper.
3.	Date of issue of final tender documents (after pre-bid meeting)	From: 16.01.2017 to 15.02.2017 (The intended bidders may purchase tender document on any working day upon payment of Rs 5,000/- for each tender paper in cash to the RIMS Cashier or those who want to bid by downloading the tender document, they have to submit separate demand drafts in favour of Director, RIMS, Ranchi for Rs 5,000/- for each tender paper with their technical bid. (1) Cost of Tender Document for CTVS - Rs. 5,000.00 (2) Cost of Tender Document for Radiology - Rs. 5,000.00 (3) Cost of Tender Document for Kitchen - Rs. 5,000.00 (4) Cost of Tender Document for equipments of all other department - Rs. 5,000.00
4.	Last date of submission of sealed tender documents (Only by speed post / Registered post)	On 16.02.2017 till 04.30 P.M
5.	Opening of technical bid & discussion on technical issues.	On 17.02.2017 at 12:30 P.M in RIMS administrative conference hall, in front of purchase committee. All the bidders or their duly authorized representative must represent the tender opening for discussion & queries of purchase committee.

Note :1. For details of list of equipments, tender terms, conditions & specification please visit RIMS website : **www.rimsranchi.org** from 20.12.2016 for sample tender paper to attend the pre-bid meeting.
2. Final Tender paper will be uploaded on 16.01.2017 after pre bid meeting. All the bidders have to submit their tenders as per final tender paper (Not as per sample tender paper).
3. Before participating the meetings the bidders may physically visit the site and they may discuss with the concerned H.O.Ds / Officer In-charge, RIMS, Ranchi regarding requirements or queries.

Sd/-
Director
Rajendra Institute of Medical Sciences
Ranchi

राजेन्द्र आयुर्विज्ञान संस्थान
(झारखण्ड सरकार का एक स्वयतशासी संस्थान)
राँची–834009 (झारखण्ड)
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RAJENDRA INSTITUTE OF MEDICAL SCIENCES
(An Autonomous Institute under Govt. of Jharkhand)
Ranchi-834009 (Jharkhand)
Phone: 0651-2541533, Fax: 0651-2540629,
Email : rimsranchi@rediffmail.com

Corrigendum notice No. RIMS/Stores/ME(4)/ 033 Dated 02.01.2017

CHANGE OF DATE FOR PRE-BID DISCUSSION MEETING VIDE INVITED NIT NO. 13277 DATED 06.12.2016

Due to unavoidable circumstances the dates of pre-bid discussion meeting vide NIT no. 13277 dated 06.12.2016 are being rectified as here under. The intended bidders must have to come accordingly.

		Previous dates	New Changed dates
1.	Pre bid meeting for discussion on various technical issues	On 04.01.2017 & 05.01.2017 at 12:30 P.M at RIMS. All the intending bidders must attend the pre-bid discussion meeting for clarification of their queries & requirements of RIMS. No claims will be considered after finalization of tender paper.	For CTVS & Kitchen appliances on 04.01.2017 & for Rest other departments such as Radiology, Surgery, Paediatric Surgery, Pathology, Orthopaedics, Obst. & Gynaecology, Ophthalmology, Urology, ENT, Anaesthesiology, Dental Institute, Neurosurgery, Biochemistry & Physiology on 09.01.2017 & 10.01.2017 Time & Venue will be same as per previous notice.

Note : Rest terms & conditions will remain same as in NIT No. 13277 dated 06.12.2016.

Sd/-
Director
Rajendra Institute of Medical Sciences
Ranchi

राजेन्द्र आयुर्विज्ञान संस्थान
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Corrigendum notice No. RIMS/Stores/ME(4)/ 416 Dated 16.01.2017

CORRIGENDUM FOR CHANGE OF DATE FOR UPLOADING OF FINAL TENDER DOUCMENTS UNDER NIT NO. 13277 DATED 06.12.2016

Due to unavoidable circumstances (During pre-bid discussion meeting on 09.01.2017 and 10.01.2017 the large nos of submitted request letters from the intended bidders regarding rectification in specification of sample tender paper) the dates for uploading/ Issue of final tender document is being extended as under :

		Previous dates	New Changed dates
1.	Uploading of final tender documents on RIMS website (www.rimsranchi.org)/ Issue of final tender documents.	On 16.01.2017 to 15.02.2017	23.01.2017 to 15.02.2017

Note : Rest terms & conditions & submission date will remain same as in NIT No. 13277 dated 06.12.2016.

Sd/-
Director
Rajendra Institute of Medical Sciences
Ranchi

(1) ADVANCED HEART LUNG MACHINE

1. DESCRIPTION :

Heart Lung Machine is an apparatus through which blood I 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.

TECHNICAL SPECIFICATION:

- The unit and should have 3 single pumps and 1 twin pump can be used as arterial , suction, vent and cardioplegia with separate power supply and control modules. Should have easy access connectors for interchanging the pump. The pumps should show accurate measurements and the machine should be used for performing paediatric and neonate surgery.
- Out of the total 5 pumps – 2 single pumps , 1 twin pump and 1 mast pump should be there.
- The design of pump must be horse shoe race way design and the pumps should have direct drive system and maintenance free. All the Pumps should have pulsatile mode in build. Each Module should work its own.
- Each head should be controlled individually and rotatable in different direction with master – slave control.
- Should have a spill proof base.
- Machine should show all warnings and alarms in complete text message and different audible tones with different colour codings.
- The unit should be supplied with a **Battery back up of minimum of 90 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 automatic and immediate.
- Accuracy: Occlusion accuracy should be – 0.015mm, Occlusion rollers accuracy should be adequate.
- Occlusion: Should have Thumb wheel locking Mechanism
- Monitors : Pressure monitor (2), Timers(3), Temperature Monitor(4) and all the monitors should be touch screen.
- Pressure Sensor should have 2 modes – Stop Mode & Control Mode.
- Cardioplegia module should have both Manual as well as Automatic operation.
- Should be provided with mechanical gas blender.
- Should be provided with Level Sensor and air Bubble sensor
- Bubble Sensor should have different bubble detection thresholds including even micro-bubble detection function.
- Level sensor should be with 2 modes - Normal & Control Mode.
- Must have inbuilt Master UPS - shows all the details like Battery time, Load time & Remaining time. Should have BSA Calculation

(2) LARGE AUTOCLAVE

- Fully automatic double door high pressure steam sterilizer with chamber volume 450 -600 L. Integrated steam generator should equipped with automatic salt removal system & two stage water ring vacuum pump with water saving mechanism and silent operation.
- Sterilization chamber, doors and chamber jacket should be made of high quality AISI 316L/ Ti steel. Vertical /Horizontal sliding door with safety locks, manual actuation of doors and automatic door sealing. All pipes in contact with steam should be made of AISI 316 Ti.

- The chamber design should rectangular floor slanted towards the drain for easy replacement of condensate.
- The steam supply for sterilization chamber and for steam jacket should be separated into 2 lines for increasing temperature stability in jacket and for saving the consumption of demineralised water. The power failure for at least 10-15 Seconds should be ignored by the sterilizer.
- Should have two microprocessor control system for fully independent checking and control of the sterilization system. Integrated thermal printer. Should be complete auto diagnostic system providing error codes on display in case of failure.
- The steam Generator should also be made of AISI 316 Ti steel & the steam generator should be equipped with automatic salt removal system(Auto blow down).
- Display of remaining cycle time, display of temperature and pressure in chamber, jacket and steam generator should be provided on the touch screen. Graphic indication of curves of chamber temp. and pressure.
- Absolute pressure sensors for the precise recording and control of vacuum and pressure in the chamber and additionally in the jacket. Resistance temperature sensors PT100 for the precise control, evaluation and regulation of the temperature course.
- Integrated waste water cooling, integrated water saving device, Touch screen display, Chip card reader and RS 232 interface. The system should be suppied with suitable water purification system for smooth functioning of sterilizer
- Sterilization to be achieved at 134 degrees. The sterilizer should have at least 4 preloaded programs for standard sterilization, pre heating, containers and rubbers. It should also have preloaded test programs for Bowie-Dick test and Vacuum test.
- The sterilizer should come with standard accessories like sterilization baskets, basic insert, guiding rail for rack, grid tray, start up kit, Transport and loading trolley etc. The sterilizer should be complete with side and top paneling.
- Should be European CE and USFDA certified and should comply with EN 285 and EN 17665 standards. The system should have PED /ASME certificate for pressure vessel

(3) SINGLE CHAMBER PACEMAKER

- Should at least have modes AAO, AAI, VOO and VVI.
- Should have facility to attach to patient arm, leg as well as IV Pole.
- Should have sensitivity range from 0.1 to 20mv.
- Should have basic pacing rate 30 to 180ppm which is continuously adjustable.
- Should have rapid atrial pacing rate at least in the range 80-700 ppm, with easy increments.
- Should have an output amplitude 0.4 to 10 mv continuously adjustable.
- Should have incremental adjustable sensitivity 0.1 to 20 mv.
- Should have refractory period of 250 ms.
- Should have work on 9 V alkaline batteries or 1.5 V AA batteries which are very easily available in the market.
- Should have back up battery life > 200 hrs.
- Should have low battery indicator.
- Should be CE approved.
- Five Pacing cables should be provided with each unit.
- 5 years warranty should be available.
- CMC after 5 years should be quoted separately. For final comparison, CMC price of five years will be taken into account.
- Adequate service backup should be available.

(4) DUAL CHAMBER PACEMAKER

- MODE OF OPERATION: Demand or Asynchronous
- Voltage output:0.1 TO 20 mA or wider
- Pulse rate 30-200 or more ppm with rapid atrial pacing available.
- Pulse width 1 msec or wider.
- Display should demonstrate both sensing and pulsing.
- Dimensions- should be compact and light in weight.
- Control: All controls are to be located on the face and are to be protected by a transparent cover.
- Should have safety lock for set pacing parameters.
- Sensitivity: Should be continuously variable from 1 to 20 mV or more in ventricle and 0.4 10 mV in atrium.
- Refractory period –Atrial 200-500 msec, PVARP.
- Inhibit sensitivity 1-20 mV.
- Should have pacing pause mode.
- AV interval-manual range 200-300, sensed A-V 100-200.
- Power backup to be 9 volts, pacing should continue during battery change period.
- Should be CE approved.
- Should have low battery indicator.
- Six Pacing cables should be provided with each unit.
- 5 years warranty should be available.
- CMC after 5 years should be quoted separately. For final comparison, CMC price of five years will be taken into account.
- Adequate service backup should be available.

(5) INTRA AORTIC BALLOON PUMP

- Latest technology model, system should be suitable for Adult application.
- Should be easily transportable with compact wheelbase design.
- System should have automated trigger source and timing management and should provide continuous consistent support.
- System should have following features :-

  a. One button start up. Should reach maximum support fast on startup.
  b. Automatically adapt to changing condition.
  c. Automatically evaluates and selects optimal trigger source and lead.
  d. Automatically sets inflation at the dicrotic notch and deflates IAB at the start of systole.
  e. Automatically responds to changes in signal quality by selecting new trigger source and re-timing to adapt to patient rhythm changes.
  f. System should automatically detect arrhythmia and adapt the R wave deflation mode accordingly.

- Additional features: System should be capable of automatically selecting appropriate trigger
- **Trigger:** ECG. Pressure Trigger, Pacer A, Pacer V/AV, Internal. Should have 1:1 , 1:2 , 1 : 3 or 1: 4 assist levels.
- **ECG:** Threshold dynamically adjusted by system.
- **Pressure Trigger:** Automatic adjustable from 10 to 30mm Hg +/- 3mm Hg. Should be able to trigger at low pulse pressure also.
- **ECG Lead :** In auto operation mode I, II & III.
- Pneumatics : Vacuum/Pressure technology with fast inflation/deflation speed.

- Monitor : Large Minimum 8" color monitor with rotation & tilting. Should have good visibility from a distance ;multimparametric display should be available.
- Doppler : Doppler with 8 MHz non directional probe for checking limb ischemia.
- Printer: With Menu option is preferable.
- Should have onscreen display of helium level.
- It should have valid US FDA and European CE Certification.
- Should be supplied with all standard accessories like ECG cable, BP transducer, Helium cylinder (2)
- Adequate service backup should be available locally.
- 5 years warranty with spares and 5 years warranty without spares (CMC) should be available.
- For final comparison, CMC price of five years will be taken into account.

(6) PFT MACHINE

1 **Description of Function**

1.1 Pulmonary function tests are a broad range of tests that are usually done in a health care provider's office or a specialized facility. They measure how well the lungs take in and exhale air and how efficiently they transfer oxygen into the blood.

2 **Operational Requirements**

2.1 System should be supplied complete with printer.

3 **Technical Specifications**

3.1 1. The following tests should be performed by the PFT Equipment.
a. It should measure FEV , FVC, PEF, SVC,FEV %, MMEF, PIF, MVV,FRC,1 1 RV, TLC, FET, ERV, IRV, PiMAX/PeMAX

b. DLCO, BRONCHIAL PROVOCATION TEST

2. Predicted value- depends upon national preference
3. Multi window lay out
4. Configurable print out format
5. Real time flow volume and volume time traces
6. Overlaying of previous test curves for comparison
7. Open & Closed flow/volume loop test technique possible
8. Powerful search capability
9. Storage- 1000 patients' tests including flow/volume loops and volume time curves.
10. Should have networking support

4. System Configuration Accessories, spares and consumables

None

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 operating continuously in ambient temperature of 20-30 deg C and relative humidity of 15-90%

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

6 Power Supply

6.1 Power input to be 220-240VAC, 50Hz fitted with Indian plug
6.2 UPS of suitable rating with voltage regulation, spike protection and maintenance free batteries for 60 minutes back up

7 Standards, Safety and Training

7.1 Should be FDA, CE, UL or BIS approved product
7.2 Manufacturer should have ISO certification for quality standards.
7.3 Comprehensive training for lab staff and support services till familiarity with the system.
7.4 Comprehensive warranty for 5 years and 5 years CMC after warranty including UPS
7.5 Electrical safety conforms to standards for electrical safety IEC 60601-1 (OR EQUIVALENT international/national standard) General requirement for Electrical safety of Medical Equipment.

8. Documentation

8.1 User/Technical/Maintenance manuals to be supplied in English.
8.2 List of important spare parts and accessories with their part number and costing.
8.3 Certificate of calibration and inspection.
8.4 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.
8.5 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.
8.6 List of Equipments available for providing calibration and routine Preventive Maintenance Support. as per manufacturer documentation in service/technical manual.

9. Note:

- Equipment with 5 years warranty and thereafter 5 years CMC will be taken for the purpose of price evaluation.
- The above Equipments are to be supplied with Suitable Compatible Cabinet /Furniture /Steel /Modular make for safe custody of the Equipment
- Should confirm to all international safety standards, turnkey installation and with warranty /CMC as indicated and which shall be considered for the evaluation of the price bids
- Tenderer's attention is drawn to GIT clause 18 and GIT sub-clause 11.1(c). The tenderer is to provide the required details, information, confirmations, etc. accordingly failing which it's tender is liable to be ignored.
- In case of proprietary items, Proprietary Certificate must be enclosed.

(7) OXYGEN CONCENTRATOR 5LPM

- It should be able to deliver Oxygen concentration of >93% nominal purity at flow rate of 0-5 LPM.
- Flow meter should be there with control knob.
- It should have alarms for Low/High Pressure, Power failure & low Oxygen purity.
- It should have oxygen delivery pressure of 9 PSI or more.
- It should have 02 purity indicator with alarm if purity falls below 85%.
- Noise level to be <55 db.
- Electrical requirement of 220+/-10% VAC with low power consumption not more than 300 watts.
- Operating temperature range 0 deg C to 40 deg C.

- It should be light weight (<20kgs) and having noiseless wheels/castors.
- Nasal cannula of at least 2 meters to be provided.
- It should have a re-settable safety fuse for safe guarding the compressor against power fluctuations.
- Humidifier bottle with blow off safety valve and electronic alarm / alarm whistle should be provided in a recessed place for safety.
- The unit should be European CEand USFDA marked
- It should have been supplied to government/Corporate hospitals and satisfactory work reports must be attached.
- Compliance report should be mentioned point by for all the required tender specification. Also the required technical specifications should be clearly mentioned in the equipments brochure or catalogue.
- Unit should be supplied with 5 years of comprehensive warranty followed by AMC/CMC for next five years after the warranty period.
- The quoted equipment should be of the latest generation and availability of spares should be confirmed up to the next ten years alongwith certificate of the same should be submitted.
- The firm should also submit the rate list for major spares and consumables.

(8) SURGICAL LOUPE

Specifications:

- Magnification Approx : 2.5x to 4.5x
- Configurations : TTL; Flip-up & TTF
- Field Width & Depth : 4"(10cm.)
- Weight: 1.6 oz (45 To 50 grams)
- Working distance
  - Short: 10" – 15"(26-38cm.)
  - Regular: 12" – 17" (30-43cm)
  - Long: 14" – 19"(36-48cm.)
  - XLong: 16"-21"(40-53 cm.)
  - XXLong:18"-23"(45-58 cm.)
- Waterproof
- Hypo allergenic
- Corrosion resistant
- Adjustable or customized as per your requirement
- Adjustable nose pad
- Lightweight
- It should have five years warranty
- It should be EUROPEAN CE & US FDA approved

(9) SAGITTAL / VERTICAL STERNAL SAW |

- The Sternal Saw should be light weight and provide clear line of sight.
- The Sternal Saw should operate through a flexible drive cable by an electric motor or using rechargeable battery.
- It is able to be ETO Sterilized/autoclaved.
- The blade holding mechanism should be chuck type assembly for quickly replacing the blades.

- The reciprocating blade should have a 5-7 mm stroke length.
  The saw should have a blade protector on it and blade protector should be easily replaceable.

(10) FORCED AIR WARMING UNITS

- Should deliver warm air uniformly to the patient through disposable plastic blankets
- Should have temperature range from ambient, to 43-44^0 C.
- Should have hose end or in equipment temperature control system
- Should have low maintenance requirements
- Should have short warm up time
- Should be quiet and light weight
- Can be mounted to the infusion pole or bed rails or placed on the floor
- Should display actual temperature of air being delivered to the patient
- Must meet all convective warming standards
- Should be easy to operate in two steps
- Should have safety alarms such as over temperature, under temperature and hose disconnect
- Should have wide range of disposable blankets for variety of patient sizes and positions
- Blankets must have 2 layers of non woven polypropylene fabric bounded to a layer of polyethylene for durability and to prevent tearing and puncturing
- Blankets must be radiolucent, flame retardant and latex free
- Air holes must be milted into blankets and not punched so there's no particulate or "hanging chads" in the surgical area.
- Should be compatible with all commonly available warm air blankets.

(11) PT/INR MACHINE

- Should have two levels of quality control on every strip.
- Should have large LCD Screen and easy to read digits.
- Should have simple icon based interface.
- Should have compact kit design.
- Should have extended battery life.
- Should have extended test strip area.
- Should be auto turn on with strip insertion.
- Strips should be able to store at room temperature for 12 months.
- One drop of blood should perform both test & Quality control.
- Should be European CE & US FDA Approved.

(12) AUTOMATED COAGULATION TIMER (ACT) MACHINE

- The equipment should be small, easily portable microprocessor controlled coagulation time monitoring instrument working on 220V/50Hz. Supply.
- It should be capable of performing tests like low and high range clotting time, recalcified activated clotting time, prothrombin time and high heparinase test on whole blood citrated whole blood and plasma with respective disposable test cartridges.
- The equipment should have two channels for measuring the individual clotting time and for average difference for the two channels with the help of two channel test cartridges.
- The display should show the coagulation time of the two channels. Heat block channels should also be displayed and should be 37^0 C+/-.5^0 C.

- The equipment must have a self diagnostic program display for evaluation and fault finding/rectification.
- Provision of serial date RS 232 is required.
- Test results should be stored in the order in which they are performed and should have the capability to externally transfer or save data to a floppy disk.

(13) HEAD LIGHT

- Ceramic body elliptical lamp
- Touch Screen Controls
- 1,000 hour lamp
- Dual Fan Cooling System
- External Air Filter
- Automatic Shutter
- Standby Mode
- New Mechanical Lamp Alignment
- Consistent High Lux Output
- Internal Self Diagnosis

Specifications of Lamp

- Lamp Type: Ceramic Type Xenon Lamp
- Lamp Power Rating: 300 Watts
- Lamp Color Temperature: 5,600K
- Lamp Warranty: 1000 Hours (Typical)
- Front Panel Controls: On/Off Switch, Touch Screen Controls, Turret
- Input Voltage Range: 100 – 120 VAC 50 /60Hz, 220–240VAC 50Hz
- Power Consumption: 450 Watts
- Regulatory: UL60601, EN 60601-1, EN 60601-1-2, CAN/CSA, C22.2, No 601.1-M90, CE
- Equipment Class: BF-TYPE
- Dimensions: 338mm (13.3″) W x 155mm (6.1″) H x 457mm (18″) D Approximately.
- Weight: 10.0 kg (22 lb) Approximately.

(14) CEREBRAL/SOMATIC OXIMETER MONITOR (NIRS)

The Cerebral/ Somatic Oximeter monitor is a non invasive oximeter which simultaneously monitors changes in regional blood oxygen saturation in the brain and skeletal muscle tissue of the body. It may be used for cerebral oximetry, somatic coximetry or both simultaneously.

- It must be available in either four or more data channels, user-friendly System which comes pre-calibrated and ready to use in 30 seconds or less.
- Physically it should have the following.
- Dimensions : Height 20-30cm cm, Width 25-32 cm, Depth of 15-25 cm Weight 4.5-5.50 Kg
- Preamplifier Cable's Length must be 4.5 -5m &Sensor Cable Length must be 1.5 -2 .00 m
- Operationally it must have following:

  Range of rSO2 14 – 96(updated every 4 – 8 seconds)
  Repeatability Hardware (including sensor) repeatability is within 1 rSO2 index point from unit to unit (measured invitro).
  Alarm Limit Range High: 19 – 97; Low: 14 – 92 High and low limits cannot cross

Trend Memory 24 hours at 2 samples per minute ,with 25 cases saved in memory
Diagnostics Automatic self-test Safety Class Continuous Operation

- Power External AC mains or backup battery
- Operational Electrical details must be as following: Input Voltage 100 – 240VAC
- Frequency 50/60Hz ,Current 1.0A – 0.5A (maximum at 100 and240 volts respectively)
- Digital Output RS-232 communication, USB Port USB 2.0 Flash Memory
- Regulatory Standards

  The System must comply with the following U.S. and international regulatory standards for medical equipment: UL 60601-1CSA C22.2.601.1EN 60601
  Must have FDA and CE Certificate for the entire patient Categories.

- The Cerebral /Somatic Oximeter System Must include

  Cerebral Oximeter
  PA Preamplifier with Cable, Channel 1 ,2
  PB Preamplifier with Cable, Channel 3 & 4
  RSC-1 Reusable Sensor Cable, Channel 1
  RSC-2 Reusable Sensor Cable, Channel 2
  RSC-3 Reusable Sensor Cable, Channel 3
  RSC-4 Reusable Sensor Cable, Channel 4
  5100C-USB USB Flash Drive
  Power Cord

- It must be compatible with following Disposable, Noninvasive Sensors: Disposable Cerebral Neonatal Sensor, (<5 kg) ,Disposable Neonatal, NIRS Sensor, (<5 kg) 10,Disposable Pediatric sensor (<40 kg) ,Disposable Adult sensor (>40 kg)

- It must have following Available accessories and replacement parts which include:

  a. Power Cord
  b. 5100C-USB USB Flash Drive

(15) MULTI PARAMETER TRANSPORT MONITOR

- Rugged and durable with shock resistance capability,
- Small, Lightweight, transport ready design
- At least 3-4 hours battery life with NIBP and should have direct DC input also.
- Can be used in large and small body fixed and rotary wing aircraft
- Able to view the color screen indoors and outdoors
- Parameters: 3 lead ECG clip type (NOT snap on type), Respiration, Heart Rate, NIBP ,SpO2 ,at least 2 invasive pressures.
- Motion tolerant monitoring
- Different patient mode available (Adult, Pediatric & Neonate)
- Easy to use and intuitive user interface which need minimal user training.
- Able to store 24 hour tabular and graphical trending
- Able to capture important event and review on patient monitor
- Complies with all relevant AAMI, IEC,EN,CSA, and UL standards
- Should be US FDA approved.
- Should be supplied with standard set of accessories and also include :

  (i) NIBP cuff (2 of each size) - Adult, Pediatric, Neonatal
  (ii) ECG Lead – 02
  (iii) Re-usable SpO_2 Sensor (2 of each size) - Adult, Pediatric, Neonatal
  (iv) Invasive BP monitoring cable with transducer - 04
  (v) Disposable transducer domes - 20

- Screen size – 10" to 12"

(16) BIPAP MACHINE

- Usable for both adults and pediatric patients above 20kg body weight.

- Should have continuous mode of operation.
- Should have multiple therapy modes i.e. CPAP, AUTOSET, BILEVEL, PAC (PRESSURE ASSIST CONTROL), SPONTANEOUS, S/T (SPONTANEOUS/TIMED), VAP (VOLUME ASSURED PRESSURE SUPPORT) etc.
- Should have battery backup (up to 4 hrs.)
- Must be electromagnetically compatible.
- Pressure output should be Up to 30cmH2O
- Should be able to measure and display parameters accurately(i.e. RR, Exhaled tidal volume/exhaled minute ventilation, air leak rate etc.)
- Should have humidification facility (with humidifier)
- Should have Alarm system both visual and audible of different priorities
- LED display screen displaying all the set parameters lime RR,EPAP,IPAP<Exhaled VT, Leak, mode of ventilation etc.
- Ramp availability required.
- Accessories like breathing circuits and masks of all sizes (face masks and nasal masks) should be supplied with
- Weight of the machine should be less than 2kgs (light weight preferred) and should be user friendly.

Should be US FDA & European CE approved

(17) <u>NON INVASIVE CARDIAC PUMP</u>

- The Cardiac Support Pump should able to generate chest compression & provide consistent compression with no interruptions.
- It should be easy to use in both Hospital and Emergency set up mainly during transportation.
- It should have facility to provide chest compression to patient while carrying to staircase and even on 45^0 elevation.
- It should be battery operated and extremely simple user interface.
- It should able to achieve uniform load distribution by squeezing entire chest.
- The Chest compression band should have an ability to do the high-quality compression.
- It should have small LCD backlit screen to show compression modes.
- It should have ability to automatically size the patient by calculating size, shape and compliance of every patient.
- The system should be capability to provide both 30:2 (30 compressions and 2 ventilation pause) and continuous compression just by pressing buttons.
- The system should come with 3 batteries, 1Battery Charger and 3 load distribution band(LifeBand) capable of doing high quality chest compressions.
- The battery should be made of Li-Ion technology which enable to provide continuous compression of minimum 20 minutes in fully charge condition.
- The quoted Unit should be US FDA approved.
- The Unit should have facility to work in Synchronization with Defibrillator.
- The defibrillator should be rugged and should have easy to read displays to be readable in any environment.
- The Defibrillator should have facility for ECG Monitoring, defibrillation, rectilinear external pacing (transcutaneous) & recorder.
- Defibrillator must have AED mode and facility to apply AED padz when whole system is operational.
- The Defibrillator should be Rectilinear biphasic technology, having energy selection of 1 – 200 joules.

- The Defibrillator should have charging time of unit should be less than 7 Seconds of maximum energy.
- The Defibrillator should have ability to measure chest compression rate and depth in real time and both visual and optional audible feedback is provided.
- It should have ability that all CPR data can be recorded and reviewed by using software specially designed for doing this (if needed).
- It should have ability to filter out CPR artifacts and allowing person to see organized rhythms without interrupting chest compression.
- It should have voice and visual prompts both as per AHA Guidelines.
- The defibrillator should have option to Upgrade to EtCO2, SpO2, NIBP and12 leads, prices to be quoted separately.
- It should be US FDA approved.

(18) FLASH AUTOCLVAE

- Fully automatic , instant sutoclave from 17 – 20 liter capacity with optional RS 232 Port for connecting thermal printer temperature , pressure , time and date of cycle .
- It should provide sterilization at 121 degree and 134 degree Celsius with pre selectable sterilization time .
- It should be class B autoclave having pre vacuum cycle to remove air from the chamber .
- It should have option for water purification system which can directly be mounted over the machine to cater the purified water needs .also it have a separate tank for water for manual filling .
- It should have automatic pressure door locking system when sterilization under pressure is in progress , to prevent accidental door opening .
- It should have dry cycle with selectable time period
- Audio visual alarm to indicate end of process.
- Compatible sterilization tray should be given with the autoclave .
- Should have LED / LCD display for process information .
- Safety valve to release excess pressure to prevent accident .
- Should be in compliance with EN 13060 .
- The autoclave should be CE certified and US FDA approved.

(19) BATTERY OPERATED STERNUM SAW SYSTEM

Typically used in Cardio thoracic procedures: Open Heart Surgery

Technical Specification

Sternum Saw Hand piece:

- Dedicated Sternum Saw hand piece should have minimum 14000 CPM with safe mode option
- Saw noise level should not more than 93db
- Should have 3.9 mm arc of excursion
- Light weight pistol grip Hand piece with battery should not be more than 1.2 Kgs
- Option of Sternum Guard
- DC brush less motor for low maintenance- No life time need of lubrication
- Tool less mounting of accessories for all blades or attachments
- Various autoclavable option
- Microprocessor controlled Hand piece Can be calibrate for the consistence performance

- Can be fitted with Small Battery, Large Battery or Aseptic Battery Kit

Re Do Sternum Saw (Sagital Saw) Hand piece:

- Dedicated sagittal saw hand piece speed of 10000 - 12000 cycles per minute
- Saw Noise level should not more than 89db
- Weight of hand piece with battery should be not more than 1.6 Kgs
- Should have 5 degree arc of excursion
- Blade mount should be adjustable to different angles with 360 degree rotation
- Two speed controls with standard and fast mode.
- Microprocessor controlled Hand piece Can be calibrate for the consistence performance
- Tool less mounting of accessories
- DC brush less motor for low maintenance- No life time need of lubrication
- Various autoclavable option
- Control of fast, standard &Safe mode on hand piece

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 with no module requirement
- Should have an indicator to provide battery status for charging.
- Should be able to check over autoclaved battery number of time
- Should be able to check over autoclaved total time
- Should have reconditioning futures for battery
- Should be able to charge different batteries with same charger

Battery:

- Ni Mh& Ni Cd batteries with low internal impedance to deliver higher current than other battery types,
- Ni Mh& Ni Cd cells with capacity to produce more torque and non autoclavable & autoclavable option with average life of 200 approximate charging cycles,
- Should have a run time of minimum 15 minutes
- Should be autoclavable

Accessories & Sterilization Case:

- Sternum blade guard
- Should be accommodate all hand piece, attachment and accessories for autoclave

(20) PORTABLE ECG MACHINE

- 12 channel digital ECG machine with simultaneous acquisition of all leads and preferably an LCD display prior to printing.
- The unit should be lightweight (< 6 kgs) and easily portable.
- Machine should run on AC current & rechargeable batteries and should be provided with a proper bag to carry the equipment and its ancillaries.
- Should have powerful battery of at least 3 hours or lasts for 250 recordings on single charge battery.
- The ECG machine should conform to AHA, ACC guidelines for medical equipment.
- The units should have the capability for proper self check & calibration.
- Adult and pediatric clip type electrodes for limb leads and other reusable electrodes & cable should be quoted separately.
- The output should have the name; date & time of ECG printed and have the option to print in multiple formats.
- Analysis software to be quoted .

- The unit should preferably be capable of providing continuous three/six/twelve channel output in any combination in case of necessity of long rhythm strips.
- Extra battery should also be quoted.
- All spares should be also be quoted separately i.e. ECG, bulbs, ECG cables and batteries.

(21) RESUSCITATION/EMERGENCY CART WITH DEFIBRILATOR

- The resuscitation cart should be durable with ergonomic handle and should have easy grip.
- It should have an Aluminium frame & made of High powered powder coated Mild Steel.
- Should have height around 37 to 40 inches with Casters.
- It should be CE Marked as well as ISO9001:2008 Certified.
- Should have drawers – approximately -2x3", 2x6",1x9" which run smoothly on Auto Return channels.
- The cart should have provision of side storage which allows storage of variety of accessories like -can, storage bins, GloveDispenser,Sharp Container Set.
- It should have Defibrillator Shelf, CPR Board, Oxygen Tank Cylinderspace.
- It should have ABS top Surface & Advance Polymer material which is easy to clean. It should not dent, chip rust, flake or corrode.
- The trolley should be easily rolling and should have toe brakes.
- It should have I.V pole with double clamps. Writing Board should be there
- Each, approximately-3" drawer should have provision of 25-30 compartments for vial, ampoules.
- It should have Twin Wheel Casters & Central Locking system to close all the drawers with one key.
- Must provide atleast one performance certificate from any government Hospital for the same model quoted.
- It should be preferably imported.

Specification of Defibrillator as part of cart

- Light weight Defibrillator with ECG monitor.
- The complete unit should be US FDA and European CE approved.
- Synchronized biphasic shock from 2 to ≥ 150 Joules
- Should be supplied with Adult and pediatric external paddles
- Should be supplied with Adult (two) and infant (two) internal paddles
- Option for external disposable defibrillation patched for adult and pediatric patients
- Should have facility for external transcutaneous pacing with pacing rate between 40 to 160 bpm in demand and fixed modes.
- Should be fitted with a printer
- Should be compatible with OT monitors
- Supplied with ECG cable.
- The device should be AC/12V DC powered with ability to run on internal battery. Device should be capable of giving 50 shocks with fully charged battery.
- Should have alarm for arrhythmia, high/low heart rate
- Should have audio command for directing its use
- Should have ability to display and record at least 3-channel ECG simultaneously.
- Price of external patch electrodes (Adult and Pediatric) for defibrillation should be quoted separately.

(22) ADJUSTABLE HEIGHT STRADDLE INSTRUMENT TABLE

Adjustable height, Surgical operating STRADDLE TROLLEY straddles the operating table, for keeping surgical instruments.

- Should be made of fine grade stainless steel..
- Should have Twenty inches of height adjustment, for lowering and raising OT Table.
- Should have a detachable crank handle for height adjustment.
- Height should be adjustable manually from either side.

Dimensions (W x D x H) (inches)	48"W x 24"D Height Adjustable
Width (inches)	48" -50"
Depth (inches)	24"
Height (inches)	36"- 56"
Height Adjustment (inches)	36"-56"
Casters	Rubber Swivel, Two with Brake, 3" Wheel Diameter
Wt. (lbs)	140-160
Notes	Leg Clearance: at least 40 inches.

(23) DEFIBRILLATOR

- Machine should conform to latest international guidelines (AHA 2015) of AHA/ERC/ ILCOR for CPR and defibrillation using Biphasic Energy for Defibrillation up to 200J.
- The unit should be US-FDA approved.
- It should have color TFT/LCD display screen size of minimum 6-inch diagonal with three wave form display or more.
- Should have facility for manual Defibrillator, AED mode, Synchronized Cardioversion, external transcutaneous pacing and Internal Defibrillation (for cardiac surgery applications).
- It should display of both selected and delivered energy.
- The machine should have facility to increase/decrease energy selection through paddles as well as on machine.
- It should have ability to measure Chest Compression Rate, Chest compression Depth, Chest release and Idle Time for adult as well as pediatric with both visual and audible prompts.
- Defibrillator should have user selectable advisory mode.
- The unit should do self-test daily with facility to give print out of defibrillator testing report and have code ready indicator on unit.
- It should have ability to filter out CPR artifacts and allowing clinician to see organized filtered rhythms without interrupting chest compressions.
- Battery should be Li-Ion capable of at least 3 hours of ECG monitoring and capability of delivering at least 50 shocks once fully charged and should have charge level indicator on it.
- Defibrillator should have facility to upgrade for monitoring of Masimo low perfusion SPO2, NIBP and Main stream ETCO2, prices to be quoted separately.

- The Unit Should be supplied with minimum of following accessories: -

A) Li-Ion smart battery – 1 no.

B) ECG cable (3-Lead) – 2 nos.

C) External defibrillator paddles (pediatric inbuilt in adult) –1 nos.

D) Autoclavable Internal Handle for Defibrillation with integrated Spoons/ paddles to be used for minimum 150 autoclave cycle.

E) Multi-function defibrillator and monitoring/ pacing pads/gel sheets qty-12 nos.

- Bidder must quote all consumable and accessories.

(24) BLOOD/FLUID WARMING SYSTEM

- Blood/Fluid Warmer Safety effectively warms fluid from KVO 30,000 ml. / hour.
- Reacts instantly to changes in flow rates-so you don't have to uses economically easy to use disposable warning sets. Virtually eliminates maintenance.
- Tight coupled heat system provides Heat when you need it and only when you need it.
- Heater & disposable are closely connected for instant response to changes in flow rates.
- No excess heat is retained in the system, so flow changes don't overheat fluid.
- Highly conductive warming plates maximize heat transfer.
- Low-resistance flow path is engineered for optimum performance.
- Warming plates are ideally spaced for optimal surface area conduct.
- Gentle-radius curves reduce resistance and promote flow.
- Non-restrictive design eliminates," bottleneck effects"
- Built-in safety features provide added protection.
- Operating set-point at 41°C.
- Audible and visible system alarms if fluid temperature exceeds 42°C.
- Audible and visible under temperature alarm.
- Secondary alarm systems provide fall-safe back-up.

(25) VARIABLE HEIGHT TWO -SECTION RECOVERY TROLLEY

- Twin pedestal hydraulic adjustment
- Height adjustment pedals located on both side of the stretcher
- Hydraulic Trendelenburg-reverse Trendelenburg mechanism with two pedal operation from either side of the stretcher allowing attendant's hand to be free all time.
- 200mm coasters with central locking brake pedal located at each corner with one steering coasters and option fifth wheel steering
- Two section sliding X-ray lucent mattress platform for using C-arm system
- With full length under platform cassette shelf, permitting cassette location at any position below the platform and access from both side and depending on configuration and accessories also from head or foot ends
- Elevated X-ray cassette shelf mechanism to ensure that cassette is flush with platform
- Adjustable backrest is 90^0 by the pneumatic spring release for exact positioning without effort
- Lateral bumper strip at each corner
- Full length under bed thermoformed ABS base cover with built-in oxygen cylinder cradle for size D.E or F and ample storage space for patient.
- Collapsible fold down type side-rails permit access to cassette shelf in all positions

- 4 infusion pole sockets with infusion poles with 4-fluid bottle hooks.
- Combi –foot board and shelf for keeping infusion pumps and patient records
- Working load 250kgs.
- Patient surface width 73.5 cm.
- Overall length 210 cm.
- Height range 611-91cm.

(26) ESOPHAGEAL AND GASTRIC PRESSURE MONITOR

Esophageal and Gastric Pressure Monitor

Esophageal and Gastric Pressure monitor is required for CTVS departments specially for Difficult-to-wean patients, COPD, ARDS ,Detection of patient-ventilator asynchrony, Assessment of patient respiratory muscle strength, Diaphragmatic activity.

- The system should Measure signals of Flow; Airway Pressure; Esophageal Pressure; Gastric Pressure, Trans Pulmonary Pressure and Trans diaphragmatic Pressure.
- Esophageal and gastric pressures should be measurable by the separately provided port through inflatable balloon catheters.
- The balloon catheters should be of a length of 100 cms or greater and the balloon length should be approximately 8 cm.
- The balloon catheter pressure should be measurable by a pressure transducer system (± 75 cm H2O)
- The Balloon probe should has incorporated a contrast tip in order to be able to verify the proper position in an x-ray image.
- The system should display Trend Graphics; Campbell Diagram; Pressure Time Product; Stress Index, Rapid shallow Breathing Index, Plateau Pressure, Dynamic Intrinsic PEEP, Esophageal Pressure swing, Dynamic Lung Compliance, Transpulmonary Plateau Pressure.
- The system should provide curve for Volume ,Flow, Airway Pressure, Esophageal Pressure, Transpulmonary Pressure, Gastric Pressure , Transdiaphargmatic Pressure.
- The system should have facility of auto calibration for accurate pressure measurement.
- The Flow sensor should be easily connected to endotracheal tubes, tracheotomy cannula or NIV masks.
- The signals can be relayed to a Laptop system which should be supplied along with Machine.
- Software for recording and analyzing the pressure signals should be provided.
- The Esophageal and Gastric Pressure Monitor should be light weight around one kg for easy movement from one bed to another Bed inside ICU.
- The system should be supply along with a Laptop of minimum 14 " screen , 4 GB RAM, 500 GB HDD, Windows operating system.
- Should supply Accessories Balloon catheters – 150 no. , Flow sensor -20 no along with the system.
- All accessories required to make the equipment fully functional should be provided.
- The Firm must have supplied the same unit to a Leading Government Hospitals like AIIMS,PGI in India.
- Warranty for 2 years and AMC/CMC for 5 years and its rate quoted separately.
- The unit must have been supplied in a Reputed Central/State Government Hospital in India.
- POWER SUPPLY:- 110V-220V – 50Hz-60Hz.
- The System should be European CE Certified.

(27) NON-INVASIVE CARDIAC OUTPUT MONITOR

- Should display continuous non-invasively measure hemodynamic, and cardiac output variables.

- Should have the following parameters: Heart rate, Stroke volume, Cardiac output, Cardiac index, Index of contractility, variation of index of contractility, systolic time ratio, thoracic fluid index, stroke volume variation.
- Should be based on electrical velocimetery method.
- Same machine should be suitable for neonates, children, and adults.
- Should use only four electrodes.
- Should be able to detect proper electrode placement
- Should be able to indicate signal quality
- Should have fast optimization and minimal delay in measurement of beat-to-beat result.
- Hand held, or bedside machine.
- Digital interfaces support value link interface protocol should have internal data storage data export on to excel sheet.
- Should be US FDA and European CE approved.

(28) ECMO MACHINE

- Centrifugal pump system should be stand alone trolley and following accessories

  1) Pump control panel
  2) Drive unit
  3) Emergency drive unit
  4) Flow sensor

- Should have pressure control sensor and temperature control sensor.
- The priming volume of the pump should not be more than 60 ml.
- The pump head should be able to use up to six hours of operation.
- The maximum flow rate of the pump head should be 8 l/min.
- The unit should have inbuilt UPS and should have backup of 90 minutes.
- The oxygenator should have a minimum validation of 5 days.
- The priming volume should not be more than 90ml.
- Minimum range of rotator speed (RPM) at least 0-3500 RPM.
- Superior Air handling
- Low index of Haemolyses (due to the Spin-Inducer Impeller)
- Low heat Generation (Heat sink bearing)

(29) HEATER COOLER MACHINE

- The unit shall be capable of operating continuously in ambient temperature of 2 - 40.5 degree celcius.
- The unit should have 3 independent tanks and 3 separate circuits and these circuits should be able to control patient's temperature and also heating and cooling of cardioplegia and should work simultaneously.
- The accuracy should be 0.1 C. Settings should be adjustable to 0.1
- The heater cooler unit should also be compatible to get integrated into the heart lung machine.

(30) CELL SAVER MACHINE

1 Recent generation autologus blood recovery system using latest micro-processor technology for automated collection and processing of autologus blood during surgery.

2 Should have automatic sensor for sensing the level in the reservoir to initiate machine operation.

3 Despite automated operation, machine should have option for user to reprogram the parameters.

4 It should have dual RBC sensor in the centrifuge well, an ultrasonic air detector on the tubing lines and optical effluent line sensor to provide information to microprocessor for regulation of cycles of machine, and should also monitor the quality of washing. Should have fluid loss sensor.

5 It should have computer guided set up to guide the operator in setting up the system.

6 The system should have inbuilt and regulated vacuum suction with smart suction technology

7 There should be touch screen display panel to provide information relative to the operation of the system parameters like pump rate, wash volume, number of bowls processed,product volume and current mode of operation, which should be regularly updated automatically time to time.

8 It should have integrated hematocrit sensor. The final blood product should contain hematocrit of not less than 60%.

9 It should be provided with a cart with four castor wheels to ensure easy manoeurability with locking facility for at least two wheels.

10 It should have height adjustable I.V pole for hanging saline solution reservoir, reinfusion bags, anticoagulants and transfer packs.

11 Processing time should not be more than 5 minutes, Pump speed should be programmable from at least 25 to 1000 ml/min increments and temporarily reset facility with pump speed arrow keys from 0-1000ml/min in manual mode.

12 Washing bowls should be in minimum 3 different sizes for various kinds of patients

13 Vacuum Pump can be used as an integrated and alone also.

14 It should have inbuilt USB ports and Ethernet Ports for data management system. It should have inbuilt memory for storing upto 10,000 cases.

15 Should Have an option of doing sequestration process.

16 Should have inbuilt printer with permanent printouts or built in barcode reader to record disposable set, solutions and operator / patients informations.

17. It should be light weight preferably less than 95 lbs.

(31) BISPECTRAL INDEX (BIS)- ANAESTHESIA DEPTH MONITOR

- A monitor for providing numerical value of electroencephalograph after fast Fourier transformation in numbers from 0 to 100 both in adults and children. Lightweight stand alone weighing less than 2 Kgs.
- Display size of the unit should be 4-5 inches height and 5-6 inches in width.

- Digital output: USB port A, B RS 232 serial port.
- Power requirements: 100-240 VAC, 5-60 Hz, 0.7 ampere max.
- Battery backup: more than 30 minutes at full charge.
- Recharge time not more than 6 hours.
- Provision to software updates: User- vis USB port.
- Artifact rejection should be automatic.
- EEG scales: 25 Volts/ division (+/- mV full scale).
- EEG sweep speeds: 25mm/sec.
- Computed parameters: Bispectral Index, Suppression Ratio, EMG signal quality index, and burst count.
- Should be approved by US FDA.
- User defined display: Trend and real time EEG waveforms.
- Update rate: Maximum 1 second for BIS number, 10 second for trend.
- Alarms: Auditory and Visual, user adjustable limits.
- Filters: ON (2-70Hz with notch) or OFF (0.25- 100 Hz)
- Mode: sensor automatically select mode.
- Analog to Digital converted.
- Noise shaped Sigma delta.
- Resolution 16 Bits @ 256 samples/sec.
- Input impedance: 50 m Ohms.
- Noise: < 0.3 V RMS (2.0V peak to peak): 0.25 Hz to 50Hz..3
- Common Mode rejection: isolation mode.
- 110 dB @ 50-60 Hz to earth ground.3
- Frequency bandwidth- 0.16- 450 Hz.
- Should be supplied with 100 (adult) and 50 (Paed) sets of consumable accessories .
- Price of consumables should be quoted separately.

(32) FULLY AUTOMATIC EO/ETO STERILIZER

- The system should be operated on single use disposable 100% EO gas cartridge.
- The chamber and all contact parts shall be made from S.S. 304
- The chambers hould have provided with a **flat door**, there should be easy locking arrangement
  and leak proof operation.
- The chamber should be of approximately 16"(H) x 16"(W) x 54"(D)
- The chamber should have uniform heating system.
- Sterilization cycle should be operated/carried out in negative pressure.
- Cartridge should be punctured inside the chamber automatically.
- Their should be PLC display which show all critical parameters of the sterilization. And the sterilization-aeration process can be continuous in same chamber.
- Company/Supplier should have their own gas filling facility so their would be uninterrupted supply of gas cartridges.
- Machine should be operated on Gas cartridge only.
- Supplier should have their service station.
- US FDA & European CE approved.

(33) HANDHELD MICROCIRCULATIONS IMAGING DEVICE.

Technical specification of Handheld Microcirculations Imaging Device

The Micro circulation Imaging Device Requires regular monitoring of all ICU patients for early microcirculatory derangements. Early improvement of the microcirculation (< 24h) is key to reduce organ failure. Homogeneous perfusion of the capillaries is a prerequisite for normal function of the microcirculation and Diminished capillary perfusion or abnormal perfusion is an early and sensitive indicator of cardiovascular disease and failure. The Micro vascular scan analysis system is used to enable the comprehensive evaluation of the functional state of the micro circulation in patients at the bedsides.

- The system should Measure real time micro circulation of Critical ill Patient.
- The system can be used to enable the comprehensive evaluation of the functional state of the microcirculation in critical ill Patient at the bedside.
- The system should be based on the principal of SDF (Side stream Dark Field) Imaging technology.
- The system should have facility for automatic analysis and scoring parameters like
- De Backer Density
- Proportion of Perfused Vessels
- Total Vessel Density
- Perfused Vessel Density
- Vessel Length and
- Perfused Vessel Length.
- The Micro Vascular Images should be assessed live by the physician without any additional tools.
- The Device should work on Built-in rechargeable Battery operated meaning that the physician can assess the microcirculation without having to rely on available power outlets whilst providing additional safety for the patient using a low current.
- The system should makes use of a USB interface connecting with which it can be safely connected to any laptop for automatic analysis and scoring parameters.
- The system should be supply along with a Laptop of minimum 14 " screen , 4 GB RAM, 500 GB HDD, Windows operating system.
- Should supply Accessories sterile disposable lens protection cover – 100 no. along with the system.
- All accessories required to make the equipment fully functional should be provided.
- Warranty for 2 years and AMC/CMC for 5 years and its rate quoted separately.
- Company should have service centre in India .
- POWER SUPPLY:- 110V-220V – 50Hz-60Hz.
- The System should be European CE Certified.

(34) SMALL AUTOCLAVE

- Fully automatic single door high pressure steam sterilizer with chamber volume 300 -350 L
- Integrated steam generator should equipped with automatic salt removal system & two stage water ring vacuum pump with water saving mechanism and silent operation.
- Sterilization chamber, doors and chamber jacket should be made of high quality AISI 316 L/Ti steel. Vertical sliding door with safety locks, manual actuation of doors and automatic door sealing. All pipes in contact with steam should be made of AISI 316 Ti.
- The chamber design should rectangular floor slanted towards the drain for easy replacement of condensate.
- The steam supply for sterilization chamber and for steam jacket should be separated into 2 lines for increasing temperature stability in jacket and for saving the consumption of demineralised water. The power failure for at least 10-15 Seconds should be ignored by the sterilizer.
- Should have two microprocessor control system for fully independent checking and control of the sterilization system. Integrated thermal printer. Should be complete auto diagnostic system providing error codes on display in case of failure.

- The steam Generator should also be made of AISI 316 Ti steel & the steam generator should be equipped with automatic cleaning facility .
- Display of remaining cycle time, display of temperature and pressure in chamber, jacket and steam generator should be provided on the touch screen. Graphic indication of curves of chamber temp. and pressure.
- Absolute pressure sensors for the precise recording and control of vacuum and pressure in the chamber and additionally in the jacket. Resistance temperature sensors PT100 for the precise control, evaluation and regulation of the temperature course.
- Integrated waste water cooling, integrated water saving device, Touch screen display, Chip card reader and RS 232 interface.
- Sterilization to be achieved at 134 degrees and 121 degree . The sterilizer should have at least 4 preloaded programs for standard sterilization, pre heating, containers and rubbers. It should also have preloaded test programs for Bowie-Dick test and Vacuum test.
- The sterilizer should come with standard accessories like sterilization baskets, basic insert, guiding rail for rack, grid tray, start up kit . The sterilizer should be complete with side paneling and a water purification with suitable capacity should be provided .
- Should be US FDA/ European CE certified and should comply with EN 285 standard. The system should have pressure directives 97/23/EC.
- All Machine related consumables like door seal, microbiological filters etc. should be covered during warranty period .
- The Bidder should have at least 5 installation of similar or higher capacity in India and should have service center in Delhi .

(35) SUCTION MACHINE

- It should be a fully automatic surgical suction unit with 2 jars. When the first jar is full, the system selects the second jar automatically. After filling the second jar the system stops by itself and hence prevents the leakage of waste fluid.
- It should have the following technical specification.
- 100 L/min. flow rate.
- Capacity: 100 liters.
- Should have automatic selecting system once one of the jar is full and should automatically shift to the second jar.
- Two collecting jars.
- Max. vacuum power should be 635 mmHg.
- Max. noise level should not be more than 55dB.
- 4 caster and two of them with brakes.
- Overfilling system cutoff for preventing fluid leakage.
- Oil free, maintenance free vacuum pump.
- Aluminum main body
- Different jar options.
- Company should have ISO 13485 and ISO 9001 certified

(36) BLOOD GAS ANALYSER

- Blood Gas Analyzer for the measurement of pH, pO_2, pCO_2, Na^+, K^+, Ca^{++}, Cl^-, Glucose, Lactate, Co-oximetry, tHb& SaO_2% from whole blood with main calculated parameters like Hct, $HCO3^-$, tCO_2, O_2 Sat, BEecf, BE blood, A-aDO_2, P50, Anion gap, ctO_2, cCa^{++}, (7.40), pO_2 (A-a), RI and temperature corrected values.

- All parameters should be available in single aspiration of sample.
- Instrument should have a window/Micro Processor based operation with 10-12 inches coloured touch screen / LCD Display.
- Instrument should store patient results automatically.
- Instrument should not be a full/partial cartridge based system.
- Instrument should have a built-in bar code reader.
- Should have detection system for air bubble.
- Measuring time up to 90-100 seconds.
- Sample value should not be more than 200µl with co-oximetry.
- Instrument should have simple wet-section with minimum number of tubing and valves to avoid breakdowns.
- Analyzer should be able to measure capillary samples.
- Instrument should have HIS/LIS connectivity.
- Should be FDA approved (FDA certificate needs to be enclosed)
- All accessories/ spares consumable items (Reagent, electrodes and membranes etc.) should be listed and their costs should be quoted separately @ 100-150 samples per day and it should be fixed for 5 years from the date of the installation of the equipment.

(37) HIGH END ECHO CARDIOGRAPHY MACHINE.

- The system must be latest generation highest and latest end and technologically advance digital 4D (Live 3D) Echocardiography system for Transthoracic adult, pediatric cardiac applications. System should be capable of 4D (Live 3D) imaging in Transesophageal applications. Any other model other than the highest end and the latest version system and not the latest is liable for rejection.
- System must be offered with a minimum of 1000000 digital processed channels, Original Technical data sheet should be enclosed in technical bid. To support the number of channels on the system. If not mentioned than please attach a letter from the manufacturer along with the technical bid clearly stating the digital processed channel of the offered system.
- System should have adult, pediatric cardiology transducer with either single crystal technology or pure wave technology for excellent grayscale image quality on difficult to image patients. Please mention the technology used in the transducer. Original technical datasheet should be enclosed in technical bid to support the technology.
- System must be offered with a minimum 21 inches High Resolution flat panel medical grade display monitor with nearly infinite position adjustments. Must provide the largest flat panel.
- System mus have at least four imaging universal active probe ports with electronic switching facility from key board without probe adaptor.
- System should be capable of supporting second generation 4D (Live 3D) matrix transducer capable of supporting a minimum of 2000 elements for exceptional 4D (Live 3D) image quality on the matrix array transducer. Separate 4D (Live 3D) Matrix Trans-esophageal Transducer with for 4D (Live 3D) Echo, 4D (Live 3D) zoom, triggered full volume and triggered 3D color volume with electro cautery suppression.
- System should support broadband probes spanning a frequency of 1-17MHz.
- Image storage facility on in build hard disc or MOD/CD/DVD-RW facility should be available, In built hard disk with capacity of 1TB. System should have extensive image management capability including thumb nail review, Cineloop editing etc.
- System must be offered with Speckle reduction image : Image processing technique to remove speckles and clutter artifacts.

- System should have 4D (Live 3D) Echocardiography capability with color flow imaging.
- System should be capable of scanning depth of 30cm. Scanning depth should be clearly mentioned in the technical quote, if not mentioned please attach a letter from the manufacturer along eith the technical bid clearly stating the scanning depth of 30cm in the offered system.
- Should have advanced Tissue Doppler imaging with High Frame rate acquisition of minimum of 390 frames per second.
- System must be offered with advanced quantification tool to access the mitral valve 3d data set booth on system and on a licensed work station.
- Should be able to perform advance quantification measurement like strain & Strain Rate quantification. Should measure the myocardial velocity and derives the strain rate and strain along user-defined M-Line, Capable of drawing up to 3 M-lines at a time, capable of sub-dividing each m-line into 8 sub-regions or according to user defined sub-region sizes, Point of interest tool obtains values from any point on the M-mode display. In addition to the Tissue Doppler based strainsystem shoul have 2D Based strain like VVI, AFT and TMQ should be offered. These should be offered both on the system and on a workstation. OFF-CART workstation (both hardware and software) should offered and highlighted in the technical bid.
- 2D speckle tracking.

Specification of High End Echocardiography System

- System must be offered with user friendly high resolution user interfrace touch panel of minimum size of 11.0 inch.
- Should be able to perform MRP views for Quantification from 3D imaging on volume measurement likd LV volumes, Ejection fraction from 3D Image, etc. Also should offer 3D synchronicity indicates to measure and compare timing of maximum contraction of regional LV volumes to determine those patients who will best benefit form CRT system. Should display global LV volume and should provide simulatenous display of 17 regional volume wavefrom. This should be offered OFF-CART and not on the system. OFF-CARt workstation (both hardware and software) shold be offered and highlighted in the technical bid.
- Contras Hormonic Imaging should be offere as standard on the system, with optimization for Low and HI MI applications. Should also have facility of LOW MI with triggered replenishment Imaging.
- ntegrated stress Echo facility to perform Stress Echo exams.

System must be following transducer

- 4D (Live 3D) Echo Marix Transducer for Adult 4D (Live 3D) with frequency ranging from 1-5 Mhz. The probe must support a minimum of 2000 elements for exceptional 4D (Live 3D) image quality on the matrix array transducer to simultaneous display of two real-time live high-quaity image planes. This transducer should have eigher single crystal technology or purewave technology for excellent image quality on difficult to image patient. Please mention the crystal technology used in the transducer. System offered with normal transducers for adult echo are liable for rejection. The probe should be of the smallest foot print in the frequency range specified.
- 3-4 MHz Broadband Paediatric Echo Transducer for Paediatric and small adult Cardiology imaging.
- 5-12 MHz Broadband Paediatric Echo Transducer for Neonatal and large Paediatric Cardiology Imaging.

- 4D (Live 3D) Echo Matrix TEE Transducer for Adult 4D (Live 3D) frequency ranging from 2-7 Mhz. This probe must support a minimum of 1500 elements for exceptional 4D (Live 3D) image quality on the matrix array transducer to simultaneous display of two real-time live high-quality image planes. This transducer should have either single crystal technology or purewave technology for excellent image quality on difficult to image patient. Please mention the crystal technology used in the transducer. System must be offered with quantification tool to access the mitral valve 3D data sets.

System should be supplied with the following peripheral devices

- Thermal B/W Printer
- 2 KVA Online UPS
- Latest Pentium PC (off-cart workstation) wth permanent licence software for analyzing and quantification of 2D and 3D data sets. CD/DVD writer with image management software and colour laser printer. PC shold be offered with a flat panel 17 inch display monitor. (Hardware essential for OFF-CART quantification).\
- The above PC should be offered with the licenced software to work on the below features :-
- Strain and Strain rate imaging.
- Semi Automated Boarder detection
- Tissue Motion Annular Displacement
- Mitral Valve 3D data sets
- 2D speckle tracking

The below requirement must be qoted (Optional) as an field upgrade in the bove quoted system.

- 4-7 MHz broadband paediatric TEE Transducer the tip size should be smaller than the adult TEE probe.
- 3-12 MHz Linear Array Transducer for Vascular Imaging

(38) DIGITAL MOBILE X-RAY

The unit should be compact, easily transportable digital mobile radiographic unit with articulated or telescopic arm, preferably articulated. It should be suitable for bedside x-ray for ward patients, intensive care units and operation theaters. The unit should be a digital system with flat panel detector. The vendor should provide a demonstration of the capabilities of their machine to perform X-ray procedures on all body parts (including head and chest) of any patient with the machine counterbalance positioned at the foot end of the patient. If the DR system is inoperable it should be able to function as conventional system. The system must include the following:

1. Power line connection:
    - The unit should operate on single-phase power supply with plug-in facility to any standard wall outlet with automatic adaptation to line voltage 200 to 240 Volts, 15 Amp plug.
2. The Generator:
    - Must be microprocessor controlled high frequency output 35 KW or above
    - It should have a digital display of mAmps and KV and an electronic timer.
    - KV range: 40 KV to 120 KV or more in increments of 1KV
    - Max. Current: 300 mA or more.
    - mAs range: 0.1-350 mAs (to specify mAs separately)
    - Exposure time range: 0.001-10S.
    - X-ray Tube::
    - Rotation anode with 3000rpm or more.
    - Heat storage capacity of the anode: 120KHU or better.

- Tube overload protection should be available

3. Exposure:
    - Vendor must provide with exposure technique chart.
    - Exposure status on main control and collimator
    - Exposure indicator or air kerma indicator
4. Flat panel detector:
    - Detector should be wireless, cesium iodide scintillator with amorphous silicon technology.
    - The detector should be of size 14X 17 inches or more.
    - The detector pixel matrix size should be 2.3K X 2.3K or more.
    - Pixel size 150 µm or less.
    - The machine should have a detector storage compartment.
    - The image viewing time after exposure should not be more than 10 sec.
5. Battery:
    - The machine should be able to run on mains as well on battery supply.
    - Specify battery charging time and battery operation time.
    - Number of exposures which can be done on fully charged battery should be greater than 150.
    - The battery should also provide for the motor to move the machine.
6. Workstation:
    - The machine should have an integrated workstation with a TFT touch screen.
    - The workstation should enable to view the image, and provide post processing features, using touch screen.
    - The post processing features should include – zoom, contrast, and brightness adjustment, storage of image with a memory of atleast 2000 images.
    - The touch screen size should be atleast 15 inches.
7. Connectivity:
    - The machine should be fully network ready and it should be possible to transfer images and patient data from and to hospital network using LAN connectivity and wireless LAN
    - The system should be DICOM 3 compatibility and DICOM functions including DICOM print, image export, WLM, MPPS.
    - It should provide the possibility to write all patient images, studies and single images onto CDs directly on workstation.
    - Interface: DICOM 3.0 Ethernet 10/100 Base T, DICOM work list interface, storage service class (SCU) and others.

8. The unit must have an effective braking system for parking, transport and emergency braking. The tube must be fully counterbalanced with rotation in all directions.
9. The exposure release switch should be detachable with a cord of atleast 5 meters. Exposures with remote control should be possible. Remote control should be offered with the system.
10. The Dose Area Product meter should measure the X-ray dose output at the collimator and reports the measured Dose Area Product (mGy*m2) to the DICOM header of the image.
11. Two lightweight 'Zero lead' apron should be provided.
12. Grid of appropriate ratio with mention of grid ratio and frequency should be there.
13. Five year comprehensive on site warranty of entire system (spares and labour), without exclusion, including detector, X-ray tube, computers and all other accessories. This will be followed by 5 year CMC to be quoted separately, year wise.
14. 98% uptime guarantee should be given. In case down time exceeds 2%, penalty in form of extended warrant, double the number of days for which the equipment goes out of service will be applied.
15. Submit a valid NOC/AERB type approved certificate for the model quoted.
16. Quoted model should be European CE and USA FDA certified.
17. Mention the list of other users of the same model in India and abroad, with their addresses, compact telephone numbers and e-mails. Please provide satisfactory performance certificate from at least three users for the quoted model.
18. The supplier must ensure the availability of expertise for service and maintenance. Uninterrupted availability of spare parts and repair for the next 10 years must be assured.

(39) OVERBED TABLE/ CARDIAC TABLE

- Material- base M.S (epoxy powder-coating platforms, table top- wooden with sun mica.
- Platform- angle base 24" X 12 wooden platform 36" X 18" with sun mica top
- Pillar- M.S. (Epoxy powder coating) rectangular adjustable mini height 36", Max. Height 54".
- Base: H-shaped with 2-rubber wheels 4 nos. German M.S. spray powder coating

(40) AIR MATRESS

- Anti decubitous fine bubble mattress
- Dimension: Bubble pad is 78" (L) X 34" (W) when inflated
- Power 220 V, 50 Hz.

(41) PORTABLE 2D-ECHOCARDIOGRAPHYCOLOR DOPPLER SYSTEM

- The offered system should be top of the line platform on a worldwide basis.
- It should be lightweight easily portable machine (less than 7 kgs) with proper bag and storage facility.
- A separate cart (of the same company) should be provided for moving the portable machine.
- System should have extremely high-resolution 2D imaging, color flow imaging, M-mode, PW Doppler, CW Doppler, and Duplex modes.
- Should have advanced imaging processing algorithms to analyze between targets and artifacts so as to sharpen target anatomy and reduce speckle and artifacts for excellent image quality.
- Should have flat panel, high-resolution display monitor of minimum 15 inch.
- Should have extended field of view imaging of structures by continuously scanning and moving the probe over the area of interest.
- Should have an on-board workstation for storage and review of all exams i.e 2D Doppler loops etc.
- Should have DICOM support to be able to connect to hospital network, laser cameras etc.
- Should have a large Hard disk capacity to store patient data and examination loops.
- Should be able to transfer images and clips to CD and DVD media.
- Should be supplied with –

  5 MH_z Adult 2D probe

  3 – 8 MH_z Paediatric 2D probe

  1 – 5 MH_z Abdominal transducer probe

  3 – 10 MH_z Vascular probe

- The system should be US FDA and European CE approved.

42. CARDIAC ELECTROSURGERY UNIT

1. The unit should have all necessary modalities comprising of Mnopolar, Bipolar & Vessel sealing output.
2. The unit shold be microprocessor controlled unit with TFT of LED display and facility to store minimum 25 programs.
3. The unit should be supplied with two monopolar, one bipolar output, in future should have facility to upgrade argon plasma coagulation unit and a vessel sealing output.
4. Unit should have quality to upgrade to additional monopolar or bipolar & vessel sealing sockets if required.
5. The unit should have facility to use two nonopolar output simultaneously either with footswitch or hand switch wirh Twin Coag mode.
6. The unit should have different modulated modes for vast range of surgeries.

7. Unit should have twin coagulation & precise mode.
8. Cut modes shold have auto cut, high cut & dry cut.
9. The unit shold also have s special continuous neutral electrode monitoring system
10. The unit shold have internal cooling system.
11. The unit should be supplied with all necessary electrosurgical accessories for cardiac surgeries.
12. Should have water proof pedal for monopolar cut and coagulation and bipolar cut and coagulation.

Unit should be US FDA & European CE approved.

43. Thromboelastograh

- 2 independent measuring channels for analyzer with connection through A/D Box.
- Cup drive should be line synchronized with synchronous motor.
- Should have individual temperature control for each column
- Measuring technique should be a shear elasticity of a coagulating sample, determined by motion of cup.
- Sample volume shold be approximately 0.36 ml.
- Initial warm up time should be less than 5 minute to warm sample cups & pins.
- ACT and clot rate (rate of actual clot formation) results.
- Separate results for factor Xa Thrombin (IIa) inhibition.
- Information on coagulation factors and fibrinogen in one simple test.
- Accurate heparin anticoagulation management.
- High sensitivity to residual heparin detection.
- Low molecular weight heparin management.
- Should have the facility of platelet mapping assay and can assess platelet function in patients who have received platelet inhibiting drugs.
- Microprocessor controlled.
- Simple QC procedure.
- Machine should be portable with weight of the equipment <=6 Kg.

General Conditions for all equipments of Part-II

1. **<u>Warranty</u>:-There would be warranty for five years. If any part of the equipment is not covered under warranty the vendor must provide advance information. The cost of disposable accessories (if any) should be quoted separately. The Quoted price will be fixed for a period of five years.**
2. **<u>Comprehensive Maintenance Contract</u>: In addition to warranty for five years, the vendor should quote the price of comprehensive Maintenance Contract (labor+ spares) (CMC) for five years post warranty. The price quoted for the 5 years CMC would be considered for the comparison of the total price and to determine the inter-se ranking of the bids. However the CMC price will only be paid during the actual period of service under contract.**
3. **It will be responsibility of the vendor to submit proposal of CMC at least 6 months before expiry of warranty of previous CMC.**
4. **In the technical bid the product should be quoted with a set of standard accessories. The price bid must clearly state the accessories included. The price of optional accessories should be quoted separately.**
5. **The product or its earlier model should have been marketed in the national and international market for at least 5 years.**

6. **The parent company should certify that the quoted product is not going to be out of assembly line for at least three years from date of quotation.**
7. **The parent company should give the undertaking to provide the spares during the warranty and CMC period if required.**
8. **If the equipment is software based, and the new software is introduced within five years the up gradation will be provided free of cost**
9. **Demonstration: The Department may ask for demonstration of actual quoted product or even for trial use.**
10. **Training: The necessary training of the personnel for the use of the equipment will be provided by the company/vendor. The vendor must mention the type of training i.e. on site or abroad and number of persons.**
11. **Compliance statement. The vendor must provide, in tabular form a comparative chart of the required technical specification and technical specification of the quoted product. The vendor must give the relevant page number and paragraph number, in their literature regarding that technical information in the technical bid. Merely stating "complies" or "meets requirement" will lead to assumption that the quoted product does not have the required feature.**

SPECIFICATION OFCONSUMABLES ITEMS FOR DEPARTMENT OF CTVS, RIMS, RANCHI.

Group A: Anesthesia and ICU Items

1. INTRAVENOUS CANNULA:

- Size: 14 G to 22G.
- ISO/ CE certified
- Non-toxic, biologically acceptable FEP/ polyurethane catheter with metallic stellate.
- Catheter should be made up of encapsulated radio-opaque material.
- The stellate should have taper-cut and sharp for easy insertion. Beyond this cut end it should not protrude more than 1mm further than the tip of catheter.
- Injection port with one-way (silicone valve) with flange attached to the catheter shaft. After insertion into blood vessel it should be easy to open to open and to close the valve without application of much pressure so as to avoid injuries to the blood vessel.
- Standard size hub attached to the distal end for intravenous line attachment.
- Injection port with color-coded cap.
- Color-coding for different sizes.
- Size- 14, 16, 18, 20, 22 & 24G.
- Pre-sterilized packed singly with tyvec paper and blister (cannula manufacturing date, size, length of cannula etc. should be clearly printed)

2. FEMORAL ARTERIAL CANNULA (ADULT):

- Femoral Arterial Cannula (Adult) Seldinger technique polyethylene shall have radio opaque line and anti-kink collar and wing hub for fixation to skin.
- Size-1. 20G-Length 8cm. One transparent and XRO Catheter (polyethylene), one introducer needle one straight guide wire.
- Size-2.18 G Length 10cm. One transparent and XRO Catheter (polyethylene), one introducer needle one straight guide wire.
- Size 3. 16 G Length 15& 20cm. One polyurethane XRO Catheter one introducer needle, J guide wire-advancer
- Should be US FDA APPROVED

3. FEMORAL ARTERIAL CANNULA(PAED):

- Femoral Arterial Cannula (Paed) Polyurethane with radio opaque line introduced by Seldinger technique with integral polyurethane extension tube length 4.5cm with fixation wing.
- Should be in a peel pack.
- Should have one polyurethane catheter, one introducer needle, and one straight guide wire with flexible tip, one 50x50 cm drape sheet.
- Size 22G Length 4,6,8,20cm.
- Should be US FDA/ CE APPROVED

4. CENTRAL VENOUS CATHETERS – DOUBLE & TRIPLE LUMEN:

- Should bemanufactured from specially formulated and biocompatible PU material.
- Should be soft tip catheter for easy and non-traumatic insertion, based on Seldinger technique.
- Should be sterile and individually packed in hard blister pack.
- **Kit should consist of:**
  a) Soft tip polyurethane catheter,"J" tip Guide wire (0.035" – 30-80 cm) with guide advancer.
  b) "Y" shaped Introducer needle (18 G X 70 mm).
  c) Tissue dilator.
  d) Suture wing and clamp fastener, scalpel, injection ports, Extension Line clamps, Syringe 5ml
  e) Injection site, Hypodermic needle (17G to 21G)

f) Needle sponge

- Sizes: Double Lumen: 7 Fr, 16 cm, 14/18 G, 18/18G.
- Triple Lumen: 7 Fr, 12 to 20 cm, 16/18/ 18 G, 14/18/18G, 20/22/22G.

5. PAEDIATRIC DOUBLE LUMEN CVP KIT

- Should have polyurathane double lumen kit with flexible distal tip fully radio opaque should have flexible distal tip fully radio opaque graduation each centimeter from 5cm to the distal tip. J Guide wire. Should have distal & proximal lumen 18 G each for rapid infusion.
- Size. 3-4Fr Length 10-15cm (StraightGuide-wire)
- 4.5Fr Length 6 & 12.5cm. J GuidewireNitinol.
- 6 Fr. – Length 15- 20cm
- Should be US FDA APPROVED

6. SINGLE LUMEN CATHETER (SELDINGER TECHNIQUE)

- Should be polyurethane Single Lumen catheter with J Guide-wire non kinking kit should be radio opaque with fixation wing & integral extension tube with flexible & transparent extension tube (PUR)
- Size – Catheter 12-16G,
- Lengths- 10cm-20cm

7. LA LINE CENTRAL CATHETER(ALL SIZES)

- Should be long I.V Catheter with external needle and fixed proximal hub catheter in fully radiopaque polyurethane protected by a non touch-handling sleeve marking every cm 10 to 20cm.
- Should be made available in assorted sizes.

8. SWAN GANZ PA CATHETER INTRODUCER KIT SET:

- Percutaneous Sheath introducer set should have bonded hemostasis valve & side port along with .035 x 45 cm straight & "J" tip guide wire for introducing 7.5 Fr& 8.0 Fr PA Catheter.
- It should have sheath diameter of 8.5 F & sheath length of ≈11 cm. It should be made of radiopaque polyurethane & should have a coating of Heparin as well as antimicrobial material (Benzalkonium Chloride) on entire sheath surface.
- It should come with 1 catheter contamination shield, ≈80 cm in length.
- It should have one 4-waystopcock, one vessel dilator & four 4x 4gauze pads.0ne disposable scalpel, # 11 blade & one 18 ga x 2 ½ thin wall needle.

9. SWAN GANZ THERMODILUTION VIP CATHETER

- Flow directed 5-lumen balloon tipped pulmonary artery catheter. 7.5 Fr in diameter &≈ 110 cm in length
- It should have a coating of Heparin as well as antimicrobial material (Benzalkonium Chloride) on entire catheter surface.
- Should be able to give Cardiac output using Thermo dilution method.
- Should be able to give PA pressure, PAWP & RA Pressure when connected to transducer.
- Should have proximal infusion &proximal injectateports at ≈31 cm &≈30 cm respectively.
- It should come with one volume-limiting syringe of 1.5cc for balloon inflation.

10. SWAN GANZ PA CATHETER

- Flow directed 3 lumen balloon tipped pulmonary artery catheter, 7 Fr in diameter &≈110 cm in length
- Should be able to give PA pressure, PAWP & RA Pressure when connected to transducer. Should have proximal infusion port at 30 cm. Recommended guide wire size 0.89 mm.
- It should come with one volume-limiting syringe of 1.5cc for balloon inflation.

11. DISPOSABLE PRESSURE TRANSDUCER

- One Disposable pressure transducer with flush device & vent stopcock.
- It should be able to give a Pressure & waveform on any multipara monitor with IBP module.
- It should have 3±1ml/hr flow rate across flush device with IV bag pressurized to 300 mm Hg
- It should have moisture resistance connector Sheath without pins.

- Must have a natural frequency 25-40 Hz to give accurate reading at wide variations of heart rate range.
- It should have an operating Pressure Range of -50 to 300 mmHg, with Overpressure Tolerance Range of -500 to +5000 mm Hg.
- It should work on ambient temperature (operating) 15°C to 40°C, and must be suitable for storage at -25°C to +70°C.
- It should have sensitivity of 5.0μ V/V/mm Hg ± 1%
- It should have an integrated flush device, which can be operated from any direction for easy accessibility.
- It should have a test port that can be used to check the performance of the transducer when used along with a simulator device for the purpose.

12. PRESSURE INFUSION BAG

- Should be made up of durable plastic to prevent the rip & tear of bag
- Should have clear sleeve around the bag to see the contents of the fluid bag.
- Should have convenient IV pole loop hanger
- Should have I.V Bag holder to hang the fluid bag inside.
- Should have double sealing to prevent the rip or tear of pressure bag
- Should have stopcock valve.
- Should have efficient palm fitted bulb for the inflation of bag.
- Pressure gauge should have 360-degree window to see pressure from all sides.
- Should have built in bleed valve to check the over inflation of the bag.
- Sizes- 500,1000 & 3000ml.
- Each bag should have aneroid pressure gauge with inflation capacity of 400 to 700 mmHg.

13. ANATOMICAL FACE MASK SIZE

- Should be good quality and latex free, reusable autoclavable and should conform to its face 22mm female connection,
- Inflatable air seal size 0,1,2,3,4,5,6.

14. SILICON FACE MASK CE MARKED

a) Should be transparent for easy observation.
b) Should be flexible & can be repeatedly autoclavable.
c) Should be of reputed brand
d) Each unit should have print of company name & size.
e) Sizes 0,1,2,3,5.
f) Should have self-inflating soft cuff (in which pressure can be regulated).
g) Should have comfortable grip for tight seal.

15. OXYGEN MASKS:O_2 MASK ADULT &PAED:

- Molded facemask manufactured from non-toxic, non-irritant medical grade PVC.
- Should be provided with adjustable elastic strap.
- Should have swivel connector for convenience of attachment to the oxygen tube.
- Should have 200 cm long multichannel tube to ensure continuous flow of oxygen.
- Should have proximal end fitted with soft funnel shape connector for connection to oxygen source.
- Should be individually packed in poly bag.

16. NEBULIZER MASK ADULT &PAED.:

- Soft, clear aerosol mask with anatomical form for long term use.
- Should have gently rolled, feathered edges with integrated Nose Bridge for extra comfort.
- Should have rotating type connector for patient's comfort.
- Should have larger surface area with unique convex cone design to ensure maximum capillary action and to eliminate medication wastage.
- Should be able to nebulize 3 cc within 10 minutes in horizontal or vertical position so as to ensure patient comfort.

17. CLOSED CIRCUIT (PEDIATRIC):

- ISO marked.
- Length-1.75mtr. double tubing with a Y connector with least dead space.
- Y connector adopter 15mm to 20 mm connector.
- Latex free medical plastic material, disposable, non-irritant to tissue, and should not react to anesthetic gases and volatile agents.
- Outer diameter (OD) 10-12mm.
- Bag-1L. capacity, natural latex medical grade rubber, antistatic, soft and should not react with anesthetic gases and agents.
- Expandable type, corrugated, non-kinkable tube.

18. MAPLESON C BREATHING SYSTEM ADULT:

- For use during anesthetic procedures, critical care areas and transportation of adult patients; 1.8m length 2 L bag with 15 F/22F connector APL valve.

19. MAPLESON C BREATHING SYSTEM PEDIATRIC:

- For use during anesthetic procedure, critical care areas and transportation of pediatric patients; 1.8m length 2L bag with 15F/22F connector.

20. OXYGEN RECOVERY KIT:

- It should be specially designed kit with 'T' shaped connector for delivering oxygen.
- It should have 15 mm connector to fit all tracheal tubes.
- It should have suction port at elbow to facilitate oro-bronchialsuctioning without disconnecting the patient from oxygensource.
- It should have two-meter long star lumen tube to enable to connect theT-connector with oxygen source.
- Distal end should be open for exhaling the waste gases.
- Should be sterile and individually packed in peelable pack.
- Unit shouldcomprise of: 'T' shape connector & two meter long tube.

21. T PIECE WITH APL VALVE

- Should be good quality, light weight, non conductive disposable T piece with corrugate tubing 1.8m circuit length, low resistance, 500 ml bag with APL valve with 15F/22F connector, safety cap.

22. ANESTHETIC CIRCUIT HOLDER OF ADULT, PEDIATRIC AND NEONATAL CIRCUITS

- Anesthetic circuit holder for adult and pediatric circuits, should be reusable with one joint and flexible rod with under mattress fixation; adjustable height

23. ENDOTRACHEAL TUBES WITH CUFF (DISPOSABLE):

- Pre-sterilized, single use
- Siliconized PVC non-toxic to tissues.
- Implantation tested marking on the tube.
- Thermo-sensitive to adapt to tracheal anatomy.
- Non-kinkable.
- Bevel with Murphy eye.
- Radio-opaque line all along the length of the tube to detect the correct position on X-ray.
- Should adopt universal connector of 15mm and should be compatible with all circuits.
- Cuff should be bonded, non-herniating.
- Size range- 2.5 to 9.0 mm in 0.5mm increments.
- Inflation of the cuff balloon via a one-way valve with a pilot balloon and should be on the concave aspect of the tube.
- Depth marker at the proximal cuff end, 3 cm from the cuff.
- Cuff should be smooth, non-traumatic, low-pressure high volume.
- ETT opening should be beveled type, rounded edge, facing to the left end of the tube with an angle of 38 +/- 10^0
- Markings on the tube to know the depth of insertion and fixation at mouth.
- Specified mention on the tube-
    - Nasal/oral

- Outside diameter OD in mm.
- Inside diameter ID in mm.

24. DOUBLE LUMEN ENDOTRACHEAL TUBE:

- Made of medical grade PVC
- Left and right sided.
- All sizes.
- Bronchial cuff should be of blue color and its pilot balloon should be also of blue color for the ease of differentiating between tracheal & bronchial cuffs.
- Pre-sterilized, ready for use.
- Should have pre-inserted stellate to help maintain the shape and curve of the tube.

25. THERMOPLASTIC SUPRA-GLOTTIC AIRWAY DEVICE

- Should have soft non inflatable anatomical seal, epiglottis blocker; buccal cavity stabilizer, integrated bite block; integrated gastric channel for passage of nasogastric tube
- Size: 1, 1.5,2,3,4,5

26. LARYNGEAL MASK AIRWAY:

- Reusable (autoclavable) airway mask with thick main tube wall to reduce the risk of crushing.
- Flexible tube, transparent.
- 15mm. male Connector for universal breathing circuit connection.
- Inflatable, soft, smooth silicone oval mask.
- Color-coding of the pilot balloon for size identification.
- Attachment of mask with tube diagonal.
- Aperture bar at the distal end.
- Size: 1.0, 1.5, 2.0, 2.5, 3, 4, 5.
- CE marked

27. GUEDEL AIRWAY

- Disposable, supplied pre-sterilized ready to use.
- Should have **a** Rigid body to maintain airway;
- Soft tip; one piece with re-enforced hollow bite block;
- Distal end with a flange.
- All Sizes-000, 00, 0, 1, 2, 3, 4.
- Color coding
- ISO/CE certified

28. NASOPHARYNGEAL AIRWAY:

- Made of medical grade PVC
- Implant tested material marked on the airway.
- Thermo- sensitive material, which confirms the naso-pharyngeal anatomy.
- Kink resistance.
- Smooth outer surface and atraumatic bevel with rounded edges.
- Enlarged Flange at the distal end to protect the airway from loss in the nasal passage.
- Size: 4, 5, 6, 7, 8, & 9 mm ID.
- Should be disposable sterile and ready for use.

29. INTUBATING STYLETS

- Made of malleable material;
- Latex free;
- Sterile;
- Aluminum core (MRI safe);
- Sizes 6Fr, 10 Fr. ,&14Fr.

30. EMERGENCY FAILED INTUBATION TUBE-

- The tube should have unique double lumen design for rapid establishment of an effective airway through either esophageal or tracheal placement.
- There should be blind placement, which eliminates the need of laryngoscope.
- The tube should have pharyngeal balloon, which inflates to hold device firmly in place, and helps prevent

the escape of gas through nose or mouth.

- The tube should have full length lumen which allows for suctioning of gastric content s with no interruption of patient ventilation should the tube airway be placed in the esophagus.
- Esophaguscuff should inflate to seal the esophagus so that gas does not enter the stomach and gastric content are not aspirated.
- Should be available in two sizes of 37fr 7 41fr.
- Tube should have number of holes for better airway passage.

31. Percutaneous tracheostomy set with tracheostomy tube:

- Should be with tracheostomy tube.
- Should have multiple dilators of different sizes- 14Fr., 21Fr., 24Fr., 27Fr.
- Guiding catheter over which the dilator is introduced.
- The guide wire should have position markings.
- Should have introducer needle with sheath.
- Should be supplied with essential accessories.

32. Tracheostomy Tube With Subglottic Suction.

- All sizes,
- Large capacity, low pressure cuff.
- Should have a separate port for subglottic suction.

33. Tracheostomy Tube

- All sizes,
- With and without cuff
- Large capacity, low-pressure cuff.

34. CORRUGATED TUBE CONNECTOR

- Should allow movement of breathing circuit at patient end.
- Should allow connection between all breathing circuits and the ET tube connector.
- The corrugated tube should be expandable.
- Should be made of medical grade PVC.
- Should be compatible with ETT and tracheostomy tube.

35. CATHETER MOUNTS WITH BRONCHOSCOPY PORT:

- Should be flexible & Extendable
- Should be having bronchoscopy port.
- Should be 360 degree rotating head.

36. SUCTION TUBE 30M COIL, 7MM ID WITH BUBBLE NON CONDUCTIVE

37. SUCTION TUBE 30M COIL 5MM ID WITH BUBBLE NON CONDUCTIVE

38. HME filters for adults: Low dead space, hydrophobic filtration incorporated with heat and moisture exchange filter and with retainable gas sampling port, disposable good quality.

39. HME filters for neonatal: Low dead space, hydrophobic filtration incorporated with heat and moisture exchange filter and with retainable gas sampling port, disposable good quality.

40. HME filters for pediatrics: Low dead space, hydrophobic filtration incorporated with heat and moisture exchange filter and with retainable gas sampling port, disposable good quality.

41. ANTI MICROBIAL BREATHING SYSTEM HEATED WIRE

- Should be light weight and flexibleto minimize drag on circuits,
- 1.5m heated inspiratory tubing,
- Silver impregnated 0.5m humidifier connection tube,

- Auto float humidification chamber with dual float
- Sizes: Adult, pediatric, Neonatal.

42. SUCTION CATHETER THUMB CONTROLLED

- Working length should be at least 50cms (working length without Connector) for 10 Fr.& above; should be at least 40 cm. in length below 10 Fr.
- Should be color-coded and should have open end with lateral eye with length marked in centimeters with male connector with vacuum control device as ISO specifications.
- Should be in straight soft blister packing.
- Should have markings on the full length of the tube
- Should have markings on the catheter.
- Sizes 6,8,10,12,14,16, and 18 Fr.

43. BLOOD ADMINISTRATION SET:

- CE marked.
- Manufactured from non-toxic medical grade PVC.
- Molded cylindrical double drip chamber fitted withsharp plastic spike and nylon filter
- Roller type regulator for accurate flow control.
- Molded bubble latex bulb for extra medication or Y-port.
- 18G vein needle with protective cap.
- Double pack.
- Sterile, ready to use (by ETO/ Gamma ray)
- Tube length should not be less than 150 cm., it should be transparent and non-kinkable.
- The filter shall have uniform pores and shall cover a total area of not less than 10.0 cm2 and shall have pore size of 200 µm. +/- 20 µm and should be clearly mentioned on the package.
- All PVC items should be certified medical grade only.

44. LEUCOCYTE REDUCING BLOOD TRANSFUSION SET:

Blood set should have drip chamber and filter with proven leucocyte reduction properties for leucocyte free blood transfusion for organ transplant use. It should have filter size 40 microns and 180 sq. cm of filter area and should have attached IV set with a luer lock tip.

45. MEASURED VOLUME SET (ISO/CE)

- Should be made up of PVC material
- Should have soft cylindrical type measure volume chamber with float valve to prevent air embolism
- The set should have transparent tubing and chamber.
- Should have capacity of 100ml and 150 ml.
- Should have drip nozzle with reduced size of drop that has to be uniform at 60 drops/ml.
- Should have molded bubble latex bulb for extra medication or Y port for injection.
- Should be sterile ready for use.
- Should be double packed.
- Should have short bevel 23 G Vein needle.
- Should have built in airway for bottle perforating spike (air vent).

46. DRESSING FOR THE FIXATION OF I.V. LINE

- Transparent.
- Good quality
- Sizes – 6x7cm; 7x9cm

47. SURGIAL TAPE NON WOVEN, VISCOSE RAYON POROUS BACKING (MICRO PORE TYPE PAPER TAPE) WITHOUT DISPENSER.

Sizes :

- ½ X 9.10 mtrs.
- 1 X 9.10 mtrs.
- 2 X 9.10 mtrs.

- 3 X 9.10 mtrs.

48. TRANSPARENT DRESSING FOR FIXATION OF MULTI LUMEN CATHETER " TEGADERM TYPE" ORSIMILAR.

Size – 8.5cm x 10.5cm and 100.5cm x120.5cm

49. THREE WAY STOP CONNECTOR (DISPOSABLE) Without Luer Lock

a) Three-way stopcock should be manufactured from medical grade, clear transparent polycarbonate.
b) It should have three arm handle which should be easy to operate.
c) Should have minimum residual volume.
d) Should have rigid construction with circular flow channel to prevent air trap.
e) Should be provided with two female luer lock ports and one male luer lock port with rotating lock.
f) Should be sterile and should be individually packed in blister pack.
g) Its plastic material should be medical grade PVC.
h) Should have intermediate locking slot.
i) Male and female connector should be compatible to all needle and IV cannula.

50. SPIRAL (POLYETHYLENE) TUBING

- Should be spirally coiled tubing (polyethylene) for drug infusion (Drug compatible).
- Size – 100,150,200,300 & 400cm.
- Should be US FDA APPROVED

51. POLYETHYLENE PRESSURE EXTENSION TUBE

- Should be polyethylene high pressure extension tube (drug compatible)
- Size – 11, 30,50,100,150& 200cm.
- Should be US FDA APPROVED.

52. EXTENSION LINE FOR LIGHT SENSITIVE DRUGS

- Extension line for light Sensitive drugs (anti UV).
- Size – 100,150,200cm.
- Should be US FDA APPROVED.

- It should have 200 cm long multichannel tubing to ensure continuous supply.

53. BASIC PARALLEL VENTILATOR CIRCUIT:

- FDA & CE marked should incorporate with in-line nebulization T Valve with Automatic closer preventing pressure drop. Must be clear construction.

54. FLEXIBLE TUBING – SILICONE:

- Highly flexible medical grade silicone tubing, autoclavable, can be sterilized by EO.
- Sizes : 6mm & 8mm;
- Length of tube roll should be 60.0mtr.

55. PATIENT IDENTIFICATION BAND:

- Patient identification band should be made of skin friendly, non-tear able material.
- It should have convenient button type locking feature and larger write on space.
- Colors: Red, White, Green& Blue.

56. SURGICAL GLOVES:

- Powder free polymer coated latex surgical gloves
- Made from natural rubber latex
- Pouch peel down to open.
- Sizes: 6, 6.5, 7.0, 7.5, 8.0, 8.5.

57. EXAMINATION GLOVES - LATEX FREE:

- Examination Gloves manufactured with 100% latex free material.
- Gloves should be odor free, powder freeandlatex associated allergy.
- Should be made of sturdy material that does not get puncture or tear easily.
- Should have flexible design for easy donning.
- Should have micro rough texture on fingers.
- Sizes: Small, Medium, and Large.
- Box of 100 pieces

58. DISPOSABLE SURGEON FACE MASK - STERILE:

- Three layermask, whichshould offer excellent (99%) bacterial filtration efficiency.
- Non- woven breathable fabric, each layer of 25 GSM.
- Should be super smooth, soft and ultrasonically weldedair permeable for comfortable use.
- Should have flexible nose clip (rust free PVC coated) for proper positioning on the nose bridge.
- Size: 17.5 X 9.6 cm. Tie string: 90 cm.
- Should be sterile & should be individually packed in poly pack.

59. SURGEON'S CAP- DISPOSABLE:

- Should be of good quality
- Made from non-woven breathable fabric of 35 GSM
- Well fitting with back elastic or string.
- Air permeable.
- Properly ultrasonically sealed for uniformity.
- Different sizes & color.

60. FEMALE CRIMP CAP, DISPOSABLE:

- Should be of good quality.
- Made from non-woven breathable fabric of 15 GSM
- Well fitted with double elastic or string.
- Air permeable.
- Properly ultrasonically sealed for uniformity.

61. SURGEON'S GOWN:

- Blue color.
- Made from non-woven spun lace fabric breathable but impermeable to blood and water
- Re-enforced front to provide 100% protection against any amount of blood and fluid in user-friendly packing.
- Gamma irradiated.
- Should have CE mark.

62. DISPOSABLE GOWNS (FOR ATTENDANTS):

- Purple color
- Moisture repellent properties
- Made of non-woven fabric
- Size: Medium, Large and Extra large
- Length -150 cm, width- 160 cm.

63. COMPLETE KIT FOR HIV/HBV PATIENT:

- Disposable surgeon gown with waterproof inter-lining on chest & arms.
- Hood cap (Monkey cap)
- Face mask with eye shield
- Long shoe cover
- Arm guard
- Cut sheet – 1.
- Slit sheet- 1.
- Draw sheet: 220 X 120 cms- 4 Nos.
- Trolley cover latex laminated – 135 X 20 cms- 4 Nos.
- Mayo stand cover- 1 No.
- Patient drape sheet- 1 No.

- Suture bags- 2 Nos.
- Disposable bag- 1 No.

64. DISPOSABLE SHOE COVER:

- Should be of good quality (thick)
- Made from non-toxic non-woven, thick fabric.
- Well stitched in universal regular size.
- Skid resistant & dust proof.
- Hard elasticated for better grip and easy to wear.
- Should cover the ankles.
- Size: Assorted- (Std. size of shoe from 7 to 12) & blue color.

65. DISPOSABLE FOLEY'S CATHETER (2 WAY) – ADULT &PAED:

- Disposable 2 way latex Foley catheter
- Should bemanufactured from natural rubber latex coated with silicone so as to eliminatethe risk of encrustation.
- Should have symmetrical large capacity balloon to ensure a straight tip andproper flow for good sphincter action to preventbladder leakage.
- Should have coned distal end with burr free eyes for a-traumaticinsertion.
- Should have hard valve to ensure easy inflation and deflation of balloon.
- Balloon capacity- 3-5 ml for pediatric and 30 to 50 ml for adult catheter.
- Length- 20-30 cm.
- Should have colour coded for instant size identification.
- Should be sterile and should be individually packed in peel-able pack.
- Sizes: 6, 8, 10, 12, 14, 16, 18, 20, 24 Fr.
- ISO 9002 CE marking, should confirm to ASTM- F623-99 Guideline specification for Foley's catheter.

66. DISPOSABLE SYRINGE & NEEDLE ALL SIZES

a) Syringes should be of clear PVC with clear markings
b) Should have rubber seal in the piston
c) Needles should be appropriate size and thickness.
d) Sterilized, disposable.
e) ISI/ ISO/ CE
f) Sizes: 1ml, 2ml, 5ml, 10ml.

67. 50ml SYRINGE(with luer lock)

a) Should be made of clear PVC.
b) Should have rubber seal in the piston
c) Should have a luer lock

68. ABSORBABLE DISPOSABLE PILLOW COVER FOR STANDARD SIZE 75X55CM

69. DISPOSABLECHAMBER FOR BAL COLLECTION WITH ADAPTER

Disposable sterile container for Bronchoscopy application.

70. EPIDURAL CATHETER WITH NEEDLE

- Single sterile pack should contain Epidural catheter with 1cm markings,
- Kit should contain epidural needle, bacterial filter and detachable injection port.
- Should be available in sizes 16 G, 18 G for adult and 22-24G for Pediatric.

71. Bite block size 4: Bite block size 4 for oral fixation of ETT size 6.5-8.0mm, Laryngeal Tube size 2 & 2.5 tube should clip into the bite block for protection against occlusion.

72. Bite block size 5 :-Bite block size 5 for oral fixation of ETT size > 8.5mm, Laryngeal tube Size 2 & 2.5 LMA 2 & 2.5 tube should clip into the bite block for protection against occlusion.

73. Bite block Size 6: Bite block size 6 for oral fixation of laryngeal Tube size 3,4,&5 and LMAs, Tube

should clip into the bite block for protection against occlusion.

74. MEDICAL GRADE SODA LIME CO2 ABSORBENT GRANULES SPECIFICATION:

- Medical grade best quality soda lime granules. Hardness, moisture and absorption should be international agency certified. Should be good quality for closed circuit. There should be high contrast pink to white color change after absorbent capacity is exhausted. Pack size should be 5 liter/container.

75. Disposable DVT Sleeve (Calf & Thigh)

76. Disposable DVT Sleeve (calf)

77. SPECIFICATION FOR BIS SENSORS

- It should have four sensors element to capture, recognize and discard artifact.
- Connector should provide secure click-in connection with push button release
- It should include an additional above eye element, which captures critical eye motion data, along with other important physiological signals.
- It should have flexible design adjusts to different head sizes
- It should have FDA approval
- Should be supplied by authorized channel partner from principal company/ manufacture. Electrode Gel: Potassium Chloride (KCl) , latex free. Sizes ADULT and PEDIATRIC

78. NIRS SENSORS. ADULT AND PEDIATRIC

79. DISPOSABLE PULSE OXIMETER SENSORS (SP02)

- Should be compliant with the equipment intended to continuously estimate and display non-invasively a patient's arterial blood oxygen saturation and pulse rate.
- Proposed sensors must comply with NellcorTechnology.
- Digit sensors should be available in Adult, Pediatric, Neonatal and Infant sizes to accommodate diverse patient sizes, weights and needs.
- Seller must have all types of sensors available (e.g., finger, forehead, and ear). Sensor must be available in Adult, Pediatric, Infant and Neonatal Sizes.
- Sensor extension cables must be available in 4' and 9' lengths.
- The sensors must be compatible with all generations of NellcorOximetry Technology in NellcorOximeters and OEM/Licensee Multi-para meter systems with all generation of Nellcor technology.
- The sensor shall resist inadvertent displacement.
- The sensor shall resist interference from ambient light.
- The sensors shall not be adversely affected by fluid spills or common disinfectant solutions.

80. DISPOSABLE ECG ELECTRODE (ADULT):

- Should have a good sticking material, solid gel, covered by translucent/ transparent thin sheet.
- Should be hypo-allergic & certificate should be attached.
- Sensor should be good quality, preferably of silver.
- Should be usable even if the chest is hairy.
- Should have buttons (metal snap: stainless steel stud) for attachment to ECG electrodes.
- Should have white label indicating brand mark.

81. INFANT FEEDING TUBE:

- Size: 3 to 10 Fr., color-coded.
- Silken smooth tube, medical grade siliconized PVC.
- X-ray opaque line.
- Fitted with female luer mount with built-in stopper/ lid.
- Packed in peel-off pouch, not coiled packing.
- Sterilized ready to use.
- Length of tube minimum- 50 +/- 5 cm.
- Smooth rounded tapered distal end with two lateral eyes.

82. URINE COLLECTION BAG WITH TRANSPARENT VOLUME CHAMBER:

- Sterile ready for use.
- Bag should be manufactured from clinical grade transparent PVC.
- Capacity- 2000ml.marked in increments of 50 ml.
- Fitted with non-return valve to avoid spillage.
- One-meter long super smooth, highly flexible non-kinkable tube which should provide approx. 6.5 mm diameter with universal male connector.
- Leak proof, single piece/ wielded manufacture.
- Provided with hanging device to be fitted on to the bed.
- Stopper drain should be attached with the bag.

83. Clinical thermometer:

- Good quality.
- Digital
- For oral temperature measurement.

84. Glucometer test strip:

- Accuracy- error not more than +/- 20%.
- Sample size should not be more than 5µL.
- Test time should not be more than 10 sec.
- Interference with commonly used drugs & other agents, which can affect blood glucose measurement, should be declared.
- Shelf life of strip should be more than 1 year.
- Shelf life of strips after opening should be up to 6 months.
- Glucometer should be free from coding or calibration requirement in order to minimize errors at user level.
- Should be available in a minimum pack size of 25 strips.
- Glucometer should start testing only when the strip has absorbed the required sample size in order to minimize wastage of strips.
- Operating temperature should be 10- 40^0 C.
- Measurement range between 10mg/dl and 600mg/dl.
- Battery should be able to do 1000 tests approximately and should run preferably on AAA battery, which is economical.
- Glucometer should be US FDA approved, CE marked.

85. Metered incentive spirometer:

- Volumetric lung exercise with dual printed scale.
- Good-Better-Best flow cup to encourage slow and deep breathing exercise.
- Advanced low work of breathing design.
- Built-in handle for ease of use.
- Sensitive & light weight bellow to detect smaller volumes.
- Latex free compact ergonomic design.
- Smooth mouthpiece with in-built dust particle filter.
- Size: 2500 ml & 4000 ml.

Group B: Cardiac surgery and perfusion items

86. . FIBRIN GLUE

Fibrin base sealant to stop surgical bleeding with proven technology

87. AORTIC PUNCH

- 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

88. Coronary artery retraction clips Sizes 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.

89. Temporary pigtail pacing wire

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

90. Tissue Stabilizer for beating heart

- Should be a low profile tissue stabilizer with auto spread feature of pods.

91. Heart positioner for beating heart

- Should be a low profile positioner for off apex position use/ to lift the heart.

92. Tissue Stabilizer for Minimally invasive beating heart surgery.

- Should be stabilizer to be used via thoracotomy with detachable shaft and should have fully rotating pods.

93. Heart positioner for Minimally invasive beating heart surgery

- Should be a positioner with detachable shaft for MICS via thoracotomy.

94. Mist Blower

- 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.

95. Arteriotomyshunts(Intra Coronary Shunts)

- **Sizes 1.0,1.25,1.5,1.75,2.0,2,5,2.5, 2.75 & 3.0mm.**
- Should be beveled tip.
- Should have fully transparent body.

96. ACT Cartridges

97. SPECIFICATION FOR INTRA AORTIC BALLOON CATHETER

- IAB Catheter should be of 7.5 Fr with displacement volume of 24cc, 34cc & 40 cc. and 8Fr with volume displacement 50cc.
- It should be more abrasion resistant and have good fatigue resistance
- Should immediate inflate at start up without manual filling of the catheter.
- It should be compatible with Data scope /Arrow pumps
- It should have exact 7.5Fr size sheath and dilator set.
- It should have 0.025 3mm J PTFE stainless steel guide wire.
- It should be approved by US FDA.

98. EMERGENCY CRICOTHYROIDOTOMY SET :

- Should have a conical introducer,
- Dilators should be made of stainless steel,
- Cricothyroidotomy tubes should be of medical grade plastic.
- With 15 mm connector,flexible tube extension made of silicone, scalpel,one way syringe,comfort neck band
- Sizes 2mm, 4mm.

99. MICRO AGGREGATE BLOOD FILTER FOR RED CELL TRANSFUSION

- Filter media should be 40 micron rated polyester screen media with uniform pore size
- Should have total filter surface area of > 170 Sq.cm
- Should have average capacity of filtering 10 units of blood.

100. PACKED RED CELL & WHOLE BLOOD LEUCOCYTE REDUCTION FILTERS.

a. Bedside filtration of one & two unit of packed red blood cells or whole blood
b. Should have universal spike with microbiological recovery vent
c. Should be with attached straight administration set/automatic self leveling drip chamber
d. Performance should consistently average less than 2x105 residual leukocytes per unit
e. Red cell recovery should average greater than 90%.
f. Filter housing hold up volume should be <25ml for one unit filter and <35ml for two unit filter
g. It should be single use
h. Should be latex free

101. SPECIFICATION FOR FORCED WARMING BLANKET

- Should be disposable and two layered;
- Should consist of non woven propylene fabric for body warming.
- Should be usable with forced air warming units.
- Material should be latex free and should meet flammability standard 16 CPR 1610 for safety.
- The manufacturer must have all the below listed types of blankets and should quote the prices separately for separate blankets
  - ✓ Full Body Adult
  - ✓ Underbody Adult with Arm and Head Openings
  - ✓ Pediatric Full body
  - ✓ Pediatric underbody Blanket.
- Should be compatible with common machines.
- Should be CE certified

102. LV Vent:

- 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.

103. AntegradeOstialCardioplegia Cannula - All Size:

- 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.

104. Cardioplegia Cannula Size Infant:

- 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.

105. Arterial cannula for arch cannulation Sizes 20FR -24 Fr.

- Should have elongated one piece wire wound body with radiopaque suture ring and dilator with depth markings.

106. Axillary artery one piece cannula with central arterial pressure measurement

- Sizes 18 Fr.-24Fr.Should have elongated one piece wire wound body with radiopaque suture ring and dilator with depth markings. Should have integrated pressure monitoring port at tip

107. One piece Pediatric Aortic cannula Size 6FR-16 Fr Vented

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

108. Straight Tip Arch cannula Sizes 8Fr-24 Fr vented and Non vented; Pediatric and Adult

- Should be beveled thin wall tips attached to tapered cannula bodies. Should be available in pediatric and adult sizes.

109. **Angled tip Arterial cannula Sized 8 Fr -24 Fr**
- Should be beveled thin wall tips attached to tapered cannula bodies. Should have kink resistant wire wound bodies.

110. **Arterial cannula angled with diffused flow tip Sizes 18 Fr-24Fr**
- Should be one piece wire wound body with integrated flutes for diffused flow.

111. **Femoral one piece Arterial and venous cannula kit**
- **Sizes 8-21 Fr. arterial and 8-29 Fr. Venous cannula**
- Should be one piece wire wound body.

112. **Femoral Multistage venous cannula**
- **Sizes: 29/29/29 Fr and 29/46/37 Fr**
- Should be one piece wire wound multiple side holes body with percutaneous kit.

113. **Standard insertion kit for femoral cannulation**

114. **Carpentier Bi-caval femoral venous cannula**
- **Sizes : 24/29 Fr, 30/33Fr**
- Should have wire wound kink resistant two stage design.

115. **Single stage venous cannula with Metal tip Sizes 12-31 Fr**
- Should have kink resistant wire wound taper body with beveled metal tip.

116. **Single stage Venous cannula with right angle Sizes 12-40 Fr**
- Should have kink resistant wire wound taper body with tapered multiport tips. Should be right angled with plastic tip.

117. **Single stage straight venous cannula malleable Sizes 12-40 Fr**
- Should have kink resistant malleable wire wound taper body with tapered multiport tips.

118. **Double-stage venous cannula round and oval shape 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.

119. **Three stage venous cannula Sizes 29/29/29 Fr 29/46/37 Fr**
- Should be three stage venous cannula for VacuumAssisted Venous Drainage(VAVD)/Kinetic Assisted Venous Drainage(KAVD)

120. **Multiple Stage Venous cannula Sizes 23 Fr and 29 Fr**
- Should have polyurethane wire wound body with radiopaque markers and multiple holes at distal end.

121. **Aortic root cannula 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.

122. **Aortic root cannula with Vent line Sizes 5 Fr-11 Fr**
- Should have radiopaque tips attached to clear bodies with separate vent line.

123. **Aortic root cannula pediatric Neonatal Sizes 4 Fr**
- Should be able to aspirate air from Aorta, Should have radiopaque tip and standard 50.5 in length or a shortened 2.5 in.

124. **Cardiopleiga needles: Neonatal, Pediatric and Adult 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.

125. **Silicon Ostial cannula for continuous perfusion Sizes 15 Fr,17Fr and 20 Fr**
- Should have a silicon body with soft bulb shaped tips, should have a female luer connection site.

126. **Ostial perfusion cannula with basket tip and soft convex tip Sizes 10 Fr, 12 Fr and 14 Fr.**
- Should have flanged, radiopaque basket tips/soft tips attached to malleable stainless steel shafts.

127. **Minimally invasive Aortic root cannula with length more than 30 cm**
- Should have more than 30 cm long body to allow insertion during MICS

128. **Minimally invasive retrograde cardioplegia cannula with deflecting tipSizes 13 and 15 Fr**
- Should have tip deflecting models for sinus placement through thoracotomy should be able to allow minimum 10mm sweep. Should be auto/ manual inflatable.

129. **Retrograde cardioplegia cannula with Auto inflate Sizes 13 Fr and 15 Fr**
- Should have silicon/ PVC bodies with auto inflatable cuff and pressure monitoring lines; should have multiport tip/ integral stopcock.

130. **Multiple perfusion set**
- Should be able to allow simultaneous perfusion of the aortic root and up to three or more vein graftsshould have inlet ports with male or female luer and clamps attached to an adapter that can split into four or more legs.

131. **Distal perfusion kit**
- Should be able to perform simultaneous perfusion of Aortic root and upto 3 or more vein grafts.

132. **Left Heart Vent Catheters Sizes 10 Fr,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 with depth marking. All ventsshould terminate with a vented or non vented ¼ in connector.

133. **Pericardial Sumps Sizes 20 Fr**
- Should feature a fluted tip, should be encased in a stainless steel spring and should have weight at the end.

134. **Intra-cardiac sump 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.

135. **Suction Tube Sizes 6 Fr,10Fr and 20 Fr**
- Should have variety of cardiac suction tubes, intracardiac suction tubes & rigid suction tubes.

136. **Micro Suction tubes 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.

137. **Macro Rigid suction tubes Sizes 20 Fr**
- Should have tip made up of stainless steel, should have fluted pool tip to maximize suction and

minimize tissue trauma, should offer gentle suction.

138. PA vent cannula

- Should have a soft, pliable tip with female luer end; should have movable depth marker and an introducer needle should be included.

139. Tourniquet Sets Sizes 12 Fr, 16 Fr and 19 Fr.

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

140. Vessel cannula with and without valve 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.

141. ArteriotomyCannula Sizes 2mm,3mm,4mm,5mm,6mm

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

142. Rapid priming set Length 35cm and 40cm

- 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.

143. Rapid Priming"Y" Set Length around 1 m

- 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.

144. SPECIFICATION FOR ADULT OXYGENATOR

- Priming volume should be less than 300 ml.
- Blood flow range should be 0-7lts/min.
- Oxygen transfer should be atleast 400ml/min.
- Heat exchange efficiency should not be less than 0.50.
- Housing material should be of polycarbonate.
- Surface area of the fibers should be from 1.8$m^2$to 2.4m^2
- Heat exchanger should be made of stainless steel and surface area should be approx. 20cm^2
- Blood inlet port (from pump) 3/8
  Blood outlet port 3/8
  Cardioplegia port 1/4
  Gas Inlet port 1/4
  Gas Outlet port 1/4
  Water Ports ½
  Maximum Pressure Blood inlet 1000mmHg
  Water Inlet 42 PSI
- Blood storage capacity of hard shell reservoir should be approx. 4000ml
- Minimum operating volume of reservoir should be 200ml.
- Hard shell reservoir should have cardiotomy filter and de-foaming part
- Hard-shell reservoir should have venous filter with pore size 452mm
- The hard-shell reservoir should have
  Venous blood inlet port ½
  Blood outlet port (to pump) ⅜
  Suction ports (six) ¼
  Vertical port to CR Filter ¼
  Quick Prime port ¼
  Auxiliary port ¼-⅜

- Sustainable negative pressure should be 15010mmHg

145. SPEICIFICATION FOR PEDIATRIC OXYGENATOR

- Priming volume should beless than 150ml.
- Blood flow range should be 0.40.01ltrs/min.
- Oxygen transfer should not be less than 250ml/min.
- Pressure drop should be least-up to 100mmHg or less.
- Heat exchange efficiency should not be less than 0.65.
- Housing material should be of polycarbonate.
- Surface area of the fibers should be approx 1.0m^2.
- Heat exchanger should be made of stainless steel and surface area should be approx 1300cm^2.
- Blood inlet port 3/8
  Blood outlet Port 3/8
  Cardioplegia port 1/4
  Gas Inlet Port 1/4
  Gas Outlet port 1/4
  Water Port 1/2
  Maximum Pressure Blood inlet 1000mmHg
  Water Inlet 42 PSI
- Blood Storage capacity of hard shell reservoir should be max 3000ml.
- Minimum operative volume of hard shell reservoir should be 100ml.
- Hard-shell reservoir should have cardiotomy filter and defoaming part.
- Hard-shell reservoir should have venous filter with pore size should be 20mm
- The hard-shell reservoir should have
- Venous blood inlet port 3/8 rotatable
- Blood outlet port (to pump) 3/8
- Suction port(six) ¼
- Vertical port to CR filter 3/8
- Quick prime port ¼
- Auxiliary port 3/8

146. SPECIFICATION FOR NEONATAL OXYGENATOR

- Blood flow range should be 0.1 – 2 liters/min.
- Priming Volumes should be around 40 ml.
- Oxygen transfer should be minimum 100 ml/min.
- Pressure drop should be least up to 100mmHg or less.
- Heat exchange efficiency should not be less than 0.65.
- Housing material should be of polycarbonate.
- Surface area of the fibers should be ≈0.5m^2 and material should be micro porous polypropylene.
- Heat exchanger should be made of stainless steel and surface area should be approx 0.035m^2.
- Blood inlet port (from pump) ¼
  Blood outlet port ¼
  Luer port (for recirculation or blood cardioplegia) one luer lock on blood outlet
  Gas inlet port ¼
  Gas outlet port 5/16
  Water ports ½
  Maximum pressure Blood inlet 1000mmHg
  Water inlet 2Kgf/cm^2
- Blood storage capacity of hard shell reservoir should be 1000ml
- Minimum operating volume of hard-shell reservoir should be 15ml
- Hard-shell reservoir should have cardiotomy filter and defoamer

- The hard-shell should have
- Venous blood inlet port ¼
- Blood output port (to pump) ¼
- Suction port (five) 3/16
- Quick prime port ¼
- Vent port ¼
- Auxiliary port ¼-3/8

Maximum sustainable negative pressure in reservoir -150mmHg

147. SPECIFICATIONS FOR PEDIATRIC ARTERIAL FILTER WITH BYPASS LOOP

- The Arterial Filter should be for pediatric use.
- Priming volume should not be more than 90ml
- Filter pore size should be 40 micron.
- The outlet and inlet blood posts should be 3/8.
- The filter should allow maximum blood flow rate of 5.0L/min.
- The filter should be provided with a bypass loop at the inlet and outlet port.

148. SPECIFICATIONS FOR CARDIOPLEGIA HEAT EXCHANGER(BCD)

- It should have priming volume less than 50 ml.
- Blood flow rate should be between 0-600 ml/min
- Filter screen should be around 100 um.
- Inlet connection should be ¼and outlet connection should be 3/16.
- Heat exchange surface area should be ≈.20m^2.
- Heat exchange should be of stainless steel corrugated pipes.
- Bubble trap should be integrated for highly efficient de-bubbling
- Integrated by pass manifold for easy de-bubbling
- Exchangeable water in /water out
- Blood flow path bottom up
- It should have a Stopcock Prime/ Perfusion for easy priming.
- It should have tip in the surgeon pack so that it can be connected to cardioplegia cannula.
- It should be available both in 4:1 and 1:4 configurations.

149. SPECIFICATION FOR PEDAITRIC HEMOCONCENTRATOR

- It should have priming volume approx 35ml.
- Effective surface area of the Fibers should be approx 0.5m^2.
- Blood port should be ¼with Luer locks.
- Filtrate port should be ½.
- Maximum Trans-membrane Pressure should be 500mm Hg.
- It should have tubing lines along with reservoir Bag.

150. SPECIFICATION FOR ADULT HEMOCONCENTRATOR

- The priming volume should be 70 ml
- Effective surface area of the fibers should be ≈1m^2.
- Blood port should be ¼ With Luer locks
- Filtrate port should be ½ (1/4adapter).
- Blood flow range should be 100-500ml.
- Maximum Trans-membrane pressure should not be more than 500mm Hg.
- It should have tubing with reservoir bag.

151. SPECIFICATION FOR NEONATAL HEMOCONCENTRATOR

- It should have priming volume less than 20 ml.
- Membrane surface area should be ≈0.2m^2.

- Max Membrane pressure should not be more than 600mm Hg.
- Capillary wall thickness should be ≈50um.
- It should have inlet/outlet lines, male luer lock connections, filter safety cap, filtrate line and additional filtrate bag (200ml).

152. SPECIFICATION FOR CUSTOM TUBING PACK

- Custom Tubing Pack Adult.
  Custom Tubing Pack with arterial filter with PVC tubing medical grade -6 as per AIIMS C.N.Centre design.
  Filter/Tubing should be CE/USFDA Approved.
- Custom Tubing Pack pediatric with PVC tubing medical grade – 6Filter/Tubing should be CE/US FDA Approved
- Custom Tubing Pack with neonatal arterial filter with PVC tubing medical grade-6Filter/Tubing should be CE/USFDA Approved
- Custom tubing packs with 3/16arterial and ¼ venous lines for small neonates. Made from medical grade-6 PVC. Filter/Tubing should be CE/USFDA approved

153. EXTRA CORPOREAL MEMBRANE OXYGENATOR (NEONATAL)

- ECMO should have a validation for 14 days and should be phthalate free (NO DOP).
- Membrane used should be of polymethylpentene fibers.
- Priming volume should be 100 ml.
- Should have contact surface area ≈0.70 square meters.
- Should cater for blood flow from 0.2 to 1.5 L/min.
- Heat exchanger surface area should be ≈0.4 square meter.
- Heat Exchanger performance factor should be of 0.77 (1.5 liter /min).
- Oxygenator and tubing should have coating of Phosphorylcholine.
- Inlet and outlet connector preferred is 1/4 (6.35 mm).

154. EXTRA CORPOREAL MEMBRANE OXYGENATOR (PAEDIATRIC)

- ECMO should have a validation for 14 days and should be phthalate free (NO DOP).
- Membrane used should be of polymethylpentene fibers.
- Should have priming volume 200 ml.
- Should have contact surface area of around1.4 square meters.
- Should cater for blood flow from 0.3 to 4 liter /min.
- Heat exchanger should have surface area of ≈0.8 square meter.
- Heat exchanger performance factor should be of ≈0.6 (@ 4 liter /min).
- Oxygenator and tubing should have coating of Phosphorylcholine(PC).
- Inlet and outlet connections preferred is 3/8(9.53 mm)

155. EXTRA CORPOREAL MEMBRANE OXYGENATOR (ADULT)

- ECMO should have a validation for 14 days and should be phthalate free (NO DOP).
- Membrane used should be of polymethylpentenefibers.
- Should have priming volume of≈200ml.
- Should have contact surface area of 1.7-1.9 square meters.
- Should cater for blood flow from 4 to 7 liters/ min.
- Heat exchanger should have surface area of ≈0.8square meter.
- Heat exchangerperformance factor should be ≈0.6 (@ 4 liters /min).
- Oxygenator and tubing should have coating of Phosphorylcholine.(PC)
- Inlet and outlet connections preferred is 3/8 (9.53 mm)

156. SPECIFICATION FOR ADULT OXYGENATOR(Integrated with arterial filter & heat exchanger)

- Oxygenator should have integrated arterial filter withcardiotomy/ venous reservoir.

- Should have integrated arterial filter with self venting technology.
- Heat exchanger surface area should be no more than 0.2m^2.
- Venous filter should be 50micro meter.
- Priming volume should not be more than 300ml.
- Blood flow range should be 0.5 to 7 LPM.
- Heat exchange efficiency should not be less than 0.50 at max flow.
- Pressure drop should be minimum up to 110 mmHg or less.
- Arterial filter should be 35micron meter.
- Membrane surface area should be 2-2.5 m^2.

157. **SPECIFIAITON FOR SMALL ADULT OXYGENATOR (Integrated Filter and Heat Exchanger)**

- Oxygenator should have integrated arterial filter with cardiotomy/venous reservoir.
- Should have integrated arterial filter with self venting technology.
- Heat exchanger surface area should be no more than 0.14m^2.
- Venous filter should be 50micro meter.
- Priming volume should not be more than 150ml
- Blood flow range should be 0.5 to 5 LPM.
- Heat exchange efficiency should not be less than 0.5 max flow @ 5 LPM
- Pressure drop should be minimum up to 110 mmHg or less.
- Arterial filter should be35micro meter.

158. **SPECIFICATION FOR PAEDIATRIC INFANT OXYGENATOR(Integrated Filter and Heat Exchanger)**

- Oxygenator should have integrated arterial filter with cardiotomy/ venous reservoir.
- Should have integrated arterial filter with self venting technology.
- Heat exchanger surface area should be no more than 0.035m^2.
- Venous filter should be50micro meter.
- Priming volume should not be more than 45ml.
- Blood flow range should be 0-1.5Ltrs/min.
- Heat exchange efficiency should not be less than 0.6 at max flow.
- Pressure drop should be minimum up to 100mmHg or less @ 1.5 LPM
- Arterial filter should be35micro meter.

159. **Arterial Perfusion CannulaeAdult.**

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

160. **Arterial Perfusion Cannulae Pediatric**

- Sizes: 8Fr, 10Fr, 12Fr,14Fr and 16Fr.
- Non wire reinforced bevel tip.
- Overall length 18cm with suture bump.

161. **Venous Cannulae Single Stage.** (neonate)

- Thin Flexible wire reinforced straight open light house tip. Overall length approx.28cm with ¼ acceptance size 12Fr, 14Fr and 16Fr

162. **Venous Cannulae Single Stage**(pediatric)

- Thin Flexible wire reinforced straight open light house tip. Overall length approx. 35cm with ¼and 3/8 acceptance Size 18Fr, 20Fr, 22Fr and 24Fr.

163. **Venous Cannulae Single Stage**(small adult)

- Thin flexible wire reinforced straight open lighthouse tip. Overall length 35cm with 3/8 acceptance

Size 26Fr and 28Fr.

164. **Venous Cannulae Single Stage**(adult)
- Thin Flexible wire reinforced straight open lighthouse tip. Overall length should be approx.40cm with 3/8 acceptance Size 30Fr, 32Fr, 34Fr, 36Fr, 38Fr and 40Fr.

165. **Venous Cannulae Right Angled**
- Wire reinforced 90^0 angled plastic tip 10Fr, overalllength approx.28cm and ¼ acceptance.

166. **Venous CannulaeRight Angled**
- Wire reinforced 90^0 angled plastic tip 12Fr, 14Fr and 16Fr. Overall length should be approx. 33cm with ¼& 3/8 acceptance

167. **Venous Cannulae Right Angled**
- Wire reinforced 90^0 angled plastic tip 18Fr and 20Fr. Overall length should be approx. 35cm with 3/8 acceptance

168. **Venous CannulaeRight Angled**
- Wire reinforced 90^0 angled plastic tip 22Fr, 24Fr and 28Fr. Overall length should be approx.38cm with 3/8 acceptance.

169. **Retrograde Cannula catheter**
- Self-inflating smooth balloon with preshapedstylet and handle 14Fr. Overall length should be approx. 27cm & should have 18-20 mm sized smooth balloon.

170. **Aortic Perfusion Cannulae;**
- Wire reinforced dispersion tip Sizes: 21Fr and 24Fr overall length approx.35cm and vent.

171. **Dual Stage Venous Cannulae;**
- Wire reinforced 32/40Fr and 36/51Fr. Overall length should be approx. 40cm and ½acceptance.

172. **Femoral Arterial Cannulae;**
- Wire reinforced overall length should be 19.5.2 cm with ¼ vented connector sizes: 8Fr, 10Fr, 12Fr and 14Fr.

173. **Femoral Arterial Cannulae;**
- Wire reinforced overall length should be approx. 24cm with 3/8 vented connector sizes: 16Fr, 18Fr and 20Fr.

174. **Femoral Venous Cannulae;**
- Wire reinforced overall length should be approx. 24cm with ¼ non vented connector.Sizes 8Fr, 10Fr, 12Fr and 14Fr.

175. **Venous Femoral Cannulae;**
- Wire reinforced overall lengthshould be 752 cm with 3/8 non vented connector sizes 18Fr, 20Fr, 22Fr,24Fr and 28Fr.

176. **Antegrade CardioplegiaCannulae**
- 12/14/16 Fr. with vent and without vent.

177. **Cardiotomy Venous Reservoir Adult, Paediatric, Neonatal**

178. **Disposable connector all sizes; Y, Straight with and without leur lock**

179. **Disposable Single Tubing all sizes (½,⅜,¼,3/16)**

180. **Wire enforced Arterial Cannula (6 Fr to 20 Fr)**

181. **Pruitt(Distal Limb arterial perfusion cannula)**

182. **Long, Flexible, wire-enforced cannula for ascending aortic & arch cannulation with obturator.**

183. **Long Flexible, wire-enforced cannula for ascending aorta & arch cannulation with guide wire.**

184. **Long Flexible wire enforced cannula for ascending aorta and arch cannula angled With side holes.**

185. **Balloon tip antegrade cerebral perfusion cannula.**

Group C: Valves and rings

186. **Complete Bovine Aortic Pericardial Valve**

- Should be bio engineered, computer optimized to ensure uniform thickness of leaflets and have tissue deflection test to ensure uniform flexibility in all three leaflets. . Long term clinical data should be available, establishing more than atleast 15 years expected durability in clinical study, long term follow up data on hemodynamic performance establishing consistency in low gradients. Should have standard low-pressure fixation &adequate treatment of tissues to preserve natural leaflet dimensionality & flexibility, while extracting phospholipids. Should have more than 20 yrs. Experience globally. Scalloped sewing ring for Aortic annulus conformity is preferable.
- Aortic Sizes 19/21/23/25/27
- Should be FDA APPROVED

187. **COMPLETE BOVINE MITRAL PERICARDIAL VALVE**

- Bio- engineered: Computer optimized to ensure uniform thickness, with Tissue deflection tests to ensure uniform flexibility in all three leaflets, unique design mounting feature such as flexible stent& optimal tissue stent compatibility for greater reliability. Long term clinical data available, establishing more than & consistency in hemodynamic performance. Low-pressure fixation & chemical treatment of tissue to preserve natural leaflet dimensionality & flexibility, while extracting maximum phospholipids. Should have more than 20 yrs experience globally. Should have convenient deployment and LVOT markers for ease of Implantation at Mitral position.
- MITRAL SIZE 25/27/29/31/33
- Should be FDA APPROVED

188. **COMPLETE BOVINE MITRAL SUPRA ANNULAR PERICARDIAL TISSUE VALVE.**

- Bio mechanically engineered tissue valve with three leaflets of identical thickness, and identical Flexibility. Should be a True supra annular valvewith a saddle shaped sewing ring with posterior flexibility & anterior rigidity for optimal conformity at Mitral position, Should have LVOTO markers for correct orientation, preventing any LVOT obstruction, with convenient deployment system to prevent suture looping and ease of deployment.
- Low profile tissue valve with asymmetrical sewing ring should preserve sub valvularapparatus and prevent LV impingement. Should have Tissue treatment to irreversibly extract both calcium binding sites Phospholipids, residual glutraldehyde, should have a flexible stent & optimal tissue stent compatibility for greater reliability. Clinical data to be available establishing long term durability and consistency in hemodynamic performance.
- Sizes: 25 to 33mm
- Should be FDA APPROVED

189. **COMPLETE BOVINE AORTIC SUPRA ANNULAR PERICARDIAL TISSUE VALVE**

- Bio-mechanically engineered tissue valve with three Leaflets of identical thickness and identical flexibility. Should be a true supra annular valve. Scallop shaped sewing ring for aortic position.Should be Low profile tissue valve. Should have Tissue treatment to irreversibly extract both calcium binding sites phospholipid, and residual glutraldehyde, should have Flexible and Durable Stent. Short term and long term clinical data should be available, establishing Durability & consistency in hemodynamic performance. Should have a sizer (barrel and replica end) for optimum sizing and placement.
- Size 19 to 29mm
- Should be FDA approved

190. **COMPLETE BOVINE PERICARDIAL LOW PROFILE AORTIC TISSUE Valve.**

- Bio-Mechanically engineered tissue valve with three leaflets of identical thickness, and Identical Flexibility.
- Should be a true supra annular valve.
- Should have a Scallop shaped sewing ring consistent with Aortic annulus.
- Should have tissue treatment to Irreversibly extract both calcium binding sites phospholipid residual

glutraldehyde,

- Should have a flexible stent & optimal tissue stent compatibility for greater reliability.
- Short and long term clinical data should be available, establishing Durability & consistency in hemodynamic performance.
- Should have Low profile height for optimizing Coronary Ostial&sino-tubular junction clearance. Should have Three Mid commissure markers for correct orientation of the valve.
- Should have a slick stent post & stent base allowing ease of implantation in small aortic root.
- SIZES: 19/29mm
- Should be FDA APPROVED

191. Tricuspid Repair Ring

- Sterile double packed tricuspid rigid ring with an anterior gap with polyester of PTFE cloth with marking for commissures.
- Should have an oval shape and opening for AV node.
- Sizes 26mm 28mm 30mm 32mm.

192. Mitral Repair Ring

- Sterile double packed rigid ring complete or with anterior gap with polyester or PTFE cloth with marking for commissures.
- Kidney shaped for mitral position.
- Cover sizes 26mm, 28mm, 30mm, 32mm, and 34mm.

193. IMR annuloplasty ring:

- Should have a complete rigid ring.
- To be constructed of a strong, durable alloy.
- Should have a increased sewing margin in the P2-P3 region,
- Should be marked with suture and designed to accommodate a double suture row.
- Should have a Dipped P3 region to accommodate higher stresses from downward LV displacement.
- Should have a convenient holder/handle to increase ease of use & operative efficiency
- Sizes 24,26,38,30,32mm
- Should be FDA APPROVED

194. 3-D Tricuspid Annuloplasty Ring:

- Should be a rigid annuloplasty ring with three-dimensional shape and with an incomplete ring shape to avoid the sensitive conduction system.
- Should have a downward angle in septal region to help reduce the stress on sutures and the risk of ring dehiscence.
- Sizes 26, 28, 30,32,34mm.
- Should be FDA approved.

195. ARTIFICIAL MECHANICAL HEART VALVE BILEAFLET MITRAL

- Rotatable design, leaflets made up of pyrolytic carbon / standard durable alloy and polyester sewing cuff.
- Should have low profile height.
- Should have minimum vertical leaflet exposure to result in NO LVOT obstruction
- Should have greater posterior wall clearance
- Wide range of sizes from 23/24mm – 34/37mm
- Should have both CE and FDA approval

196. ARTIFICIAL MECHANICAL HEART VALVE BILEAFLET MITRAL (for supra-annular implant)

- Rotatable design, leaflets made up of pyrolytic carbon / standard durable alloy and polyester sewing cuff.
- Should have low profile height.
- Should have minimum vertical leaflet exposure to result in NO LVOT obstruction
- Should have greater posterior wall clearance
- Wide range of sizes from 24 mm – 34 mm

- Should have both CE and FDA approval

197. ARTIFICAL HEART VALVE BILEAFLET AORTIC

- Rotatable design, leaflet made up of pyrolytic carbon and polyester sewing cuff, with pivot guard design.
- Should have low profile height.
- Should have minimum vertical leaflet exposure.
- Wide range of sizes from 19mm-31mm.
- Should have both CE and FDA approval

198. ARTIFICAL HEART VALVE BILEAFLET AORTIC for Supra-annular implant

- Rotatable design, leaflet made up of pyrolytic carbon and polyester sewing cuff, with pivot guard design.
- Should have low profile height.
- Should have minimum vertical leaflet exposure.
- Wide range of sizes from 16 mm- 28mm.
- Should have both CE and FDA approval

199. ARTIFICAL HEART VALVE BILEAFLET AORTIC (for Supra-annular –intra- annular implant)

- Rotatable design, leaflet made up of pyrolytic carbon and polyester sewing cuff, with pivot guard design.
- Should have low profile height.
- Should have minimum vertical leaflet exposure.
- Wide range of sizes from 17mm- 25mm.
- Should have both CE and FDA approval

200. BILEAFLET AORTIC VALVE WITH CONDUIT

- Should have double velour woven graft.
- Should be collagen impregnated to control hemostasis and reduce the hemorrhagic complications.
- Should have mechanical heart valve with low-pressure gradients. With pivot guard design and leaflet opening and >75 degrees.
- Cuff design should enhance implantability.
- Should have minimum taper conduit to facilitate strong coronary anastomosis.
- Should not have any pleats to allow easier positioning and attachment of the coronary arteries.
- Wide range of sizes from 19mm- 33mm.
- Should have both CE and FDA approval.

201. PORCINE TISSUE HEART VALVE MITRAL / AORTIC

- Should have stented, triple composite design with separate porcine leaflets to optimize leaflets cooptation and reduce stress.
- Should have anti-calcification treatment to reduce calcification.
- Low profile height.
- In aortic position should be available in sizes 19mm-31mm.
- In mitral position should be available in sizes 25mm to 33mm.
- Should have both CE and FDA approval.

202. PERICARDIAL EXTERNALLY MOUNTED TISSUE HEART VALVE(AORTIC)

- Should have stented, pericardial single layered leaflet externally mounted to optimize hemodynamics. Should have tissue to tissue interface adding to durability.
- Should have anti calcification treatment to reduce calcification.
- Supra annular design.
- In aortic position should be available in sizes 19mm-29mm.
- Should have both CE and FDA approval.

203. ANNULOPLASTY RINGS MITRAL

- Titanium alloy core with polyester woven cloth.
- 3 D motion.
- Should have both CE and FDA approval.
- Wide range of sizes 24mm- 34mm.

204. ANNULOPLASTY RING FLEXIBLE

- Fully flexible ring/band.
- Should have X-ray visibility.
- Should have both CE and FDA approval.
- Wide range of sizes - 25mm-35mm

205. Rigid remodeling ring for mitral valve repair

- **Size** 24mm,26mm,28mm,30mm,32mm,34mm,38mm,40mm
- Should be fully rigid remodeling ring.
- Should have physiologic mitral valve shape.
- 25% annular height to commissural width ratio anterior, 15% annular height to commissural width ratio posterior.
- Should have saddle shape and polyester knit covering with Titanium/silicone core.

206. Annuloplasty ring for tricuspid valve repair

- Low profile Ring,
- Sizes 26mm,28mm,32mm,34mm,36mm
- Should be incomplete ring to avoid interference in conduction system, height should be less than 3.5mm.
- Should have titanium core encapsulated with silicone and covered with polyesterfabric.
- Septal lateral compression.

207. Composite Annuloplasty ring for Mitral repair

- **Sizes** 24mm,26mm,28mm,30mm,32mm,34mm,36mm,38mm
- Should have semi rigid posterior remodeling with anterior flexibility,
- should have polyester knit covering with MP-35N/ silicone core

Group D: Vascular grafts and patches

208. Dacron straight woven Grafts 6mm to 16 mm, 30-35 cm long, Collagen coated.
209. Dacron straight woven Grafts 18mm to 28 mm, 30-35 cm long,Collagen coated.
210. Dacron straight woven Grafts 30mm to 38 mm, 30-35 cm long,Collagen coated.
211. Dacron straight woven Grafts 6mm to 16 mm, 60-70 cm long,Collagen coated.
212. Dacron straight woven Grafts 18mm to 28 mm, 60-70 cm long,Collagen coated.
213. Dacron straight woven Grafts 30mm to 38 mm, 60 cm-70 long,Collagen coated.
214. Dacron bifurcated woven grafts 12mmX6 mm, 14mmX7mm, 16mmX8mm,. 18mm X9mm with 40-50 cmslength,Collagen coated.
215. Knitted Dacron straight graft 6mm to 16 mm with 30-35 cm length,Collagen coated.
216. Knitted Dacron straight graft 18mm to 24 mm with 30-35 cm length,Collagen coated.
217. Knitted Dacron straight graft 6mm to 16 mm with 60-70 cm length,Collagen coated.
218. Knitted Dacron straight graft 18mm to 24 mm with 60-70 cm length,Collagen coated.
219. Dacron bifurcated knitted grafts 12mmX6 mm, 14mmX7mm, 16mmX 8mm,. 18mm X 9mm with 40-50 cms length
220. Dacron Woven 3 branch arch grafts 20mm to 34 mm,Collagen coated.
221. Dacron Woven 4 branch arch grafts 20mm to 34 mm,Collagen coated.
222. Dacron Woven Thoraco-abdominal grafts 20mm to 30mm, Collagen coated.
223. Dacron Woven graft 20 to 34mm with 8mm and 10 mm perfusion side branch, 40-50 cm length,Collagen coated.
224. Dacron Woven extra length graft with offset branch graft 22 to 32 mm with 8mm perfusion side

branch, Collagen coated.

225. Dacron Woven pre-curved graft 22 mm to 32 mm with 8mm perfusion side branch, Collagen coated.

226. Woven Trifurcate 12mm X 6mm X 6mm, 14 mm X 7mm X 7mm, 16mm X 8mm X 8mm, 40-50 cm in length,Collagen coated.

227. Dacron Knitted axillo-bifemoral bifurcated graft with extended support,Collagen coated.

228. Dacron Knitted Axillo-bifemoral graft 90 degrees angle with 60 cm side branch 8mm and 10 mm,Collagen coated.

229. Dacron Knitted Femoral-Femoral grafts 6mm and 8 mm 30cm and 40 cm long,Collagen coated.

230. Dacron Knitted straight Peel able support 6mm, 8mm and 10 mm, Collagen coated.

231. Dacron straight woven Grafts 6mm to 16 mm, 30-35 cm long , Gelatin coated.

232. Dacron straight woven Grafts 18mm to 28 mm, 30-35 cm long, Gelatin coated.

233. Dacron straight woven Grafts 30mm to 38 mm, 30-35 cm long, Gelatin coated.

234. Dacron straight woven Grafts 6mm to 16 mm, 60-70 cm long, Gelatin coated.

235. Dacron straight woven Grafts 18mm to 28 mm, 60-70 cm long, Gelatin coated.

236. Dacron straight woven Grafts 30mm to 38 mm, 60 cm-70 long, Gelatin coated.

237. Dacron bifurcated woven grafts 12mmX6 mm, 14mmX7mm, 16mmX 8mm,. 18mm X9mm with 40-50 cms length, Gelatin coated.

238. Knitted Dacron straight graft 6mm to 16 mm with 30-35 cm length, Gelatin coated.

239. Knitted Dacron straight graft 18mm to 24 mm with 30-35 cm length, Gelatin coated.

240. Knitted Dacron straight graft 6mm to 16 mm with 60-70 cm length, Gelatin coated.

241. Knitted Dacron straight graft 18mm to 24 mm with 60-70 cm length, Gelatin coated.

242. Dacron bifurcated knitted grafts 12mmX6 mm, 14mm X 7mm, 16mmX 8mm,.18mm X 9mm with 40-50 cms length, Gelatin coated.

243. Dacron Woven 3 branch arch grafts 20mm to 34 mm, Gelatin coated.

244. Dacron Woven 4 branch arch grafts 20mm to 34 mm, Gelatin coated.

245. Dacron Woven Thoracoabdominal grafts 20mm to 30mm, Gelatin coated.

246. Dacron Woven graft 20 to 34mm with 8mm and 10 mm perfusion side branch, 40-50 cm length, Gelatin coated.

247. Dacron Woven extra length graft with offset branch graft 22 to 32 mm with 8mm perfusion side branch, Gelatin coated.

248. Dacron Woven pre-curved graft 22 mm to 32 mm with 8mm perfusion side branch, Gelatin coated.

249. Woven Trifurcate 12mm X 6mm X 6mm, 14 mm X 7mm X 7mm, 16mm X 8mm X 8mm, 40-50 cm in length, Gelatin coated.

250. Dacron Knitted axillo-bifemoral bifurcated graft with extended support, Gelatin coated.

251. Dacron Knitted Axillo-bifemoral graft 90 degrees angle with 60 cm side branch 8mm and 0 mm, Gelatin coated.

252. **DACRON MARKING PATCH (Filamentous Fabric)**

- Should be Nominal Thickness; around 0.6 mm
- Water permeability; approximately 1800ml
- Popularly known as "MARKING PATCH"
- Markings arrow should indicate, in which direction the patch is to be stitched.
- Sizes 2" x 2", 4 x4" and 6x6 ' inches

253. **Double Velour Fabric;**

- Should have Nominal Thickness; 1.4-1.6mm.
- With Water permeability of approximately 3800 ml.
- Should have No Reference markings.
- Used for Repair of Intracardiac defects and for VSD repair in Adults.
- SIZES: - 4"X4" & 6"X6"

254. **Outflow Tract Fabric**

- PTFE.
- Should have Nominal Thickness: around 0.9mm. with Water Permeability: 250ml.

- Used for Aortic repair, Pulmonary Outflow tracks patching & other Intracardiac Defects.
- SIZES: - 4X4 & 6"X6"

255. Thin Wall Patch of PTFE

- Should have multidirectional node fiber structure, to accommodate cellular in growth & give uniform strength throughout the patch Surface.
- Should be soft & pliable for easy surgical positioning.
- No Pre clotting should be required.
- Should have excellent biocompatibility for cardiac& vascular repairs and peripheral vascular reconstruction.
- Should have Thicknessaround 0.4mm suitable for Aortic & Vascular repair
- SIZES:- 1CMX9CM,2X9CM & 3CMX6CM (OVAL SHAPED)

256. Regular Wall Patch of PTFE

- Should have multidirectional node fiber structure to accommodate cellular in-growth.
- Should be soft & pliable for easy surgical positioning.
- No Pre clotting should be required.
- Should have excellent biocompatibility for cardiac& vascular repairs and peripheral vascular reconstruction.
- Thickness – 0.6mm
- SIZES:- 3CM X 3CM,5CMX7.5CM,2.5CMX15CM & 10CMX15CM (RECTANGULAR)

257. Low Porosity FELTS of PTFE;

- Should have Thickness 1.5 to 1.8mm.
- Should have Low Porosity to control bleeding and for buttress for sutures.
- SIZES:-2' X 2", 4"X4' & 6"X6'
-

258. PTFE Normal felt;

- Should have Thickness 1.5 to 1.8mm.
- To be used as a buttress for sutures and Friable tissue
- SIZES:- 2"x2 ,4"x4 & 6"x6

259. PTFE Hard (Thick) FELTS:-

- Should have Thickness around 3 mm to provide added support to tissue.
- SIZES:- 4"X4" & 6"X6"

260. PTFE FELTS PLEDGETS

- Shape:-Rectangle, Square Oval &Round. Should have Thickness around 1.6mm
- Sizes:- 4.8mm x 6.0mm (Rectangle), 9.5mmx4.8mm (Rectangle), 6.0x6.0mm (Square) & 4.8mm x 6.0mm (Oval)

261. Regular & Thin wall e-PTFE graft all sizes and length

262. Regular & Small Beadings (Rings) PTFE graft all sizes and length.

263. BT Shunt PTFEgrafts all sizes and length

264. Large Diameters e PTFE Grafts all sizes and length

265. e-PTFE Stretch Large Diameter Reinforced Aortic Vascular Graft of all diameters and length

266. e-PTFE Cardiovascular Patch

- Sizes:- 5cm x 15cm x 0.6mm x10cm x 15cm x 0.6mm, 3cmx 6cm x 0.4mm

267. e-PTFE Pericardial Membrane 0.1mm thick

- Size 6cm x 12cm/12cmx12cm/15cm x 20cm

268. e-PTFE Stretch Reinforced Thin Wall Heparin Bonded Vascular Graft

269. 10cms length Size: 3mm/3.5mm/4mm/5mm/6mm diameter

270. e PTFE Stretch Reinforced Thin wall Non Ringed Heparin Bonded Vascular Graft 40/80cms

length Size: 6/7/8/mm diameter.

271. **e- PTFE Stretch Reinforced Removable Ringed Thin Wall Heparin Bonded Vascular Graft** 50/70/80cm length size: 6/7/8mm diameter

272. **e-PTFE Stretch Reinforced Thin Wall limbed Bifurcated Vascular Graft Size : 12/6x50cm;** 14/7x40cm/50cm; 16/8x50cm; 18/9x50cm; 20/10x50cm; 22/12 x40cm; 24/12x40cm

273. **e PTFE Suture :**Size CVO/CV2/CV3/CV4/CV5/CV6/CV7/CV8

274. **e-PTFE Stretch re-in forced removable ringed thin wall pre configured axillo bi femoral vascular graft.**

Size: i) 8mm diameter x 70cm/40cm length
ii) 8mm diameter x 90cm/40cm length

275. **e PTFE stretch re- in forced low profile integrated radially supported thin wall vascular graft.** Size 6mm/7mm/8mm diameter 40cm/60cm/80cm length

276. **e PTFE stretch re-in forced removable ringed thin wall vascular graft.** Size: 6mm/8mm diameter x 50cm/70cm/80cm length.

277. **Ascending aortic reconstruction graft**

- One piece design collagen coated VALSALVA graft for repair or reconstruction of the ascending aorta.
- Should mimic the anatomy and blood flow dynamics of the natural sinuses of Valsalva
- Unique un-crimped section that does not stretch should allow easy sewing of valve remnants or prosthetic valve
- Should facilitate estimation of the length required for optimal placement of valve remnants or prosthetic valve to ensure optimal clinical outcomes.
- Should have the ability to be precisely trimmed and shaped in case of remodeling technique procedures.
- At least 3 References line should act as a guide for prosthetic valve.
- Coated polyester fabric Cross linked Type I bovine collagen
- Water permeability < 5m * cm -2 min-1 @ 120mmHg

Group E: Miscellaneous items

278. **I.V. Set with flow controller (DEHP Free)**:

- Specially designed I.V. set for controlling the flow rate of fluid made of medical grade DEHP free polymer nonreactive to water-soluble materials.
- Gravity drive infusion set with wide dial, which operates as thumb wheel like roller clamp.
- Security door to prevent the accidental change of flow rate.
- Low cost disposable set.
- Sterile, individually packed in blister pack.

279. **Snugger Set** – All sizes: Three pairs of smooth snuggers with Yellow, Blue & Pink colors for vessel identification.Each snare set consists of thumb holder handle for easy maneuverability. Specially designed for putting purse string sutures, made of medical grade PVC. Sizes Adult &Pediatric.

280. **Disposable Suction Tube & Tip:** Medical grade PVCmolded handles with kink resistant tube for per operative suctioning. Tip of Handle should be crown/ standard shape. Vent port to be provided in handle which should be closed with tight sleeve. Soft flexible adaptors at both end of the tube for connection with secure fitment between suction source& handle. Tube Length 2500 mm, OD: 9 mm, ID: 6 mm. Sterile packed in poly pouch pack.

281. **Thoracic catheter – All Sizes:** Extra soft thoracic drainage catheter, made of DEHP free medical grade polymer, gentle to body tissues & most suitable for thoracic drainage. Catheters are marked at every 2cm from the last eye. Sterile, double (straight) packed in peel able pouch pack. Sizes required: Sizes: 16, 20, 24, 28, 32, 36, 40 FG

282. **Thoracic catheter Right Angled (90°) – All Sizes:** Extra softangledthoracic drainage catheter, made

of DEHP free medical grade polymer, gentle to body tissues & most suitable for thoracic drainage. Catheters are marked at every 2cm from the last eye. Sterile, double packed in peelable pouch pack. Sizes: 16, 20, 24, 28, 32, 36, 40 FG

283. **Thoracic catheter with trocar – All Sizes:** Thoracic drainage catheter with trocar for thoracic drainage purpose. Catheters to be marked at every 5, 10, 15 & 20 cm from the last eye. Fitted with tapered connector. Sterile, packed in peelable pouch pack. Sizes: 12, 16, 20, 24, 28, 32, 36 FG

284. **Chest Drainage Bottle – 2000 ml:** Under water seal drainage system.Double chamber compact unit with 2000 ml capacity.Easy to read graduation on bottle to determine the drainage volume precisely. Clearly marked initial level to ensure the underwater seal. Separate suction port for connection with suction unit. Should have valve to prevent excess suction. Kink resistant large bore tubing to facilitate unrestricted flow. Unit to be provided with metal hangers and floor stand. Sterile, packed in peelable pouch pack.

285. **Chest Drainage Bottle – 1200 ml:** Under water seal drainage system. Single chamber compact unit with 1200 ml capacity. Easy to read graduation on bottle to determine the drainage volume precisely.Should have valve to prevent excess suction. Clearly marked initial level to ensure the underwater seal. Specially designed positive pressure relief valve. Separate suction port for connection with suction unit. Kink resistant large bore tubing to facilitate unrestricted flow. Unit to be provided with metal hanger/ floor stand. Sterile, packed in peelable pouch pack.

286. **Chest Drainage Bottle – 500 ml:** Under water seal drainage system. Single chamber compact unit with 500 ml capacity. Easy to read graduation on bottle to determine the drainage volume precisely. Clearly marked initial level to ensure the underwater seal. Separate suction port for connection with suction unit. Kink resistant large bore tubing to facilitate unrestricted flow. Should have valve to prevent excess suction. Unit to be provided with metal hanger/ floor stand. Sterile, packed in peelable pouch pack

287. **Skin Marker Pen:** Skin marker for surgery preparation.
- Manufactured from bactericidal, antifungal Gentian Violet.
- Violet color ensures easy visibility. Sterile, individually packed in a peel open pack.
- Surgical Skin marker pen with standard size tip.

288. **FOGARTY ARTERIAL EMBLECTOMY CATHETER**
- Vinyl Latex Balloon tipped catheter for Arterial Emblectomy procedure.
- Usable length 60-80 cm, Size 2F to 8F.
- Recessed winding technique for balloon attachment for maintaining balloon symmetry for uniform contact with vessel wall, providing consistent clot removal

289. **THRU LUMEN FOGARTY CATHETER**
- Vinyl Latex Balloon tipped catheter for Arterial Embolectomy procedure.
- Usable length 80 cm.
- Size 2F-8F.
- Second lumen for guide wire compatibility facilitating crossing occluded, tortuous &stenotic arterial wall OR to be used for drug delivery & blood sampling.
- Stainless steel bushes under proximal & distal balloon windings for visualization under fluoroscopy.
- Recessed winding technique for balloon attachment for maintaining balloon symmetry for uniform contact with vessel wall, providing consistent clot removal.

290. **ELECTRO CAUTERY RETURN PLATE WITH CORD**
- All sizes should be available
- Disposable Sticky patient return split monitoring style.
- Pre attached cable (US FDA approved)

291. **ELECTRO CAUTERY RETURN PLATE WITHOUT CORD**
- All sizes should be available
- Disp. Sticky patient return split monitoring style.
- Cord should be provided separately.
- US FDA approved

292. **Disposable surgical drape:**

- Made up of reinforced spun-bond film composite material, blue laminate of polypropylene non-woven fibers and polyethylene film.
- Highly absorbent yet impervious across entire drape.
- Low-linting, non-breathable, abrasion resistant, durable, strong tear resistant, conformable, with self adhesive containing hypoallergenic acrylate type adhesive with a silicone coated paper liner.
- ETO Sterilized.
- **CABG Pack:**4 Self adhesive cautery bags(30cmx35cm),3 Op tapes(10cmx55cm),4 Lint free hand towels(23.5cmx38cm),4 Self adhesive towel drapes(91.5cmx100cm),1 Self Adhesive Medium drape(183cmx183cm),1 Self Adhesive Large drape(150cmx250cm),1 Instrument table drape(150cmx200cm),1 Large Instrument table drape(183cmx240cm),1 Self Adhesive Bilateral Split drape(183cmx200cm),2 Triangular drape(91.5cmx91.5cmx129cm).

293. **CAUTREY LEAD**

- Disposable.
- Hand control button switch with PTFE coated blade electrode.
- Should be light weight
- US FDA approved
- Should be compatible with all standard brands of cautery machines.

294. **TITANIUM LIGATING CLIPS "SIZE – SMALL"**

- Wire of the clip should be ' Heart shaped for a firm grip on Vessels
- Clips should be of 'Chevron' shape for better closure
- Cartridge should have adhesive backing for better control while loading.
- Clips should be easy to lad with soft loading technique.
- Clip cartridges should be color coded for better identification.
- Clips quoted should be registered in India for selling.
- Should have all required documentations like from 10 A and Form 41 etc.
- Should be US FDA approved with clinic data backing for the same.

295. **TITANIUM LIGATING CLIP " SIZE MEDIUM"**

- Wire of the clip should be 'Heart shaped' for a firm grip on vessels
- Clips should be of 'Chevron' shape for better closure.
- Cartridge should have adhesive backing for better control while loading.
- Clips should be easy to load with soft loading technique.
- Clip cartridges should be color coded for better identification.
- Clips quoted should be registered in India for selling. Should have all required documentations like from 10A and form 41 etc.
- Should be US FDA approved with clinic data backing for the same.

296. **TITANIUM LIGATING CLIPS"SIZE-MEDIUM LARGE"**

- Wire of the clip should be 'Heart shaped' for a firm grip on vessels.
- Clips should be of "Chevron' shape for better closure.
- Cartridge should have adhesive backing for better control while loading.
- Clips should be easy to load with soft loading technique.
- Clip cartridges should be color-coded for better identification.
- Clips quoted should be registered in India for selling. Should have all required documentation like form 10A and form 41 etc.
- Should be US FDA approved with clinic data backing for the same.

297. **TITANIUM LIGATING CLIPS" SIZE-LARGE**

- Wire of the clip should be 'Heart shaped for a firm grip on Vessels.
- Clips should be of 'Chevron' Shape for better closure
- Cartridge should have adhesive backing for better control while loading.

- Clips should be easy to load with soft loading technique.
- Clip cartridges should be color-coded for better identification.
- Clip quoted should be registered in India for selling. Should have all required documentation like from 10A and form 41 etc.
- Should be US FDA approved with clinic data backing for the same.

298. APPLICATOR FOR TITANIUM CLIPS (Small, Medium, Large)

- Should be available in three shapes :**CURVED, ANGLED & RIGHT ANGLED**
- Device to be compatible for titanium clips listed in the tender.

299. Aortic punch Long handle:

- Size: 2.5cm to 6cm
- Should have sharp dual cutting edge for clean, precise removal of aortic tissue.
- A conical tip should be there for easy insertion by straight or button hole technique.
- Ten blade sizes for trimming to desired size and shape 2.5mm – 6.0mm.

300. Pediatric bronchial blocker –

- Should have a catheter with a bifurcated distal end resembling the bifurcation of the trachea. During insertion through a standard endotracheal tube, both distal ends easily find their way into the two main stem bronchi. Under bronchoscopic vision the lung can be isolated by inflating the balloon. The inflated balloon will always be located at the entrance of the main bronchus. The EZ-Blocker should not dislocate after inflation of the isolated lung. If renewed isolation is required the balloon can be re-inflated without the need to reposition the balloon. Size -7mm.

301. DISPOSABLE CAMERA SLEEVE;

- Transparent, plastic disposable, sterile camera sleeves, for use during MICS, robotis, for epicardial echo.
- Circular diameter-6inches .
- Lengthmore than 1meter.

302. Specifications for tyvek roll

- Tyvek sheet in rolls, backed with a strong plastic top layer suitable for both Ethylene oxide and plasma sterilization.
- Should be compatible with all standard brands of plasma and steam sterilization systems
- Should have STERILISATION PROCESS indicator to confirm effective sterilization
- Sizes required
  - ✓ 50cm x 70mtrs
  - ✓ 7.5cm x 70mtrs
  - ✓ 10cm x 70mtrs
  - ✓ 15cm x 70 mtrs
  - ✓ 17.5cm x 70 mtrs
  - ✓ 20cm x 70 mtrs
  - ✓ 25cm x 70 mtrs
  - ✓ 30cm x 70 mtrs
  - ✓ 35cm x 70 mtrs
  - ✓ 40cm x 70mtrs
  - ✓ 45cm x 70mtrs
  - ✓ 50cm x 70mtrs
  - ✓ 60cm x 70mtrs

303. SURGICAL BRUSH with IODINE POVIDONE AND CHLOROHEXIDINE

- Should be sponge impregnated 12% povidone-iodine in a 15ml solution of Teepol, P.E.G and water supplied with nail cleaner.
- Should be sponge impregnated 20% chlorohexidine-iodine in a 15ml solution of ISO PROPYLE Alcohol and water supplied with nail cleaner.
- Should be US FDA APPROVED

304. Vacuum Drainage Sets:

- Device for close wound drainage under negative pressure post operatively with option to use one or two catheters.
- Drain catheters should be provided with radio opaque line and smooth eyes.
- Connecting tube should be kink resistant and should be provided with additional strength to withstand the suction.
- Chamber should be easy to depress so as to activate the suction of bellow unit.
- Should be available with different catheter.
- Should be sterile and individually packed.
- Sizes of 10, 12, 14, 16, 18 FG.

305. DRESSING ALL SIZES

- Adhesive, surgical site dressing.
- Sterile.
- Individually packed.
- All sizes

306. ADHESIVE TRANSPARENT DRAPE (SURGICAL SITE FILM) ALL SIZES

- Should be equivalent to Dermincise.
- Should be self-adhesive sterile drape for surgery and wound dressing incise drape.
- Should be available in assorted sizes.

307. Bedsores prevention air mattress with pump: Air mattress for prevention and treatment of bedsores stage.

- Should be low air loss and alternating pressure mattress.
- Should have unique strip type design, which can change shape with the elevation of bed of the patient.
- Should prevent bed sores/ accelerate healing of existing bedsores.
- Should keep the interface pressure against patient's skin at a level below capillary occlusion.
- The pump should operate at very low sound level.
- Pump should have provision to hang to the end of the bed by means of 2 hooks.
- Mattress should resist a temperature of -30 degree Celsius and should support weight of 110kg.
- Dimensions should be approx.180 x 80 x 7.5 cms.
- Should be individually packed.
- Kit should consist of mattress, motor & spare cell.

308. Respiratory muscle exerciser(Inspiratory muscle trainer device)

- Should incorporate a flow-independent, one-way valve to ensure consistent resistance,
- Should feature an adjustable specific pressure setting to be set at a particular time.
- It should work via inhalation to exercise the respiratory muscles.
- It should have flow independent one-way valve, which should work at constant pressure regardless of patient's airflow.
- It should be easy to set at adjustable pressure, whichcan be used/held in any position.
- It should be easy to clean & should have the capacity to be used with mouthpiece.
- It should be individually packed in poly bag.

309. Absorbable haemostatic gelatin sponge–

- Should be sterile absorbable hemostatic gelatin sponge with uniform porosity.
- Should be non irritating and non toxic.
- Should be Gamma/ Heat sterilized.
- Should be packed in a double blister pack.
- Dimensions: Approximately 8 x 5x 1 cm.

310. Reusable Gel Pack: Reusable Gel packs for pain management.

- It should be able to be kept in freezer for cold therapy.
- It should be able to be microwaved (for appx. 2mintues) / kept in boiling water to provide hot fomentation.
- Gel packs must be of a superior quality and non-toxic filling should be safe and hold temperatures for

longer duration.
- Should be durable, burst & puncture resistant.
- Should have been designed to ensure even spread of gel inside the pack.
- Two sizes: Large: 15 x 30cm (6" x 12") & Medium: 10 X 25 cm (4" x 10").

311. Carotid Shunts :
- Should have A Wide selection for Carotid Endartrectomy procedures. SHUNTS should be available in various sizes and lengths, including Straight, Tapered and "T" Design to add versatility in use.

312. DISP. BULL DOG CLAMPS ALL SIZES
- Disposable' bull dog' clamps for temporary occlusion of vascular structures.
- Atraumatic
- Made with standard quality plastic.
- Should be ETO sterlisable for repeated use.

313. GAUZE PADS

- **Gamma Sterilized 100% cotton + Gauze Combine Dressing**

Size-10cm x 10cm
10cm x 20cm

i. **Gauze Overwrap (of the combined Dressings)**- Leno weave Abs. Gauze Cloth

Thread Count: 21's x 21's Construction of cloth per 2.5cm: 20 x 20

Average Cut size of leno Gauze Cloth Used For Overwrap
10cm x 28cm: Wt: 44.5g/Sq.m
20cm x 28cm Wt: 44.5g/Sq.m

Absobency: Below 10 Seconds Fliorescence: Nil

ii. ABS. Cotton Wool I.P Used:

AV. Layer Thickness of Pad: 8-10mm Av. Cut Sizes I. 10cm x 10cm
II. 10cm x 20cm

Absorbency: Below 10seconds Fliorescence: Nil

iii. **Final Product:** Gauze Cotton Pad B.P. 10cm x 10cm & 10cm x 20cm

iv. **Gamma Rays Sterilization**: Product irradiated with gamma Rays.

314. GAUZE SWAB

- **Gamma Sterilized 100% cotton Gauze Swabs**

Size-10cm x 10cm x 12Ply
10cm x 08cm x 12Ply
08cm x 06cm x 12Ply

i. Cotton Gauze Cloth: Clean, hygine, neutral in ultraviolet rays, ph value 7, with X-Ray detectable threads.

ii. **Construction of Cloth**:
Thread Count: 30's x 30's
Wrap 46 per Dm (+-4)
Weft 40 per Dm (+-4)
(As per FII Schedule)

Absorbency: Below 10 seconds
Fluorescence: NIL
Foreign Matter: 0.3% by weight
Weight: 26.5g/sg.m

iii. **Cotton Gauze Cloth of Size:**

40cm x 30cm
32cm x 30cm
32cm x 18cm

Folded with cut edges in size into the final product sizes.

Size-10cm x 10cm x 12Ply
10cm x 08cm x 12Ply
08cm x 06cm x 12Ply

iv. **Gamma Sterilization:**

Each Gauze swab should be in fully packed condition to be sent for sterilization by Gamma Rays from where batch wise sterilization certificate are provided.

v. **Packing (For All Size)**

1. One pouch with 1 Swab
   20 Pouches in a box

2. One Pouch with 3 Swab
   10 such pouches in a box.

3. One Pouch with 5 Swabs
   6 Such Pouches in a box.

315. Cardiac Sutures as per below specifications:

Specification of Cardiac Surgery Suture

Sl.No	Specification
1	5-Chloro-2 – (2,4 – Dichlorophenoxy) Phenol coated Polyglactin 910 suture of 90 CM ,1/2 Circle Round Body,30 MM,Size-2-0,Pack of 12 Foils
2	5-Chloro-2 – (2,4 – Dichlorophenoxy) Phenol coated Polyglactin 910 suture of 90 CM ,1/2 Circle Round Body,40 MM,Size-1-0,Pack of 12 Foils
3	5-Chloro-2 – (2,4 – Dichlorophenoxy) Phenol coated Polyglactin 910 suture of90 CM ,1/2 Circle Round Body (Heavy),40 MM,Size-1,Pack of 12 Foils
4	5-Chloro-2 – (2,4 – Dichlorophenoxy) Phenol coated Polyglactin 910 suture of 90 CM ,1/2 Circle Reverse Cutting,40 MM,Size-2-0,Pack of 12 Foils
5	Polyamide Black Monofilament 70 CM ,3/8 Circle Reverse Cutting,45 MM,Size-2-0,Pack of 12 Foils
6	Black Braided silk of 90 CM ,3/8 Circle Cutting needle,16 MM,Size-3-0,Pack of 12 Foils
7	Black Braided silk of 76 CM ,3/8 Circle Reverse Cutting needle ,45 MM,Size-2-0,Pack of 12 Foils
8	Black Braided silk of 90 CM ,1/2 Circle Round Body needle 25 MM,Size-3-0,Pack of 12 Foils
9	Black Braided silk 90 CM ,1/2 Circle Round Body,30 MM,Size-2-0,Pack of 12 Foils

10	POLYPROPYLENE Blue Monofilament 90 CM ,1/2 Circle Round Body,25 MM,Size-3-0, Pack of 12 Foils
11	POLYPROPYLENE Blue Monofilament 90 CM ,1/2 Circle Round Body Double Needle,25 MM,Size-3-0,Pack of 12 Foils
12	POLYPROPYLENE Blue Monofilament 90 CM ,1/2 Circle Tapercut Double Needle,17 MM,Size-4-0,Pack of 12 Foils
13	POLYPROPYLENE Blue Monofilament 90 CM ,1/2 Circle Round Body Double Needle,16 MM,Size-5-0,Pack of 12 Foils
14	POLYPROPYLENE Blue Monofilament 60 CM ,3/8 Circle Round Body (282 Microns) Double Needle,10 MM,Size-6-0,Pack of 12 Foils
15	POLYPROPYLENE 60 CM , Taper Point Curved Round Body Double Needle,8 MM,Size-7-0,Pack of 12 Foils
16	Reel 25 MTR 6 Spools in a box , Black Braided Silk,Size-3-0,Pack of 6 Foils
17	Reel 25 MTR 6 Spools in a box , Black Braided Silk,Size-2-0,Pack of 6 Foils
18	Reel 25 MTR 6 Spools in a box , Black Braided Silk,Size-1-0,Pack of 6 Foils
19	Polyethylene tere pthalate Braided Green 5x75 CM White 5x75 CM with Firm PTFE Pledgets 6mmx3mmx1.5mm ,1/2 Circle Tapercut SX Double Needle,17 MM,Size-2-0,Pack of 6 Foils
20	POLYBUTYLATE Braided Green 5x75 CM White 5x75 CM with Firm PTFE Pledgets 6mmx3mmx1.5mm ,1/2 Circle Tapercut SX Double Needle,26 MM,Size-2-0,Pack of 6 Foils
21	BONEWAX 2.0 GM
22	POLYPROPYLENEBlue Monofilament 102 CM ,3/8 Circle Circle Round Body Visiblack(220 Microns) Double Needle,13.1 MM,Size-6-0,Pack of 12 Foils
23	POLYPROPYLENEBlue Monofilament 90 CM , 3/8 Circle Round Body (320 Microns) Double Needle, 13.1 MM,Size-5-0,Pack of 12 Foils
24	POLYPROPYLENE Blue Monofilament 90 CM ,1/2 Circle Round Body Double Needle,26 MM,Size-3-0,Pack of 12 Foils
25	POLYPROPYLENE Blue Monofilament 90 CM ,1/2 Circle Round Body Double Needle,17.4 MM,Size-5-0,Pack of 12 Foils
26	POLYPROPYLENE Blue Monofilament 90 CM ,1/2 Circle Round Body Double Needle,17 MM,Size-4-0,Pack of 12 Foils
27	POLYPROPYLENEBlue Monofilament 60 CM ,3/8 Circle Round Body (220 Microns) Double Needle,9.3 MM,Size-7-0,Pack of 12 Foils
28	POLYPROPYLENEBlue Monofilament 60 CM ,3/8 Circle Round Body (220 Microns) Double Needle,9.3 MM,Size-8-0,Pack of 12 Foils
29	POLYPROPYLENEBlue Monofilament 60 CM ,3/8 Circle Round Body (220 Microns) Double Needle,9.3 MM,Size-7-0,Pack of 12 Foils
30	POLYPROPYLENE Blue Monofilament 75 CM ,3/8 Circle Round Body (380 Microns) Double Needle,13 MM,Size-6-0,Pack of 12 Foils
31	POLYPROPYLENE Blue Monofilament 90 CM ,1/2 Circle Round Body Double Needle,25.9 MM,Size-4-0,Pack of 36 Foils
32	POLYPROPYLENE Blue Monofilament 60 CM ,3/8 Circle Round body Double Needle,13 MM,Size-6-0,Pack of 36 Foils
33	POLYPROPYLENE Blue Monofilament 60 CM ,3/8 Circle Round Body, Taper Point BV175-6 Double Needle,8 MM,Size-8-0,Pack of 36 Foils

34	5-Chloro-2-(2,4 – Dichlorophenoxy) Phenol COATED POLYGLACTIN 910 SUTURE OF 70CM Undyed ,3/8 Circle PS-1 Prime,24 MM,Size-3-0,Pack of 36 Foils
35	5-Chloro-2-(2,4 – Dichlorophenoxy) Phenol COATED POLYGLACTIN 910 SUTURE OF90CM Undyed ,1/2 Circle Round Body Taper Point CT-1,36.4 MM,Size-2-0,Pack of 36 Foils
36	5-Chloro-2-(2,4 – Dichlorophenoxy) Phenol COATED POLYGLACTIN 910 SUTURE OF90CM Undyed ,1/2 Circle Round Body Taper Point CT-1,36.4 MM,Size-1-0,Pack of 36 Foils
37	5-Chloro-2-(2,4 – Dichlorophenoxy) Phenol COATED POLYGLACTIN 910 SUTURE OF90CM Undyed ,1/2 Circle Round Body Taper Point CT-1,36.4 MM,Size-1,Pack of 36 Foils
38	STEEL Monofilament 2x75 CM ,1/2 Circle Round Body Blunt Point,44 MM,Size-6,Pack of 6 Foils
39	STEEL Monofilament 2x75 CM ,1/2 Circle Round Body Blunt Point,44 MM,Size-5,Pack of 6 Foils
40	STEEL Monofilament 4x45 CM ,1/2 Circle Conventional Cutting,48 MM,Size-6,Pack of 12 Foils
41	STEEL Monofilament 4x45 CM ,1/2 Circle Conventional Cutting,48 MM,Size-5,Pack of 12 Foils
42	SUTUPAK 2x75 CM ,Size-4-0,Pack of 12 Foils
43	SUTUPAK 2x75 CM ,Size-3-0,Pack of 12 Foils
44	SUTUPAK 2x75 CM ,Size-2-0,Pack of 12 Foils
45	SUTUPAK 2x75 CM ,Size-1-0,Pack of 12 Foils
46	SUTUPAK 2x75 CM ,Size-1,Pack of 12 Foils
47	SUTUPAK 2x75 CM ,Size-2,Pack of 12 Foils

316. (i) Vented Endotracheal Bougies

About 15 F in calimeter and two CM in length (which might vary slightly depending upon manufacturer).

(ii) Proseal laryngeal Mask Airway (LMA)

LMA Proseal size 1.5, 2, 2.5, 3, 4, 5, Size cuff deflator, Size Introducer (1-2, ½, 3-5)

(iii) Larybngeal Mask Airway O LMA classic

LMA Classc Size 1, 1/12, 2, 2.5, 3, 4, 5, 6, Cuff Deflator size 3-4, 5

(iv) Intubating Mask Laryngeal Airway

LMA Fastrach size 3, 4, 5, Stabiliser Rod, ETT 6.0mm, 6.5, 7.0, 7.5, 8.0mm.

317. Artifical heart Valve Aortic Mechanical Tilting Disc.

- Indigenous, Rigit Tilting Disc, Rotatable heart Valve, Mechanical, All sizes (No. 17, 19, 21, 23, 25, 27)

318. Artificial Heart Valve Mitral Mechanical Tilting Disc

- Indigenous, Rigit Tilting Disc, Rotatable heart Valve, Mechanical, All sizes (No. 23, 25, 27, 29, 31)

23/1/17

Director
Rajendra Institute of Medical Sciences
Ranchi

23/1/17 23/1/17