

MAHARASHTRA MEDICAL GOODS **PROCUREMENT AUTHORITY**

**Request for Proposal (RFP) for Supply, Installation and
Commissioning of Equipments for District Hospital on Turnkey
Basis Group A**

**RFP Reference No: E-274/MMGPA/ Equipments for
District Hospital on Turnkey Basis Group A
(2026-27)**

Date: 08/05/2026

**1st Floor, Arogya Bhawan St. George's Hospital Compound,
Near C.S.M.T. Railway Station, Mumbai - 400 001.**

Maharashtra

Website: <https://mahatenders.gov.in>.

Email: maha.mmghpa2023@gmail.com

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Disclaimer

The information contained in this Tender Document or subsequently provided to Bidder(s), whether verbally or in documentary or any other form, by or on behalf of the Maharashtra Medical Goods Procurement Authority (MMGPA) or any of its employees or advisors, is provided to Bidder(s) on the terms and conditions set out in this Tender Document subject to which such information is provided.

This Tender Document is not an agreement and is neither an offer nor invitation by the MMGPA to the prospective Bidders or any other person. The purpose of this Tender Document is to provide interested parties with information that may be useful to them in making their financial offers (Bids) pursuant to this Tender Document. This Tender Document includes statements, which reflect various assumptions and assessments arrived at by the MMGPA in relation to the project. Such assumptions, assessments and statements do not purport to contain all the information that each Bidder may require. This Tender Document may not be appropriate for all persons, and it is not possible for the MMGPA, its employees or advisors to consider the investment objectives, financial situation and particular needs of each party who reads or uses this Tender Document. The assumptions, assessments, statements and information contained in this Tender Document may not be complete, accurate, adequate or correct. Each Bidder should, therefore, conduct its own investigations and analysis and should check the accuracy, adequacy, correctness, reliability and completeness of the assumptions, assessments, statements and information contained in this Tender Document and obtain independent advice from appropriate sources.

Information provided in this Tender Document to the Bidder(s) is on a wide range of matters, some of which may depend upon interpretation of law. The information given is not intended to be an exhaustive account of statutory requirements and should not be regarded as a complete or authoritative statement of law. The MMGPA accepts no responsibility for the accuracy or otherwise for any interpretation or opinion on law expressed herein.

The MMGPA, its employees and advisors make no representation or warranty and shall have no liability to any person, including any Bidder under any law, statute, rules or regulations or tort, principles of restitution or unjust enrichment or otherwise for any loss, damages, cost or expense which may arise from or be incurred or suffered on account of anything contained in this Tender Document or otherwise, including the accuracy, adequacy, correctness, completeness or reliability of the Tender Document and any assessment, assumption, statement or information contained therein or deemed to form part of this Tender Document or arising in any way for participation in this Tender Document.

The MMGPA also accepts no liability of any nature whether resulting from negligence or otherwise howsoever caused arising from reliance of any Bidder upon the statements contained in this Tender Document.

The MMGPA may, in its absolute discretion but without being under any obligation to do so, update, amend or supplement the information, assessment or assumptions contained in this Tender Document. The Bidder shall bear all its costs associated with or relating to the preparation and submission of its

Bid including but not limited to preparation, copying, postage, delivery fees, expenses associated with any demonstrations or presentations which may be required by the MMGPA or any other costs incurred in connection with or relating to its Bid. All such costs and expenses will remain with the Bidder and the MMGPA shall not be liable in any manner whatsoever for the same or for any other costs or other expenses incurred by a Bidder in preparation or submission of the Bid, regardless of the conduct or outcome of the bidding process.

MMGPA TENDER

Abbreviations and Glossary

Abbreviations and Acronyms	Description
BG	Bank Guarantee
BOM/BOQ	Bill Of Material/Quantity
CA	CHARTERED ACCOUNTANT
CAMC	Comprehensive Annual Maintenance Contract
CBS	Cost Based Selection
CMC	Comprehensive Maintenance Contract
CRC	Consignee Receipt certificate
DPIIT	Department for Promotion of Industry and Internal Trade
EMD	Earnest Money Deposit
EM-II	Entrepreneurs Memorandum
FEMA	Foreign Exchange Management Act
GST	Goods and Services Tax
IA	Implementation Agency
IP	Intellectual Property
IQ	Installation Qualification,
ISO	International Organization of Standardization
KPI	Key Performing Indicators
LLP	Limited Liability Partnership
MMGPA	Maharashtra Medical Goods Procurement Authority
MSME	Ministry of Micro, Small & Medium Enterprises
NEFT	National Electronic Funds Transfer
O&M	Operation and Maintenance
OEM	Original Equipment Manufacturer

OP	Operational Qualification
PAN	Permanent Account Number
PO	Purchase Order
PQ	Performance Qualification
RFP	Request For Proposal
RTGS	Real Time Gross Settlement
SSI	Small-scale industries
TCV	Total Contract Value

BID NOTICE

Tender reference No: E-274/MMGPA/ Equipments for District Hospital on Turnkey basis Group A (2026-27)

Maharashtra Medical Goods Procurement Authority (hereinafter referred to as “Authority”), Mumbai invites **ONLINE BID** for the year **2026-27** in **two envelope system** from the Manufacturers/Importers/Authorized Distributor for the purchase of following items.

Schedule of requirements:

Sr. No.	Equipment Name/Item Name	No.of units	Tender fee (Rs.)	EMD (Rs.)	Consignee and Delivery Address
1	Advance Cath Lab	2	52,500+9,450/- (GST @18%)	72,80,000/-	DH Thane
	Cardiac Operation Theatre				
	ICU with Equipment and turnkey basis				
2	Advance Neurological Operation Theatre with microscope and Equipment on Turnkey Basis	1			
3	Gynac OT-2	2			

Delivery terms: Delivery at the assigned consignee address as per bid conditions.

Interested eligible bidders may obtain further information of technical specifications, required quantities and other terms and conditions applicable for procurement of above items from the tendering website <https://mahatenders.gov.in>.

Bidders will have to compulsorily quote for all Equipment and quantity listed in schedule of requirements and the evaluation will be conducted on combined price quoted for all equipment.

BID SCHEDULE

All bid related activities (Process) like Downloading of bid document, submission of bid and submission of EMD and other documents will be governed as per the time schedule given under Key Dates below:

Sr. No.	Activity	Period
1.	Period of sale of Tender document/ Download	From 08.05.2026 at 05.00pm
2.	Date for Submission of Queries	Before Pre-bid meeting
3.	Date of pre-bid meeting	14.05.2026 at 02.00pm
4.	Dates for uploading tender document	From 08.05.2026 at 05.00pm to 28.05.2026 up to 02.00 pm
5.	Last date and time for submission of tender:	28.05.2026 at 2.00 pm
6.	Date and time of opening of Envelope No.1	29.05.2026 at 02:00pm

Address for communication	1st Floor, Arogya Bhawan, St. Georges Hospital Compound, Near CSMT Railway Station, Mumbai- 400 001. Telephone No.: 022-22717527
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A complete set of tender documents may be purchased by interested eligible bidder by online payment of a non-refundable fee ("Bid/Tender Fee"). Bidder has to pay **online payment of bid fee by RTGS/NEFT to the A/c of "Maharashtra Medical Goods Procurement Authority, Mumbai"** as per the table given and within time as per schedule.

As per Govt. Resolution by Industries, Energy & Labour Department, Maharashtra State, dated 1.12.2016 - Entities who are registered under Micro, Small and Medium Enterprises Development Act, 2006 are exempted from paying Tender Form Fees and Earnest Money Deposits.

The bidders shall be rejected summarily upon failure to follow procedure prescribed in the bid document. The conditional bid shall be rejected.

Chief Executive Officer, Maharashtra Medical Goods Procurement Authority, Mumbai reserves all the rights regarding this bid document and procedure.

Sd/-
**CHIEF EXECUTIVE OFFICER,
MAHARASHTRA MEDICAL GOODS PROCUREMENT AUTHORITY
MUMBAI**

Fact Sheet

Clause Reference	Topic
Commercial Bid Evaluation	<i>The method of selection is LCBS (Least Cost Based Selection-L1)</i>
Downloading RFP Document	RFP can be downloaded from https://mahatenders.gov.in .
Earnest Money Deposit (EMD)	Bidders are required to pay the EMD/Bid Security of ₹ 72,80,000/- /- throughonline mode on https://mahatenders.gov.in or in the form of Bank Guarantee issued by a Scheduled / Nationalized Bank in the form provided in Annexure XVII
Scope of Work	Procurement is for services linked to Supply, Installation and commissioning of or use of various public health institution in Maharashtra.
Pre-bid meeting and clarifications	A pre-Bid meeting will be held on 14.05.2026 at 02.00pm Clarifications may be requested on or before the schedule date and time for submission of pre-bid queries as per the bidding schedule.
Language	Proposals should be submitted in the English language only.
Taxes	For all goods/services supplied, the Bidder shall be entirely responsible for all taxes, stamp duties, license fees, and other such levies imposed/incurred until delivery of the contracted products or services.
Bid Validity	180 days from the date of Technical Bids opening
Submission of Responses	Bidders must upload and submit all the documents on the Mahatender portal https://mahatenders.gov.in Each of the above documents must be uploaded in the format specified for this purpose
Submission of Proposals	This is online process; interested bidders are required to submit the proposal online only by the date and time specified in the RFP.
Last Date of Submission	Proposals submitted after 28.05.2026, 02:00pm will not be accepted bythe e-Tender portal.
Tender Fee	All bidders shall pay tender fee of ₹52,500+9,450 (GST @18%) In case of revision of the above-mentioned tender fee, bidders shall pay revised tender fee.

1. Introduction

Maharashtra Medical Goods Procurement Authority (MMGPA), Mumbai has been formed as per the Maharashtra Medical Goods Procurement Authority Act 2023 (Mah. Act No. XIII of 2023). The procurement authority has been formed with an objective to simplify and expedite the procurement process of medical Goods and Equipment's for health institution, under the state government and certain other health institution in the state as mentioned in the above act.

- 1.1.Chief Executive Officer, Maharashtra Medical Goods Procurement Authority, Mumbai,** hereinafter referred to as the “**Authority**” invites online bid in two Envelope systems for supply of Equipment specified in **Annexure-X** Schedule of Requirements, for use in public health facilities in the State of Maharashtra.
- 1.2.**All bid related activities (“Bid Process”) like Bid Document Downloading, Bid submission and submission of Bid Security/Earnest Money Deposit and other documents will be governed by the bid schedule given in bid notice.
- 1.3.**All activities of this bid are carried out online on Website <https://mahatenders.gov.in>. The bid document is uploaded on Government of Maharashtra, (GoM) e-tendering website <https://mahatenders.gov.in> and has to be downloaded as well as filled up and submitted online only. The Bidders are required to submit online bid fees (Non-refundable) as mentioned through **online payment gateway in A/c of "Maharashtra Medical Goods Procurement Authority, Mumbai"**. In no case, the bid fee should be mixed with EMD amount. The bid shall be liable to be rejected summarily upon failure to follow procedure prescribed in the Bid document.
- 1.4.****The quantities mentioned in the Bid are only approximate estimated quantities. The Chief Executive Officer, Maharashtra Medical Goods Procurement Authority, Mumbai reserves the right to increase or decrease the quantities’, maximum up to 50% of the quantities to be purchased without assigning any reason thereof.**
- 1.5.**If any bidder wishes to lodge any complaint against the other bidder regarding submission of false documents, information etc, the bidder has to submit the complaint before price bid opening along with deposit of **Rs.50,000 (Rupees Fifty Thousand only)** online in favor of “**Maharashtra Medical Goods Procurement Authority, Mumbai**” in the form of deposit. This complaint will be submitted to Appeal Committee along with facts. The amount so deposited shall be refunded, if after scrutiny the complaint is found to be true by the Appeal Committee. However, if the complaint is found to be false and malafide the deposit will be forfeited. No interest shall be paid against this deposit. **Any complaint received after price bid opening will not be entertained.**
- 1.6.**e-bidding process related Queries can be sent on email – eproc.support@maharashtra.gov.in
/Help: The Toll-Free Telephonic Help Desk Number 1800-3070-2232. / Mobile: +91-7878107985, +91-7878107986, +91-7878007972 and +91-7878007973
(9:00 am - 10:00 pm) Mon to Sat.
- 1.7.** The Orders/ Circulars issued by Govt. of Maharashtra from time to time will be applicable to this bid.
- 1.8.**The entire bidding process is governed by rules and clauses mentioned in Maharashtra Government Industries Department Stores Purchase Rules GR dated 01.12.2016, General

Financial Rules 2017 and CVC Guidelines. Any disputes raised by the bidder, shall be resolved within the framework of these rules and clauses

1.9.A bidder who has been blacklisted/ debarred for the quoted product(s) in any state / department/ undertaking/ corporation will not be allowed to participate in Bid for the said product(s) and will not be evaluated.

1.10. The bidder shall, at its own cost and responsibility, visit the site of the proposed works and carry out a detailed site survey. The bidder shall prepare all necessary drawings, layouts and geo-tagged photographs required for proper execution of the work. The Site Visit Report, geo-tagged photographs, and all relevant drawings shall be mandatorily uploaded as part of the Technical Bid submission. Final approval of all drawings, layouts, and technical details from the competent authority shall be mandatorily obtained by the successful bidder prior to commencement of the work.

2. Eligibility criteria

Eligibility criteria for this bid are mentioned:

Sr. No.	Basic Requirement	Specific Requirement	Documents required
1.	Registered Legal Entity	The Bidder shall be any person/Company/ Society/Proprietorship/ Partnership firm/Trust registered under applicable Act in India/ Government-owned enterprise or institution The Bidder shall be – a) A manufacturer having valid manufacturing and equipment license for the items quoted. OR b) An Importer* having valid import license and equipment license for the items quoted. OR c) Authorized Distributor fulfilling all tender conditions. d) Separate Manufacturer's Authorization will be required for each equipment. e) Registered with the GST Authorities. f) Should have a valid PAN number. <i>*Importer refers to a legal Entity such as a Company/ Society/ Trust/Partnership firm registered under applicable Act in India/ Government-owned enterprise or institution that engages in the process of bringing equipment or goods from outside India into the country's borders for commercial purposes.</i> <i>Importer itself shall be responsible for supply and maintenance of the</i>	a. Copy of certificate of incorporation/registration along with charter documents like copy of Memorandum and Articles of Association, and other registration documents according to the nature of entity. b. Attested photocopy of valid manufacturing Equipment/ import license with product list duly approved by the Licensing Authority for each and every product quoted as per specification in the bid. The license must have been duly renewed up to date and the items quoted shall be clearly highlighted in the license. If quoted item is manufactured at different places, Manufacturing License & Performance certificate should be enclosed. c. Manufacturer's Authorization as per Annexure XIV to be provided by Importer, Authorized distributor d. Copy of GST Registration certificate issued by GSTN authorities. e. Copy of PAN Card.

Sr. No.	Basic Requirement	Specific Requirement	Documents required
		<i>equipment as per the terms of RFP and shall not engage any third party for the same)</i>	
2.	Certifications/ registration	The Bidder shall have to provide requisite certifications/registration.	a. Certificates of DPIIT (if applicable) b. Original manufacturer's certificate that the product is being used in country of origin. c. Import Export Certificate (IEC Code) d. Affidavit of Importer regarding equipment being imported in India for last three years.
3.	Litigation	The Bidder should not be involved in any major litigation such as fraud, FEMA violations and any other civil or criminal proceedings that may have an impact of affecting or compromising the delivery of services as required under this contract.	Affidavit as per Annexure VII.
4.	EMD/Bid Security	Bidders are required to pay the EMD/Bid Security of ₹72,80,000 /- through online mode on https://mahatenders.gov.in or in the form of BG as per annexure XV	• EMD in the form of NEFT/RTGS/BG
5.	EMD Exemption	If a Bidder is a Micro Small and Medium Enterprise ("MSME") / Small Scale Industry ("SSI") then subject to submission of relevant documents as provided in this table, such Bidder may be exempted from submitting EMD in accordance with Appendix-8 of Govt. Resolution by Industries, Energy & Labour Department, Maharashtra State, dated 1.12.2016.	a. Requisite Certificate of Micro and Small-scale manufacturing industries registered under Micro, Small and Medium Enterprises development act 2006. b. Importer shall produce authorization Certificate from manufacturer as authorized seller as per Annexure XIV

Sr. No.	Basic Requirement	Specific Requirement	Documents required
			c. EM-II certificates whenever necessary (mandatory for Medium Enterprises)
6.	Conflict of Interest	On the date of submission of the proposal, the Bidder should not be involved in any conflict-of-interest situation.	Undertaking by the authorized signatory as per Annexure I
7.	Blacklisting or banned	On the date of submission of the proposal, the Bidder should not be blacklisted or banned by any ministry/department/attached offices/sub-ordinate offices under Government of India and any State government, Autonomous bodies (established by Central/State govt), any Central/State PSUs for unsatisfactory past performance, corrupt, fraudulent or any other unethical business practices.	Affidavit as per Annexure VII
8.	Debarment	On the date of submission of the proposal, the Bidder should not be debarred	Affidavit as per Annexure VII.
9.	Average Annual Turnover	Average Annual Turnover (in last three financial years (2023-24, 2024-25, 2025-26) shall be at least Rs. 36.40 Cr.	Certificate issued by a statutory auditor/chartered accountant (as attached Annexure-IV) along with Audited Financial Statements confirming the Average Annual Turnover of the Bidder during the stated Financial Years must be submitted.
10.	Net Worth	The net worth of the bidder in the financial year (2025-26) should be positive .	Certificate issued by a statutory auditor/chartered accountant (as attached Annexure-IV).
11.	Technical	Bidder must have successfully undertaken supply, installation &	The Bidder shall provide the documentary evidence

Sr. No.	Basic Requirement	Specific Requirement	Documents required
	Capability	commissioning of quoted Equipment or turnkey work of an amount of Rs. 36.40Cr. during last three financial years ((2023-24,2024-25,2025-26) The bidder must submit work experience documents related to the supply, installation, and commissioning of 1.Cardiac Cath Lab units on turnkey basis (at least two supply orders) 2.Modular operation theatres on turnkey basis (at least five supply orders) 3.ICU equipment (at least two supply orders) in last three financial years (2023-24,2024-25,2025-26) .	in support of its credentials such as agreement copy/ work order / Letter of Award. This should be supported by work completion certificate/customer satisfaction certificates with customer details and client certificate. Statutory auditor's certificate or Chartered Accountant's certificate, as the case may be, shall be submitted for demonstrating the past experience. (as per Annexure number 3)
12.	Production Capacity / Import Quantity	Production Capacity of the Original Equipment (Capital Goods) Manufacturer must be minimum 1.5 times of the quoted order quantity in last one financial year.	Certificate of Statutory Auditor/Chartered Accountant For importers and Authorized distributors Certificate of Statutory Auditor/Chartered Accountant of OEM has to be submitted in Annexure III
13.	Service center	In case of Bidder being Manufacturer, the bidder should have at least 2 service centers in state of Maharashtra. In case of Bidder being Importer/Authorized distributor, the bidder should ensure that OEM have at least 2 service centers in state of Maharashtra.	List of at least 2 service centers in Maharashtra with address and contact details shall be provided by the bidder which shall exist for the period of warranty as mentioned and also, during the additional CAMC/AMC period, if awarded.

Sr. No.	Basic Requirement	Specific Requirement	Documents required
			The Importer/Authorized Distributor shall provide an undertaking from OEM that OEM shall have at least 2 service centers for the period of warranty as mentioned and also, during the additional CAMC/AMC period, if awarded.

3. Conflict of Interest

Conflict of Interest among Bidders/ Agents A bidder shall not have conflict of interest with other bidders. Such conflict of interest can lead to anti-competitive practices to the detriment of Procuring Entity's interests. The bidder found to have a conflict of interest shall be disqualified. A bidder may be considered to have a conflict of interest with one or more parties in this bidding process, if:

- a. they have controlling partner (s) in common; or
- b. they receive or have received any direct or indirect subsidy/ financial stake from any of them; or
- c. they have the same legal representative/agent for purposes of this bid; or
- d. they have relationship with each other, directly or through common third parties, that puts them in a position to have access to information about or influence on the bid of another Bidder; or
- e. Bidder participates in more than one bid in this bidding process. Participation by a Bidder in more than one Bid will result in the disqualification of all bids in which the parties are involved. However, this does not limit the inclusion of the components/ sub-assembly/ Assemblies from one bidding manufacturer in more than one bid.
- f. In cases of agents quoting in offshore procurements, on behalf of their principal manufacturers, one agent cannot represent two manufacturers or quote on their behalf in a particular tender enquiry. One manufacturer can also authorize only one agent/dealer. There can be only one bid from the following: 1. The principal manufacturer directly or through one Indian agent on his behalf; and 2. Indian/foreign agent on behalf of only one principal.
- g. Bidder or any of its affiliates participated as a consultant in the preparation of the design or technical specifications of the contract that is the subject of the Bid;
- h. In case of a holding company having more than one independently manufacturing units, or more than one unit having common business ownership/management, only one unit should quote. Similar restrictions would apply to closely related sister companies. Bidders must

proactively declare such sister/ common business/ management units in same/ similar line of business.

4. Cost of bidding

The bidder shall bear all costs associated with the preparation and submission of their online bids and the Authority will in no case be responsible or liable for those costs, regardless of the conduct or outcome of the bidding process.

5. Corrigendum

The bidder shall note that any corrigendum issued regarding this bid notice will be published on the <https://mahatenders.gov.in>.

6. Pre-bid meeting

The pre-bid meeting will be held at the date, time and venue mentioned in the e-bid Notice.

A prospective bidder requiring any queries/clarification with regard to the bid document shall contact the Authority by letter or email preferably prior to the date of pre bid meeting. Email ID – maha.mmmpa2023@gmail.com

The bidder shall submit the Authorization letter nominating a responsible person of the bidder to attend the meetings like pre bid & negotiation meeting.

The prospective bidder(s) should submit their Queries /Suggestions/ Observations, if any, on or before the schedule date for receipt of queries in writing.

Only Queries/ Suggestions / Observations received in writing within stipulated scheduled time will be discussed and clarified in pre-bid meeting and any modification of the bid documents, which may become necessary as a result of pre-bid meeting, shall be made by Maharashtra Medical Goods Procurement Authority, Mumbai exclusively through the issue of an addendum/ corrigendum and shall form part of the RFP. The RFP uploaded shall be read along with any modification. Authorized representatives of prospective bidder(s) can attend the said meeting and obtain clarification regarding specifications, scope of works & tender conditions. Authorized representatives should have authorization letter to attend the pre-bid meeting, subject to the condition that queries are submitted in time.

Non-attendance at pre-bid meeting shall not be a cause for disqualification of the bidder. The suggestions/ objections/ queries which are not in consonance with the requirement of the bid & received during pre-bid meeting may not be considered, Maharashtra Medical Goods Procurement Authority, Mumbai reserves the right to accept or reject the same.

7. Amendment of bid document

7.1. At any time prior to the deadline for Sale of bid, the Authority may amend the bid documents by issuing Addendum/Corrigendum.

- 7.2. The bidder will not be communicated separately regarding the amendment. Any amendment to the bid shall be placed on the e-bidding website (<https://mahatenders.gov.in>)
- 7.3. Any addendum/corrigendum as well as clarification thus issued shall be a part of the bid documents. And it will be assumed that the information contained in the amendment will have been taken into account by the bidder.
- 7.4. To give prospective bidders reasonable time in which to take the amendment into account in preparing their bids, the Authority shall extend, at its discretion, the deadline for submission of bids, in which case, the Authority will notify all bidders by placing it on website of the extended deadline and will be binding on them.

8. Submission of Bids

The bid should be submitted online through website <https://mahatenders.gov.in> in two envelopes i.e. **Technical Bid in envelop no.1 & Commercial Bid in Envelop no.2** along with EMD & Bid Fee. **All documents should be properly signed, sealed and then uploaded.**

To prepare and submit the bid/offer online all bidders are required to have e-token based DIGITAL SIGNATURE CERTIFICATE. The Digital signature certificate should be obtained from competent authority; However, the e-tender website or helpline numbers may guide you for obtaining the same.

8.1. Technical Bid (Envelope No. 1)

Technical offer must be submitted online at <https://mahatenders.gov.in> in as per the instructions on the portal. The bidder must upload the following documents.

FOLLOWING DOCUMENTS ARE MANDATORY & SHOULD BE ENCLOSED IN SEQUENCE & ORDER, in PDF only along with the table of content:

- 8.1.1. The instruments such as power of attorney, resolution of board etc. authorizing an officer of the bidder for signing the bid document.
- 8.1.2. Authorization letter nominating a responsible person of the bidder to attend the meetings like pre bid & negotiation meeting.
- 8.1.3. Attested photocopy of valid manufacturing equipment license with product list duly approved by the Licensing Authority for each and every product quoted as per specification in the bid. The license must have been duly renewed up to date and the items quoted shall be clearly highlighted in the license. However, Loan Licensee/ third party licensee are not allowed.
- 8.1.4. Proof of Tender Fee/ EMD paid (if exempted appropriate copies for same)/ BG for EMD as per Annexure XVII.
- 8.1.5. The documents comprising the Bid shall also include:

Annexure I: Letter Comprising the Technical Bid

Annexure II: Compliance Sheet for Pre-qualification Proposal

Annexure III: Proforma for Production And Sale Statement

Annexure IV: Annual Turnover statement for three years

Annexure V: Details of Manufacturing unit

Annexure VI: Contract Form

Annexure VII: Undertaking for rates, specification, blacklisting status on Stamp paper duly notarized

Annexure VIII: Mandate Form

Annexure IX: Power of Attorney for signing of Bid

Annexure X: Technical Specifications

Annexure XI: Compliance sheet for Technical Proposal

Annexure XII: Place of delivery

Annexure XIII: Self Declaration Affidavit (on Rs.100/- Stamp Paper)

Annexure XIV: Manufacturer's Authorization From

Annexure XVIII: Checklist duly signed by authorized representative of bidder.

- Copy of Tender Fee RTGS transaction.
- Copies of Balance Sheet and Profit and Loss Accounts for last three years i.e. (2023-24, 2024-25, 2025-26) certified by the Auditor. If last year's Audit report is not finalized the Tenderer should submit Provisional Audit Report signed by Chartered Accountant.
- PAN and GST Registration certificate.
- Copy of the GST return of last quarter.
- Attested copy of valid registration made by manufacturer for offered product under Micro & Small, Medium Industries Development Act, 2006.
- EM-II certificates whenever necessary
- Electrical safety standards if required in Technical Specifications
- Incorporation / Registration Certificate of bidder
- All documents required as per point no. 2 eligibility criteria.
- All other documents as per the terms of RFP.

8.2.Commercial Bid (Envelope No. 2)

- a) All Commercial offers must be submitted online <https://mahatenders.gov.in> as per the instructions given on the portal. No hard copy of commercial bid shall be submitted. In case a bidder submits commercial bid in hard copy, such bid shall be summarily rejected.
- b) Rates should be quoted in the Commercial Bid part-1 of **Annexure XVII** only.
- c) Part-2 of **Annexure XVII** Should be filled by the Bidder. However, it will be used only for the purpose of comparing the rates offered by the bidder in various other bidders.
- d) Price bid in **Annexure XVII** Part-I should not be submitted in technical bid. If the price bid Part-I is submitted in technical bid, the bid will be rejected.

9. Deadline for submission of bid

As per schedule mentioned in bid notice.

10. Opening of Bid

On the date and time specified in the bid notice following procedure will be adopted for opening of bid.

10.1. Opening of Technical Bid (Envelope No.1)

Technical bid (Envelope No.1) of the bid will be opened by the bid opening authority. Bidder is free to attend himself or depute an authorized officer as his representative.

10.2. Opening of Commercial Bid (Envelope No.2)

The Commercial Bid shall be opened as per e-tendering procedure after the evaluation of the technical bid. The Commercial Bid shall be opened only for those Bidders who are qualified in evaluation of Technical Bid. The date and time of Commercial Bid opening will be communicated electronically through portal.

11. Period of Validity of Bid

- 11.1. The bid shall remain valid for a period of 180 days after the date of opening of the technical bid (Envelope No.1)
- 11.2. Prior to the expiration of the bid validity the Authority may request the bidders to extend the bid validity for the period as required by the Authority.

12. Earnest Money Deposit:

- 12.1. All bids must be accompanied by Earnest Money Deposit (EMD – Online)

- 12.2. EMD should be in favor of "Maharashtra Medical Goods Procurement Authority, Mumbai".
- 12.3. EMD will be Exempted as per schedule -8 of G.R.No. SPO- 2014/Pra.Kra.82/Part-III/Industry-4, dated 01.12.2016 issued by Industry, Energy & Labor Department, Mantralaya, Mumbai-1
- 12.4. Bids that do not include the Earnest Money Deposit (EMD), unless exempted as per the RFP terms, will be promptly rejected.
- 12.5. Unsuccessful bidder's EMD will be discharged/ returned after award of contract to the Selected bidder.
- 12.6. The bidder shall not be entitled for any interest on EMD.
- 12.7. The Selected bidder's EMD will be discharged after signing the Contract and submitting the Performance Security Deposit as stipulated.
- 12.8. The EMD shall be forfeited or if bidder is exempted from EMD, the bidder may be debarred/ blacklisted under the following conditions.
- 12.8.1. Bidder fails to accept the purchase order.
- 12.8.2. If a bidder withdraws its tender at any stage during the bidding process.
- 12.8.3. In case of a successful bid, if the bidder fails:
- i. To sign the Contract in accordance with terms and conditions or.
 - ii. To furnish Performance Security Deposit &/ or processing fee as per bid clause 15

13. Prices

- 13.1. The prices quoted and accepted will be binding on bidder and valid for a period of one year from the date of signing of contract and any increase in price during the period of one year will not be entertained.
- 13.2. Purchases may be made on staggered basis as per the requirement of the Authority within one year from the date of signing of the contract.
- 13.3. **Rates should be quoted in Indian Rupees only** for each of the required Equipment separately on consignee address delivery basis according to the unit asked for strictly as per the format of price schedule (**Appendix-II**). Bid for the supply of Equipment with conditions like 'AT CURRENT MARKET RATES' shall not be accepted. The Authority shall not be responsible for damages, handling, clearing, transport and insurance charges and will not be paid. The deliveries should be made as stipulated in the place /consignee address in the purchase order placed with successful tenderer. Conditional bids are not accepted and liable for rejection.

- 13.4.** In case of any enhancement in GST/Other taxes due to statutory Act of the Govt. Or any other taxes newly levied by Govt. after the date of submission of bid and during the bid period, the quantum of additional GST/Other taxes so levied will be allowed to be charged extra as separate item without any change in price structure of the equipment and accessories approved under the bid. For claiming the additional cost on account of the increase in GST/Other taxes, the bidder should produce a letter from the concerned Competent Authorities for having paid additional GST/other taxes on the goods supplied to the Authority and can also claim the same in the invoice.
- 13.5. Fall Clause:** It is a condition of the contract that all through the currency thereof, the price at which bidder will supply the stores should not exceed the lowest price charged by the bidder to any Govt. Organization / Semi Govt. Organization during the currency of the contract and that in the event of the prices going down below the contract prices, the bidder shall promptly furnish such information to the Authority to enable him to amend the contract rates for subsequent supplies.

14. Technical Specifications:

- 14.1.** The bidder shall carefully read and understand the technical specifications, quality requirements, applicable standards, Acts & Rules including the Mandatory requirement for substantiation of their compliance without deviating from bid requirements.
- 14.2.** The bidder shall carefully read & understand the specifications mentioned in **Annexure X**.

15. Evaluation of bids:

- 15.1.** After opening of technical bid, on the scheduled date, time and venue, contents of the tenders received online through e-tendering process along with all prescribed mandatory documents will be examined.
- 15.2.** The Authority shall scrutinize the documents mentioned above for its eligibility, validity, applicability, compliance, and substantiation including post qualification criteria as per bid document.
- 15.3.** The Authority shall also analyze that there is no collusive or fraudulent practice involved in the entire tendering process amongst all the tenders received.
- 15.4.** The technical scrutiny shall be on the basis of submitted substantiation documents and Medical Device Rules 2017 including allied standards of BIS codes.

- 15.5. 1. All the equipment's supplied should comply and conform to BIS/CE certificate from notified body with a 4 digit number /USFDA certificate. The equipment must be approved by CDSCO and should have ISO-13485 Certificate.
1. AERB Certificate for Equipment's using Ionizing radiation
- 15.6. Any bid that does not meet the bid conditions laid down in the bid document will be declared as not responsive and such bids shall not be considered for further evaluation. However, the bidders can check their bid evaluation status on the website.
- 15.7. Bids which are in full conformity with bid requirements and conditions shall be declared as responsive bid for opening price bid on the website and price bid of such bidders shall be opened later, on a given date and time.
- 15.8. Authority can call for original documents for verification and any other supporting documents.

16. Technical Qualification Criteria

- 16.1. Bidders who meet the pre-qualifications/eligibility requirements would be considered as qualified to move to the next stage of Technical and Financial evaluations.
- 16.2. The Medical equipment offered should meet all the technical and functional specifications given in the Annexure-X, Non-compliance to any of the technical and functional specification will attract rejection of the proposal.
- 16.3. Compliance on each parameter with detailed substantiation how the offered product meets the requirement. (Do not write simply Yes or Complied, If written, then bid will be rejected)
- 16.4. Bidders, whose bids are responsive, based on minimum qualification criteria as in Pre-Qualification Criteria would be considered technically qualified and proceed for demonstration as per clause no.27

16.5. Commercial Bid Evaluation

- 16.5.1. The Financial Bids of technically qualified Bidders will be opened on the prescribed date in the presence of Bidder representatives, who wish to attend.
- 16.5.2. The Bidder, who has submitted the lowest combined Commercial bid for all equipment, shall be selected as the ("Lowest Bidder") i.e., L1 Bidder and shall be called for further process leading to the award of the contract.

16.5.3. Only fixed price financial bids indicating total prices for all the deliverables and services specified in this bid document will be considered.

16.5.4. The bid price will include all taxes and levies and shall be in Indian Rupees.

16.5.5. Any conditional bid would be rejected.

16.5.6. Errors & Rectification: Arithmetical errors will be rectified on the following basis:
“If there is a discrepancy between the unit price and the total price that is obtained by multiplying the unit price and quantity, the unit price shall prevail and the total price shall be corrected. If there is a discrepancy between words and figures, the amount in words will prevail”

16.6. Final Selection

16.6.1. The Bidder submitting the lowest combined Commercial bid for all equipment shall be the L-1 Bidder based on the Least Cost methodology (the “L-1 Bidder”). The Bidder whose Proposal is adjudged as responsive and meets the requirements in its technical evaluation in accordance with this RFP and who quotes the lowest price in its Commercial bid shall ordinarily be declared as the selected Bidder (the “Selected Bidder”). In the event that the Authority rejects or annuls all the Bids, it may, in its discretion, invite all eligible Bidders to submit fresh Bids hereunder. In the case of two or more Bidders quoting the same value, the Bidder having the higher annual average turnover as per the eligibility criterion would be the first in sequence.

16.6.2. In the event that 2 (two) or more Bidders are qualified in terms hereof as L-1 (the “Tie Bidders”), then such Bidder having the higher annual average turnover as per the eligibility criterion would be the first in sequence. Further, if Tie Bidders are found to be having the same average annual turnover also, then the number of projects undertaken in the last 03 (three) years shall be taken into consideration and the Bidder having the higher number of projects shall be awarded as Lowest Bidder. In case, Tie Bidders are found to be having the same number of projects undertaken also, then such Tie Bidders shall be asked to further submit a best and final offer quote (“Best and Final Offer”) which shall be a lower price than their common L-1 quote for being eligible for consideration; and in such event lower price offered with respect to the L-1 quote among them shall be the Selected Bidder.

17. Performance Security Deposit & Contract

17.1. The Selected Bidder shall furnish the Performance Security Deposit to the Authority within 15 days from the date of communication of Selected Bidder for an amount of (3%) of the contract/order value and enter into Contract by paying requisite stamp duty in favor of Govt. of Maharashtra. Cost of stamp duty will be as per The Maharashtra Stamp Act. The cost of Stamp paper should be borne by the bidder.

- 17.2.** The Bidder shall provide Performance Security Deposit in the form of Demand Draft in favor of “Maharashtra Medical Goods Procurement Authority, Mumbai” payable at Mumbai from any Nationalized or Scheduled bank or in the form of Bank Guarantee issued by a Scheduled / Nationalized Bank in the form provided in **Annexure XVI**.
- 17.3.** The Performance Security Deposit will be discharged by the Authority and returned to the Supplier upon receipt of demand form supplier, not later than 60 days following the date of completion of the Supplier's performance obligations, including the warranty obligation, under the contract.
- 17.4.** The Performance security deposit shall be forfeited as a compensation for any loss resulting from the failure to perform the obligations under the contract or in the event of termination of the contract or in any event as the Authority thinks fit and proper.
- 17.5.** For items quoted by importer/Authorized Dealer, the bidder will enter into Tri parties' agreement. The agreement will be in between Maharashtra Medical Goods Procurement Authority, Mumbai + Importer/Authorized Distributor + Manufacturing Company on Non-Judicial Stamp Paper of requisite value.
- 17.6.** The micro and small enterprises registered with the National Small Industries Corporation (NSIC) and the Micro, Small and Medium Enterprises Development Institute has been exempted from depositing the security amount for the purchase up to Rs. 25,000/- and if the purchase price is higher than Rs. Twenty-Five (25) thousand then, they shall be required to keep the amount to the extent of 3% of the purchase price or Rs. Ten (10) thousand, whichever is less, as security. However, the goods having price more than Rs. Twenty-five (25) thousand, the first twenty-five thousand should not be taken into calculation.

18. Proprietary data and Patent Rights

- 18.1.** All documents and other information supplied by the Purchaser or submitted by a Bidder to the Purchaser shall remain or become the property of the Purchaser. Bidders are to treat all information as strictly confidential and shall not use it for any purpose other than for preparation and submission of their Bid. The Purchaser will not return any Bid, or any information provided along therewith.
- 18.2.** Patent Rights: The supplier indemnify the purchaser against all third-party claims of infringement of patent, trademark or industrial design rights arising from use of the Goods or any part thereof in India.

19. Award of Contract

- 19.1.** The Authority will award the Contract to the Selected Bidder whose bid has been determined to be responsive and has been determined to be the Lowest Bidder (L1).

- 19.2.** The Authority will place supply orders on staggered basis if required during the contract period.
- 19.3.** A contract will not be awarded to the Selected Bidder if Performance Security Deposit is not deposited by him to the Authority within stipulated time limit, if any extension for the submission of performance security has not been asked.
- 19.4.** The Selected Bidder who is liable for award of contract should transfer the Performance Security as per Clause 15 of this RFP.
- 19.5.** The Selected Bidder shall sign the Contract within a period of 15 (fifteen) days of issue of award of Contract.

20. Period of Contract

The contract shall commence from the date of its signing and will be valid for a period of twenty four months from the date of supply or delivery of all equipment under the Contract.

21. Deliverables and Timelines

The Bidder should deliver the medical equipment as per schedule given below:

Sl. No.	Deliverable	Location for Delivery	Timelines
1.	Supply / Delivery of equipment	As per Annexure XII.	Within 60 days for goods manufactured in India and 90 days for Imported goods from the issue of the PO (Purchase Order).
2.	Installation of Equipment		Within 7 Days from the delivery of equipment(s). In Exceptional circumstances due to unavoidable circumstances at Consignee level, CEO MMGPA shall review the situation and allow extension in installation period.
3.	Operational Acceptance of the equipment		Within 7 days from the Installation.
4.	Comprehensive warranty period		2 years from the date of successful installation.
5.	Frequency of visits to consignee addresses concerned during		One visits every three months (4 visits in a year) for periodic/preventive maintenance

Sl. No.	Deliverable	Location for Delivery	Timelines
	Warranty/CMC		and any time for attending repairs/break down calls.

22. Delivery Period

Sr. No.	Item	Units	Period
1	Advance Cath Lab	2	Within 60 days for goods manufactured in India and 90 days for Imported goods from the issue of the PO (Purchase Order).
	Cardiac Operation Theatre		
	ICU with Equipment and turnkey basis		
2	Advance Neurological Operation Theatre with microscope and Equipment on Turnkey Basis	1	
3	Gynac OT-2	2	

23. Place of delivery

The goods should be delivered to the consignee's addresses safely undamaged and tallied. The consignees' addresses are mentioned in **Annexure-XII**

23.1. Transfer of Title of Equipment with Accessories

Unless otherwise stated in the contract, notwithstanding any inspection and approval by the consignee on the Selected Bidder's premises, or any payments made to the Selected Bidder, property in the equipment (and resultant rights and liabilities) shall not pass on to the consignee until the equipment have been received, inspected, and accepted by the consignee or its representative. The equipment and every constituent part thereof, whether in the possession or control of the consignee, his agents or servants or a carrier, or the joint possession of the Selected Bidder, his agents or servants and the consignee, its agents, or servants, shall remain in every respect at the risk of the Selected Bidder, until their actual delivery is accepted by the consignee or its representative. The Selected Bidder shall alone be entitled and responsible for making claims against any carrier in respect of non-delivery, short delivery, mis-delivery, loss,

destruction, damage, or deterioration of the equipment entrusted to such carrier by the Selected Bidder for transmission to the consignee or its representative.

23.2. Insurance

Goods should be dispatched at carrier's risk, failing which they should be properly covered by transit Insurance with Government insurance Fund, MHADA, Bandra (East), Mumbai-400 051 or New Address

- 1) The goods are inserted in packages in a safe and in a sound condition,
- 2) According to the normal trade practice packing used is good. Failure to comply with these instructions may result in non-acceptance of transit risk by the Insurance Officer.

24. Guarantee/Warranty Terms

- a. The Selected Bidder has to warrant that the Goods supplied under this Contract are new, unused, of the most recent or current models and incorporate all recent improvements in design and materials unless provided otherwise in the Contract.
- b. The Selected Bidder further have to warrant that the Goods supplied under this Contract shall have no defect arising from design, materials or workmanship (except when the design and/or material is required by the Tender Inviting Authority's specifications) or from any act or omission of the Selected Bidder, that may develop under normal use of the supplied goods.
- c. All the equipment's including the accessories supplied as per the technical specification as mentioned in the bidding document should carry comprehensive warranty (including all spares) for a period mentioned in this document in the first instance. During this period, the successful Bidder shall replace all defective parts and attend to all repairs/break downs and undertake stipulated number of preventive maintenance visits to every user installation site. The cost of spare parts for all replacements has to be borne by the Selected Bidder during the period of comprehensive warranty. The items which are not covered under warranty should be clearly mentioned along with rate of the items.
- d. On expiration of the comprehensive warranty period, the Selected Bidder shall be willing to provide after sales support for an additional period on mutually agreed terms and conditions.
- e. The prospective Bidder, who is Importer/ Authorized Distributor, shall submit an undertaking from the Original Equipment Manufacturers (OEM) that they are willing to provide spare parts for the period of warranty as mentioned and also, during the additional CMC/AMC period, if awarded. The OEM shall also assure continuity of service to their product, even in the event of change in Authorized service partner/ dealership or the Bidders – their existing Authorized service partner/ dealers shall ensure and provide service during the warranty / CAMC period. The undertaking from OEM is an essential document forming part of the Technical Bid, without which the tenders will be rejected summarily in the first round itself.

- f. After sales service centers in Maharashtra should be available as part of the pre-qualification and the Bidder shall provide proof of their capability to undertake such maintenance/repair within the stipulated time. (Companies without service center/partner in Maharashtra should give an undertaking that they shall establish/appoint their service center/partner within a period of three months of the signing of contract)
- g. The Selected Bidder shall provide preventive maintenance as per the frequency mentioned in this document during the warranty period. The Bidder shall attend any number of break down/repair calls as and when informed by the Consignee authority.
- h. Upon receipt of such notice for repair/breakdown from the user institution, the Successful Bidder shall, within the period as specified in this document, and with all reasonable speed, repair or replace the defective goods or parts thereof, without cost to the Tender Inviting Authority.
- i. If the successful Bidder, having been notified, fails to rectify the defect(s) within the period specified/
mentioned in this document, the Tender Inviting Authority may proceed to take such remedial action as may be deemed necessary, at the Selected Bidder's risk and cost and without prejudice to any other rights which the Tender Inviting Authority may have against the successful Bidder under the contract.
- j. Failure to attend the repairs in time or failure to attend the stipulated preventive maintenance visit or failure to replace the defective equipment's or to provide stand by equipment if the fault/down time exceeds the stipulated period or to ensure the stipulated up-time in a year shall lead to forfeiture of the performance security and/or may lead to blacklisting/debarring of the defaulting Bidder.
- k. The equipment which requires quality assurance test shall be done at free of cost immediately after
installation, during the comprehensive warranty period, during the CMC / AMC period, by the demand of User and also when major spares are replaced.
- l. Any mandatory approval required for installation shall be obtained by the successful Bidder in liaison with the respective authorities.
- m. The Bidder shall submit the parameters which require calibration, and the frequency of calibration required.
- n. The Bidder shall undertake on-site calibration of the equipment every year as part of the after sales service during the period of comprehensive warranty, CMC/AMC or on demand from the user.
- o. The Bidder shall also have to submit whether periodic replacements of consumable items are required for proper functioning of their quoted machine/Equipment If yes they should submit the list of such consumables along with price list and frequency of replacement per year, if the same is not replaced free of cost during warranty / guarantee period.
- p. The offered warranty includes:
 - i. Visits to the user institutions at frequencies prescribed as part of preventive maintenance.
 - ii. Testing & calibration as per technical/service/operation manual of the manufacturer or as per the period specified or as per the demand of the user.
 - iii. Quality Assurance tests (if applicable).

- iv. The cost of labour for all repairs/ and all spares required for replacement during repairs all kinds of accessories, Probes, all types of sensors and transducers, Electrodes, Detectors, battery, battery for UPS, other vaccumatic parts etc. wherever applicable and also the accessories and other devices supplied along with the equipment's which forms part of the equipment system, without which it cannot perform satisfactorily.
- v. The exclusion of warranty of any vital equipment parts will be compared with offers of other Bidders during evaluation of the bids and this may be taken into consideration in deciding the successful Bidder on the basis of expert advice.
- vi. The Bidder shall provide up-time warranty of complete equipment as mentioned in this document,
the uptime being calculated on 24 (hrs) X 7 (days) basis failing Warranty period will be extended for every additional day of down time equal to one week.
- vii. The installed software should be the latest one for the particular model and all future software updates should be provided free of cost during the Warranty period.

25. Warranty Period

- a) The "Complete System" shall remain under warranty period of 2 year from the date of satisfactory installation The Complete System should include the basic unit and allied supporting components to be supplied by the bidder along with basic unit.
- b) During warranty period, bidder shall provide at least four maintenance visits per year at regular interval for usual maintenance and supervision. If bidder fails to provide these maintenance visits at regular interval, a proportionate deduction in the form of damages on pro-rata basis will be recovered from the bidder from the Performance Security amount in accordance with KPIs. In case the Performance Security is not adequate, Authority shall have right to recover the losses / damages from other sources as well.
- c) Bidder shall also attend all breakdown calls within 3-7 days of the receipt of the information from Consignees through fax/e-mail/mobile/SMS etc.
- d) During warranty period, bidder shall maintain and keep 95% uptime per year of the "Complete System."
- e) as per calculation given below: -.
- f) 1 Year = 365 days
- g) 95% of 365 days = 347 Days per annum
- h) The bidder shall compensate the uptime less than the specified above for every additional day of down time over and above 18 days stipulated above, warranty period will get extended by one week as penalty at no extra cost i.e., the extended penalty period will be equal to one week for every additional day of down time.
- i) During warranty period, bidder will make the "Complete System" in satisfactory working condition. In case, any spare parts need replacement due to normal wear and tear, bidder will supply and install the same for which no additional payment is to be made. If any spares / accessories / consumables etc. are not replaced by the bidder during warranty period, bidder

should mention it clearly with name of the items with frequency of replacement and its rate with a validity to cover warranty period.

- j) In case, the bidder is not able to provide services (and the items / accessories is not functioning as the reason thereof) due to natural calamity (act of God), Political unrest, Riot and fire at the user site, then in such a situation the warranty period will be extended by the period for which the item / accessories could not be operated because of supplier not been able to provide services.
- k) During warranty period, in case of any alleged damage due to accident / human error, a committee under the Chairmanship of CEO, MMGPA, Mumbai with one member from the bidder and one member from the Authority will decide the authenticity of the claim. The decision of the committee shall be final and binding on both the parties.
- l) Replacement of equipment's/ parts and service thereof due to manufacturing defects during warranty period will be entirely at the supplier's cost. The expenditure incurred on account of transport, installation, commissioning, and various duties involved in the replacement of equipment's/ parts shall be borne by the supplier.

26. After Sales Services

- a) After expiry of the warrantee/Guarantee period of the equipment, the Selected Bidder will have to undertake the Comprehensive Annual Maintenance contract (with spare parts) of the Complete System for the further life span of equipment. The life span of the equipment shall not be less than ten years. In special circumstances the total life span of the Equipment/ items may be reduced by the Authority.
- b) The Complete System should include the basic unit and allied supporting components to be supplied by the bidder along with basic unit.
- c) During Comprehensive Annual Maintenance Contract, bidder shall provide at least four maintenance visits per year at regular interval for usual maintenance and supervision. If bidder fails to provide these maintenance visits at regular interval per year, a proportionate deduction in the form of damages at the rate of 1/2% of CAMC contract amount per week will be deducted maximum up to 5%.
- d) Bidder shall also attend all breakdown calls within 3-7 days of the receipt of the information from Consignees through fax/e-mail/mobile/sms etc.
- e) During Comprehensive Annual Maintenance Contract, bidder shall maintain and keep 95% uptime per year of the "Complete System" as per calculation given below: -.
- f) 1 Year = 365 days
- g) 95% of 365 days = 347 Days per annum
- h) The bidder shall compensate the uptime less than the specified above for every additional day of down time over and above 18 days stipulated above, warranty period will get extended by one week as penalty at no extra cost i.e., the extended penalty period will be equal to one week for every additional day of down time.

- i) During Comprehensive Annual Maintenance Contract, bidder will make the “Complete System” in satisfactory working condition. In case, any spare parts, PCB etc. needs replacement due to normal wear and tear; bidder will supply and install the same for which no additional payment is to be made. If any spares / consumables / accessories etc. are not covered under Comprehensive Annual Maintenance Contract charges, it should be clearly mentioned with frequency of replacement and with rate. The validity of rate of such items should also be mentioned clearly. What will be the rate of escalation on the quoted rate after expiry of the validity of rate of such item must be mentioned.
- j) The payment of Comprehensive Annual Maintenance Contract will be made on half yearly basis after submission of satisfactory functioning report of the Complete System by the officials authorized by the Authority.
- k) In case, the bidder is not able to provide services (and the items / accessories is not functioning as the reason thereof) due to natural calamity (act of God), Political unrest, Riot and fire at the user site, then in such a situation the Comprehensive Annual Maintenance Contract will be extended by the period for which the item / accessories could not be operated because of supplier not been able to provide services.
- l) During Comprehensive Annual Maintenance Contract, in case of any alleged damage due to accident / human error, a committee under the Chairmanship of CEO, MMGPA, Mumbai, with one member from the bidder and one member from the Authority will decide the authenticity of the claim. The decision of the committee shall be final and binding on both the parties.

27. Comprehensive Annual Maintenance Contract

- a) The decision to enter into CMC or AMC will be determined on the basis of cost and complexity of the equipment by the Tender Inviting Authority, at its discretion, prior to the expiration of warranty period. In case if it is decided by Authority to enter into CAMC contract, the vendor will have to submit CAMC agreement at the time of supply of items. The Performance Security Deposit for CAMC contract will be 10% of the CAMC cost.
- b) The Comprehensive Maintenance Contract (CMC) is otherwise an extended warranty. All the terms and conditions agreed by the successful Bidder for executing the comprehensive warranty of the equipment shall be extended during the period of CMC, only difference being the payment of CMC charges is absent during the period of comprehensive warranty.
- c) The cost of CMC, accessories, spares, and consumables as in case may be quoted along with taxes applicable, if any. The taxes to be paid extra, to be specifically indicated. In the absence of any such stipulation the price will be taken inclusive of such taxes and no claim for the same will be entertained later.
- d) Failure/refusal on the part of the successful tender supplying/installing the equipment's to enter into CMC with the Tender Inviting Authority, at the end of the Comprehensive Warranty Period, if the Authority, as the case may be, desires so, shall lead to forfeiture of performance security and may also result in the blacklisting/debarring of the Bidder.
- e) The payment of the agreed CMC charges will be made as per frequency for payment after satisfactory

- f) completion of said period, on receipt of service report/ break down report from the user.
- g) The Bidder shall also have to submit whether periodic replacements of consumable items are required for
- h) proper functioning of their quoted machine/Equipment? If yes, they should submit the list of such
- i) consumables along with price list and frequency of replacement per year if the same is not included in quoted
- j) Comprehensive Annual Maintenance Contract charges per year.
- k) The tenderer will have to agree to enter into an Annual Maintenance Contract (AMC)@ 0.5% per year of the Order value of the machinery / equipment (excluding taxes).
- l) Where required, tenderer will have to agree for Comprehensive Maintenance Contract (CMC) inclusive of all spares @ 5% of the Order value (excluding taxes) of the equipment per year. The period of such AMC / CMC will be of 8 years after completion of warranty period. In case of non-compliance of AMC/CMC the supplier will be liable to pay a damages. Such damages shall be recovered from the amount of the Performance Security submitted. Payment for AMC /CMC on yearly basis will be made by the user's institution, at the end of year after satisfactory performance report from the end user.

Key Performing Indicators (KPI)

Sr. No.	SLA Description	Resolution Target	Liquidated Damage (LD)
1.	Supply/Delivery of equipment(s)	Within 60 days for goods manufactured in India and 90 days for Imported goods from the issue of the PO (Purchase Order).	1/2% per week delay and thereof of the Purchase Order value, maximum up to 5% value of the Purchase Order
2.	Installation of Equipment	Within 7 days of supply of equipment(s)	1/2% per week delay and thereof of the Equipment Value, maximum up to 5% value of the Equipment
3.	Operational Acceptance of the equipment(s)	Within 7 days of Installation of equipment(s)	1/2% per week delay and thereof of the Equipment Value, maximum up to 5% value of the Equipment
4.	Any defect in EQUIPMENT or any of its part	Resolution: ≤ 3 Days from the time the call is logged by end user.	1/2% of cost of the Equipment & accessories will be deducted per week up to maximum 5% of PO Value post which purchaser may proceed to take such remedial action as may be necessary. Damages will be recovered from due

Sr. No.	SLA Description	Resolution Target	Liquidated Damage (LD)
			payment to bidder or from Performance Security deposit. Once the Performance Security deposit get forfeited, the bidder will be required to recoup the Performance Security deposit. if the bidder fails to recoup the Performance Security deposit or settle the damages amount, the bidder will be blacklisted for three years. (Performance Security deposit will be released after settlement of damages.)
5.	Warranty	Resolution: ≤3-7 Days from the time the call is logged by end user.	The Selected Bidder must ensure 95% uptime during warranty period. In case of downtime, warranty period will be extended for period of downtime. If the equipment is not attended within 3 days for Mumbai, 7 days for other places the supplier will be liable to pay a damages of 1/2% of purchase cost for every week of delay. Such damages will be recovered from the amount of security deposit. Certificate of such uptime / downtime issued by the end user will be binding for the supplier.
6.	Annual Maintenance Contract (For rendering services)/ The tenderer will have to agree to enter into an Annual Maintenance Contract (AMC)@ 0.5%per year of the Order value of the machinery / equipment (excluding taxes).	Resolution: ≤3-7 Days from the time the call is logged by end user.	1/2% per week delay and thereof of the Equipment Value, maximum up to 5% value of the Equipment

Sr. No.	SLA Description	Resolution Target	Liquidated Damage (LD)
7.	Comprehensive Annual Maintenance Contract: - Where required, tenderer will have to agree for Comprehensive Maintenance Contract (CMC) inclusive of all spares @5% of the Order value (excluding taxes) of the equipment per year. The period of such AMC / CMC will be of 8 years after completion of warranty period. In case of non-compliance of AMC/CMC the supplier will be liable to pay damages. Such damages shall be recovered from the amount of the Performance Security submitted. Payment for AMC /CMC on yearly basis will be made by the user's institution, at the end of year after satisfactory performance report from the end user.	Resolution: <=3-7 Days from the time the call is logged by end user.	1/2% per week delay and thereof of the Equipment Value, maximum up to 5% value of the Equipment

28. Demonstration

- a. Demonstration of quoted product is mandatory for technically qualified bidders before the opening of financial bid. Such bidders shall produce the quoted product for demonstration on the date (approximately within 7 days from the date of declaration of technically qualified bidder) and at the place specified by the MMGPA, Mumbai, India. If the concerned bidder fails to do so, the said bid will be summarily rejected and the EMD will be forfeited. If demonstration / testing of equipment offered by the bidder is found to be non-satisfactory, then the said bid will not be considered, and the bid will be rejected.
- b. Consumables should submit in 3 samples.

- c. In case of Equipment for which it is not possible to arrange demonstration at the MMGPA due to technical reasons like requirement of regulatory certificates and bulky equipment, demonstration shall be arranged at the site where the equipment is stored by the bidder. Demonstration of such equipment shall be done on the date (approximately within 7 days from the date of opening of technical bid) and at the place specified by the MMGPA, Mumbai, India. If the concerned bidder fails to arrange the product for the demonstration, or after the demonstration, the said product does not satisfy the test, the bid of the said bidder will be rejected and EMD will be forfeited. The decision to arrange Demonstration onsite shall be at the sole discretion of CEO, MMGPA and will be binding on all the bidders. The cost of arranging the demonstration shall be borne by the bidder.
- d. The demonstration of equipment should be attended by empaneled members as decided by CEO, MMGPA from members empaneled by Government Resolution dated 31.10.2017. The video recording of the demonstration shall be mandatorily done. Soft copy of the Video Recording shall be handed over to the representative of MMGPA who witnessed the demonstration, at the site itself. Arrangement of Video Recording shall be done by the bidder at their own cost. The demonstration report shall be prepared on same day and signed by all present including representatives of bidder and the report of the demonstration should be scanned and mailed to General Manager (Technical), MMGPA on office mail I.D. on the same day.

29. Pre-dispatch Inspection

The Pre-dispatch inspection will be done by a team appointed by CEO, MMGPA prior to shipment and the team will inspect the equipment physically in accordance to the tender specifications and certify the following things: -

- a. The equipment is new and made of virgin material, it is not reconditioned / retrofitted.
- b. The name of the equipment manufacturer, model and serial nos. of equipment & country of manufacturer.
- c. "Maharashtra Government (MMGPA) Supply" shall be affixed on each equipment item by using aluminum strip of appropriate size.
- d. The team shall clearly mention in their report the purchase order no., date and name of consignee.
- e. Packing List: - It shall be issued by original manufacturer/importer/ Authorized Distributor.
- f. Country of origin Certificate: - It shall be issued by competent authority of that country (Chamber of commerce of concerned Country) mentioning Name of manufacturer, consignee, name of equipment, invoice No., Qty. etc.
- g. Original Invoice issued by bidders / manufacturer should contain following details: -
- h. The name of the equipment manufacturer, model, and serial nos. of the equipment.
- i. Name of the consignee -list attached.
- j. Allowances of pre-dispatch inspection team shall be borne by the Bidder.

30. Consequences of default by Bidder

- 30.1. Damages on late delivery:** If the supplier fails to deliver the goods or any consignment thereof within the period prescribed for delivery, the purchaser shall be entitled to recover 1/2 % of the value of the delayed supply for each week of delay or part thereof subject to the maximum of 5%, calculated from the next day after the agreed delivery period is over.
- 30.2. Consequences of inferior substandard/supply:** If the equipment supplied is found of inferior quality or not as per specifications, the contractor shall replace the equipment within one month from the date of intimation at the cost & risk of the contractor and also liable to pay the fine imposed by the consignee, failing which Performance Security Deposit of the contractor shall be forfeited and the tenderer shall be liable for penal action including black-listing etc. In addition to the forfeiture of the Performance Security Deposit, if any fine is imposed by the consignee same shall be recovered from other dues to the contractor from – his bills payable.
- 30.3. Replacement of Rejected materials:** - Tenderer / Contractor shall have to replace rejected material with approved one. The supplier shall remove the rejected material within 15 days failing which the same will be disposed of by consignee at the risk and cost of contractor without any further correspondence in this regard.
- 30.4. Risk & Cost Purchase:** - In case the Contractor/s, shall at any time during the continuance of these presents fails to supply satisfactorily the equipment within the prescribed time as herein provided and or in case shall fail to replace any part/s that may have been rejected with other of approved quality, the consignee shall be at liberty forthwith to procure the same in the open market at the risk and cost of the contractor/s. Similarly if the work underlying the contract is not executed satisfactorily within the stipulated period or after the same having been disapproved wholly or partly is not rectified or re-done to the satisfaction of the Officer in Charge within the said specific period, the consignee shall get the same executed or rectified or re-done through any other agencies, at the entire risk of the supplier and expenses thereby incurred, shall be payable by the supplier and / or may be deducted from any moneys due or become due to the contractor/s and the consignee may, however fix such other subsequent date as he may think fit by which the delivery of the said article and or execution of the said work shall be completed.
- 30.5. Blacklisting:** - The firm shall be black-listed for a period of two years, if it is found that: -
- a. Forged documents are submitted.
- OR
- b. If it becomes responsive on the basis of submission of bogus certificate / information.

- 30.6.** In case of non-supply of equipment / accessories or supply of substandard quality or supply of equipment / accessories found to have been previously used or having re-furbished parts.
- 30.7.** Replacement of equipment's/ parts and service thereof due to manufacturing defects during warranty period will be entirely at the supplier's cost. The expenditure incurred on account of transport, installation, commissioning, and various duties involved in the replacement of equipment's/ parts shall be borne by the supplier.

31. Third Party Inspection

- 31.1.** In the event of challenge raised about the technical specifications or the working of the equipment by the technically disqualified bidder/s or the user department, the CEO, MMGPA, Mumbai will have the authority to appoint third party inspection. The cost of third-party inspection shall be borne by the tenderer, but such "third-party inspection" will be at the discretion of CEO. MMGPA.

32. Installation & Site plan

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

Specify the following points for installation of the System: -

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

33. Force Majeure

- 33.1.** If, at any time, during the continuance of this contract the performance in whole or in part by either party of any obligation under this contract shall be prevented or delayed by reason of any war, hostility, acts of the public enemy, civil commotion, sabotage, fires, floods, explosions, epidemics, quarantine restriction, strikes, lock-outs or acts of God (hereinafter referred to as "events"), provided notice of happening of any such eventuality is given by

either party to the other within 21 days from the date of occurrence thereof, neither party shall by reason of such event, be entitled to terminate this contract nor shall either party have any claim for damages against the other in respect of such nonperformance or delay in performance; and deliveries under the contract shall be resumed as soon as practicable after such event has come to an end or ceased to exist, and the decision of purchasing officer as to whether the deliveries have been so resumed or not, shall be final and conclusive, provided further that if the performance in whole or part of any obligation under this contract is prevented or delayed by reason of any such event for a period exceeding 60 days, either party may at its option terminate the contract PROVIDED ALSO that if the contract is terminated under this clause, the purchaser shall be at liberty take over from the contract at a price to be fixed by the purchasing Officer which shall be final all unused, undamaged and acceptable materials, bought out components and stores in course of manufacture in the possession of the contractor at the time of such termination or such portion thereof as the purchaser may deem fit accepting such material, bought out components and stores as the contractor may with the concurrence of the purchaser elect to retain.

34. Confidentiality

- 34.1.** Information relating to the examination, clarification, evaluation, and comparison of bids, and recommendations for the award of a Contract shall not be disclosed to bidders or any
- 34.2.** other persons not officially concerned with such process until the notification of Contract award is made.
- 34.3.** Any effort by the bidder to influence the Authority in the Authority's bid evaluation, bid comparison, or contract award decisions may result in the rejection of the bidder's bid.

35. Payment

Payment against supply order issued under this bid will be made by Maharashtra Medical Goods Procurement Authority, Mumbai.

Payment of 80% of the contract value will be released against receipt of original GST invoice duly supported by acknowledgement of receipt of equipment in good condition certified by concerned facility in charge at consignee location. Remaining 20% payment will be released after successful installation and satisfactory commissioning and operation of the equipment and upon submission of following documents:

- I. 3 copies of supplier's invoice.
- II. Acceptance certificates issued by the consignees.
- III. Payments towards the supply of Items will be made strictly as per the rules of MMGPA, Mumbai. The payment will be made through RTGS/ NEFT. The bidder shall furnish the relevant details to make the payment through RTGS/NEFT and the change of Bank Account during the validity of the bid will not be entertained normally.

- IV. The bidder must furnish CRC (Consignee Receipt certificate) IQ, PQ and OQ certificate approved, signed and stamped by the Authorized Consignee.

The Authority shall have every right to deduct the pending dues on account of loss, compensation, or any remedial action in monetary terms from the said payment. The supplier shall not agitate the said issue in future.

36. Corrupt or Fraudulent Practices

- 36.1.** The Authority as well as bidders shall observe the highest standard of ethics during the procurement and execution of such contracts.
- 36.2.** “Corrupt practice” means the offering, giving, receiving, or soliciting of anything of value to influence the action of a public official in the procurement process or in contract execution.
- 36.3.** “Fraudulent practice” means a misrepresentation or omission of facts in order to influence a procurement process or the execution of a contract to the detriment of Authority and includes collusive practice among bidders (prior to or after bid submission) designed to establish bid prices at artificial non-competitive levels and to deprive the Authority of the benefits of free and open competition.
- 36.4.** “Collusive practice” means a scheme or arrangement between two or more bidders, with or without the knowledge of the Authority, designed to establish bid prices at artificial, non-competitive level; and. “Coercive practice” means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the procurement process or effect the execution of the contract.
- 36.5.** “The Authority will reject a bid for award if it determines that the bidder recommended for award has directly or through an agent engaged in corrupt or fraudulent practices in competing for the contract in question.
- 36.6.** The Authority will declare a firm or individual as ineligible, either indefinitely or for a stated period of time, to be awarded a contract if it at any time determines that they have, directly or through an agent, engaged in corrupt, fraudulent, collusive, or coercive practices in competing for, or in executing, a contract.

37. Resolution Of Dispute

- 37.1.** In the event of any question, dispute, or differences in respect of contract or terms and conditions of the contract or interpretation of the terms and conditions or part of the terms and conditions of the contract arises, the parties may mutually settle the dispute amicably.

38. Arbitration

- 38.1.** In the event of failure to settle the dispute amicably between the parties, the same shall be referred to the sole arbitrator as mutually agreed upon by the parties. The award passed by the sole Arbitrator shall be final and binding on the parties.
- 38.2.** The arbitration proceedings shall be carried out as per the Indian Arbitration and Conciliation Act, 1996 and the rules made thereunder. For settlement of all disputes & Arbitration the place of jurisdiction shall be Mumbai, Maharashtra. The language of Arbitration shall be English.

39. Governing Language

- 39.1.** English language version of the contract shall govern its Interpretation.

40. Applicable laws:

- 40.1.** The contract shall be governed in accordance with the law prevailing in India, Act, Rules, Amendments, and orders made there on from time to time.

41. Indemnification

- 41.1.** The supplier shall indemnify the Authority against all actions, suit, claims and demand or in respect of anything done or omitted to be done by supplier in connection with the contract and against any losses or damages to the Authority in consequence of any action or suit being brought against the supplier for anything done or omitted to be done by the supplier in the execution of the contract. The supplier shall submit an indemnity bond to this effect.

42. Jurisdiction:

- 42.1.** All the suits arising out of the contract shall be authority in the court of competent jurisdiction situated in Mumbai only and not elsewhere.

43. Saving clause:

- 43.1.** No suits, prosecution or any legal proceedings shall lie against the Chief Executive Officer, Maharashtra Medical Goods Procurement Authority, Mumbai, or any person for anything that is done in good faith or intended to be done in pursuance of bid.

Appendix I: Pre-qualification-cum-Technical Bid Templates

I. General

The Bidders are expected to respond to the RFP using the forms given in this section and all documents supporting Pre-Qualification / Technical Evaluation Criteria.

Pre-Qualification Bid & Technical Proposal shall comprise of following forms:

Annexure to be used in Pre-Qualification cum Technical Proposal (Envelope 1)

Annexure I: Letter Comprising the Technical Bid

Annexure II: Compliance Sheet for Pre-qualification Proposal

Annexure III: Proforma for Production And Sale Statement

Annexure IV: Annual Turnover statement for three years

Annexure V: Details of Manufacturing unit

Annexure VI: Contract Form

Annexure VII: Undertaking for rates, specification, blacklisting status on Stamp paper duly notarized

Annexure VIII: Mandate Form

Annexure IX: Power of Attorney for signing of Bid

Annexure X: Technical Specifications

Annexure XI: Compliance sheet for Technical Proposal

Annexure XII: Place of delivery

Annexure XIII: Self Declaration Affidavit (on Rs.100/- Stamp Paper)

Annexure XIV: Manufacturer's Authorization Form

Annexure XV: Format for EMD Bank Guarantee if not submitted online.

Annexure XVIII: Checklist duly filled and signed by the bidder's Authorized representative.

Annexure I: Letter Comprising the Technical Bid

To,
Chief Executive Officer,
Maharashtra Medical Goods Procurement Authority,
1st Floor, Aarogya Bhawan,
Near CSMT Railway Station,
Mumbai 400001 (Maharashtra)

Subject: Request for Proposal (RFP) for.....

Dear Sir,

Having examined the bid document and addendum/corrigendum, if any the receipt of which is hereby acknowledged, we, the undersigned, offer to supply and deliver the goods under the above-named Contract in full conformity with the said bid document and our financial offer in the Price schedule submitted in Envelop No. 2 which is made part of this bid.

We undertake that all information provided in our bid and in the Appendices is true and correct and all documents accompanying such bid are true copies of their respective originals.

We undertake, if our bid is accepted, to deliver the goods in accordance with the delivery schedule specified in the bid document.

We undertake that as on the date of submission of the proposal, we are not involved in any conflict-of-interest situation.

If our bid is accepted, we undertake to submit the security deposit in the form, in the amounts, and within the times specified in the bid document.

We agree to abide by this bid for the Bid Validity Period specified in the bid document and it shall remain binding upon us and may be accepted by you at any time before the expiration of that period.

Until the formal final Contract is prepared and executed between us, this bid together with your written acceptance of the bid shall constitute a binding Contract between us. We understand that you are not bound to accept the lowest or any bid you may receive.

We agree and undertake to abide by all the terms and conditions of the RFP Document. In witness thereof, We submit this Proposal under and in accordance with the terms of the RFP Document.

Signed: _____

Date: _____

In the capacity of _____

Duly authorized to sign this bid for and on behalf of _____

Signature & stamp of bidder

Annexure II: Compliance sheet for Pre-Qualification Proposal

(The pre-qualification proposal should comprise of the following basic requirements. The documents mentioned in this compliance sheet along with this form, needs to be a part of the Pre-Qualification proposal)

Sr. No.	Basic Requirement	Specific Requirement	Documents required
1.	Registered Legal Entity	The Bidder shall be any person/Company/ Society/Proprietorship/ Partnership firm/Trust registered under applicable Act in India/ Government-owned enterprise or institution The Bidder shall be – a) A manufacturer having valid manufacturing and equipment license for the items quoted. OR b) An Importer* having valid import license and equipment license for the items quoted. OR c) Authorized Distributor fulfilling all tender conditions. d) Separate Manufacturer's Authorization will be required for each equipment. e) Registered with the GST Authorities. f) Should have a valid PAN number. <i>*Importer refers to a legal Entity such as a Company/ Society/ Trust/Partnership firm registered under applicable Act in India/ Government-owned enterprise or institution that engages in the process of bringing equipment or goods from outside India into the</i>	a. Copy of certificate of incorporation/registration along with charter documents like copy of Memorandum and Articles of Association, and other registration documents according to the nature of entity. b. Attested photocopy of valid manufacturing Equipment/ import license with product list duly approved by the Licensing Authority for each and every product quoted as per specification in the bid. The license must have been duly renewed up to date and the items quoted shall be clearly highlighted in the license. If quoted item is manufactured at different places, Manufacturing License & Performance certificate should be enclosed. c. Manufacturer's Authorization as per Annexure XIV to be provided by Importer, Authorized distributor d. Copy of GST Registration certificate

Sr. No.	Basic Requirement	Specific Requirement	Documents required
		<i>country's borders for commercial purposes.</i> <i>Importer itself shall be responsible for supply and maintenance of the equipment as per the terms of RFP and shall not engage any third party for the same)</i>	issued by GSTN authorities. In case of e. Copy of PAN Card.
2.	Certifications/ registration	The Bidder shall have to provide requisite certifications/registration.	a. Certificates of DPIIT (if applicable) b. Original manufacturer's certificate that the product is being used in country of origin. c. Import Export Certificate (IEC Code) d. Affidavit of Importer regarding equipment being imported in India for last three years.
3.	Litigation	The Bidder should not be involved in any major litigation such as fraud, FEMA violations and any other civil or criminal proceedings that may have an impact of affecting or compromising the delivery of services as required under this contract.	Affidavit as per Annexure VII.
4.	EMD/Bid Security	Bidders are required to pay the EMD/Bid Security of ₹ 72,80,000/- through online mode on https://mahatenders.gov.in or in the form of BG as per annexure XV	• EMD in the form of NEFT/RTGS/BG
5.	EMD Exemption	If a Bidder is a Micro Small and Medium Enterprise ("MSME") / Small Scale Industry ("SSI") then subject to submission of relevant documents as provided in this table, such Bidder may be exempted from	• Requisite Certificate of Micro and Small-scale manufacturing industries registered under Micro, Small and Medium

Sr. No.	Basic Requirement	Specific Requirement	Documents required
		submitting EMD in accordance with Appendix-8 of Govt. Resolution by Industries, Energy & Labour Department, Maharashtra State, dated 1.12.2016.	Enterprises development act 2006. • Importer shall produce authorization Certificate from manufacturer as authorized seller as per Annexure XIV • EM-II certificates whenever necessary (mandatory for Medium Enterprises)
6.	Conflict of Interest	On the date of submission of the proposal, the Bidder should not be involved in any conflict-of-interest situation.	Undertaking by the authorized signatory as per Annexure I
7.	Blacklisting or banned	On the date of submission of the proposal, the Bidder should not be blacklisted or banned by any ministry/department/attached offices/sub-ordinate offices under Government of India and any State government, Autonomous bodies (established by Central/State govt), any Central/State PSUs for unsatisfactory past performance, corrupt, fraudulent or any other unethical business practices.	Affidavit as per Annexure VII
8.	Debarment	On the date of submission of the proposal, the Bidder should not be debarred	Affidavit as per Annexure VII.
9.	Average Annual Turnover	Average Annual Turnover (in last three financial years (2023-24, 2024-25, 2025-26) shall be at least Rs 36.40 Cr.	Certificate issued by a statutory auditor/chartered accountant (as attached Annexure-IV) along with Audited Financial Statements confirming the

Sr. No.	Basic Requirement	Specific Requirement	Documents required
			Average Annual Turnover of the Bidder during the stated Financial Years must be submitted.
10.	Net Worth	The net worth of the bidder in the financial year (2025-2026) should be positive .	Certificate issued by a statutory auditor/chartered accountant (as attached Annexure-IV).
11.	Technical Capability	Bidder must have successfully undertaken supply, installation & commissioning of quoted Equipment or turnkey work of an amount of Rs 36.40Cr. during last three financial years (2023-24,2024-25,2025-26) The bidder must submit work experience documents related to the supply, installation, and commissioning of 1.Cardiac Cath Lab units on turnkey basis (at least two supply orders) 2.Modular operation theatres on turnkey basis (at least five supply orders) 3.ICU equipment (at least two supply orders) in last three financial years (2023-24,2024-25,2025-26) .	The Bidder shall provide the documentary evidence in support of its credentials such as agreement copy/ work order / Letter of Award. This should be supported by work completion certificate/customer satisfaction certificates with customer details and client certificate. Statutory auditor's certificate or Chartered Accountant's certificate, as the case may be, shall be submitted for demonstrating the past experience. (as per Annexure number III)
12.	Production Capacity / Import Quantity	Production Capacity of the Original Equipment (Capital Goods) Manufacturer must be minimum 1.5 times of the quoted order quantity in last one financial year.	Certificate of Statutory Auditor/Chartered Accountant For importers and Authorized distributors Certificate of Statutory Auditor/Chartered Accountant of OEM has

Sr. No.	Basic Requirement	Specific Requirement	Documents required
			to be submitted in Annexure III
13.	Service center	In case of Bidder being Manufacturer, the bidder should have at least 2 service centers in state of Maharashtra. In case of Bidder being Importer/Authorized distributor, the bidder should ensure that OEM have at least 2 service centers in state of Maharashtra.	List of at least 2 service centers in Maharashtra with address and contact details shall be provided by the bidder which shall exist for the period of warranty as mentioned and also, during the additional CMC/AMC period, if awarded. The Importer/Authorized Distributor shall provide an undertaking from OEM that OEM shall have at least 2 service centers for the period of warranty as mentioned and also, during the additional CMC/AMC period, if awarded.

Annexure III: Proforma for Production And Sale Statement
(For a period of last 3 Years)

(To be submitted on the letterhead of the Statutory Auditor/ Chartered Accountant of the Bidder)

Sr. No.	Year	Name and full Address of the Purchaser	Purchasing Entity (Gov./Semi Gov./Other)	Name of the Product	Purchase Order No. & Date	Purchase Order Quantity	Purchase Order Value (in Rs.)	Quantity		PO Copy enclosed on Pg. No.
								Manufactured Qty	Sold Qty	
1	2023-24									
2	2024-25									
3	2025-26									

Add rows as per requirement.

Note:

1. In support of above statement, enclose the copies of supply orders with client's satisfactory certificates. All purchase orders should be enclosed in the sequence as per the data provided in table above.
2. All the data provided in the above table has been verified by undersigned CA.

Name, Membership number and signature of the Chartered Accountant:

UDIN:

Name and seal of the firm:

Location, Date:

Authorized Signature (*PoA holder*)

[In full and initials with Seal]:

Name and Title of Signatory:

Name of Bidder (*Firm/ Organization's name*):

Address:

Telephone:

Email:

(Name and seal of the Bidder)

[Location, Date]

Disclaimer: If, 1. The bidder is OEM , then the details of Annexure III of production in last three years

The bidder is Authorized distributor, then the details of Annexure III of sale in last three years

Annexure IV: Average Annual Turnover and Net Worth of the Bidder

(To be submitted on the letterhead of the Statutory Auditor/ Chartered Accountant of the Bidder)

The Average Annual Turnover and Net Worth details of M/s _____ for participation under the RFP are given below and certified that the statement is true and correct.

Sr. No.	Year	Turnover (In Rs.)	Positive Net worth (Yes/ No)
1	2023-24		
2	2024-25		
3	2025-26		
4	Average Annual Turnover of above 3 years		

This is to certify that the Net worth of (*name of Bidder*) is Positive for last 3 (three) Financial Years i.e., (2023-24, 2024-25, 2025-26) as per the Audited Financial Statements.

For the purposes of this RFP, net worth (the “**Net Worth**”), in case of Company shall mean the aggregate value of the paid-up share capital and all reserves created out of the profits and securities premium account, after deducting the aggregate value of the accumulated losses, deferred expenditure and miscellaneous expenditure not written off, as per the audited balance sheet, but does not include reserves created out of revaluation of assets, write-back of depreciation and amalgamation.

For other eligible entities, the Net Worth shall mean the amount derived by subtracting the liabilities from the corpus and reserve amounts as certified by the chartered accountant/statutory auditor having valid registration.

Note:

- Certificate issued by a statutory auditor/chartered accountant along with Audited Financial Statements confirming the average annual turnover of the Bidder during the stated financial years must be submitted on the letterhead of the Statutory Auditor.
- Provide supporting Audited Financial Statements (Balance Sheets, Profit and Loss Statements, etc.) of the bidding organization/ firm.

Name, Membership number and signature of the Chartered Accountant:

UDIN

Name and seal of the firm:

Location, Date:

Authorized Signature (*PoA holder*)

[In full and initials with Seal]:

Name and Title of Signatory:

Name of Bidder (*Firm/ Organization's name*):

Address:

Telephone:

Email:

(Name and seal of the Bidder)

[Location, Date]

Annexure V: Details of Manufacturing Unit

1. **Name of the Manufacturer:**
2. **Full address:**
3. **Phone Nos.:**
4. **Fax No.:**
5. **Email ID:**
6. **Date of inception:**
7. **License No. & date:**
8. **Issued by:**
9. **Valid up to:**
10. **RTGS (Real Time Gross Settlement) System or Core Banking A/c No.:**
11. **Details of installed production capacity for 1 year:**

Sr. No.	Equipment name	Total Production Capacity	Actual Production	Installed Quantity
1	Advance Cath Lab (Capital Goods)			
	Cardiac Operation Theatre (Capital Goods)			
	ICU with Equipment and turnkey basis (Capital Goods)			
2	Advance Neurological Operation Theatre with microscope and Equipment on Turnkey Basis (Capital Goods)			
3	Gynac OT-2 (Capital Goods)			

Date:

Seal

Signature

Name (in capital letters)

Note: The details of manufacturing unit shall be for the premises where item quoted are actually manufactured.

THE DETAILS OF FACTORY PREMISES

Person In-charge of Factory

Name :

Phone No. :

Mobile No. :

Nearest Land mark of Factory:

Layout

Km from Airport :

Name of the Airport and City:

Km from Railway Station :

Name of the Railway Station:

Km from Bus Stand :

Name of the Bus Stand :
and City

Name of designation of the authorized signatory

Note: The details of manufacturing unit shall be for the premises where item quoted are actually manufactured.

Annexure VI: Contract Form

(Stamp duty as applicable as per MSA)

THIS AGREEMENT made the day of....., 200...
Between.....

(Name of Authority) of..... (Country of Authority) (Hereinafter "the Authority") of the
one part and..... (Name of Supplier) of..... (City and Country of
Supplier) (Hereinafter called "the Supplier") of the other part:

WHEREAS the Authority is desirous that certain Goods and ancillary services viz. (Brief
Description of Goods and Services) be procured and has accepted a bid by the Supplier for
the supply of those goods and services in the sum of..... (Contract Price in
Words and Figures) (Hereinafter called "the Contract Price"). Whereas the supplier has
deposited a Demand Draft in favor of "Maharashtra Medical Goods Procurement Authority,
Mumbai" payable at Mumbai from any Nationalized or Scheduled bank of Rs.....
(Rs. in words.....) as performance security towards the fulfillment of this agreement.

NOW THIS AGREEMENT WITNESSETH AS FOLLOWS:

1. In this Agreement words and expressions shall have the same meanings as
are respectively assigned to them in the Conditions of Contract referred to.
2. The contractor has accepted the contract on the terms and condition set out in
notice No.-----

-----as well in the Acceptance Letter No : - -----Dt:

-----which will hold good during the period of this agreement.

3. The following documents shall be deemed to form and be read and construed
as part of this Agreement, viz.:
 - (a) The Price List submitted by the Supplier;
 - (b) The Schedule of Requirements;
 - (c) The Technical Specifications;
 - (d) Terms & conditions of tender document.

- (e) The Authority's Notification of Award.
4. In consideration of the payments to be made by the Authority to the Supplier as hereinafter mentioned, the Supplier hereby covenants with the Authority to provide the goods and services and to remedy defects therein in conformity in all respects with the provisions of the Contract.
 5. The Authority hereby covenants to pay the Supplier in consideration of the provision of the goods and services and the remedying of defects therein, the Contract Price or such other sum as may become payable under the provisions of the Contract at the times and in the manner prescribed by the Contract.
 6. Upon breach by the supplier of any of the condition of the agreement, the Chief Executive Officer may by a notice in writing resolving, determine and put an end to this agreement without prejudice to the right of the Government to claim damages for antecedent breaches thereof on the part of the supplier and also to responsible compensation for the loss occasioned by the failure of the supplier to fulfill the agreement as certified in writing by the Chief Executive Officer which certificate shall to conclusive evidence of the amount of such compensation payable by the supplier to the Government.
 7. This Agreement shall remain in force until the expiry of 24 (Twenty Four) months from the date of supply or delivery of all equipment under the Contract but notwithstanding herein or in the tender and acceptance forms contained, the Government shall not be bound to take the whole or any part of the estimated quantity herein or therein mentioned and may cancel the contract at any time upon giving one month's notice in writing without compensating the Supplier.
 8. The Supplier has fully read, understood & shall abide by all the term and conditions as stipulated in Bidder document, failing which the Contract Agreement is liable to be terminated at any time without assigning any reason by the Maharashtra Medical Goods Procurement Authority, Mumbai.
 9. Any change/amendments if required to be incorporated in the Agreement at a later stage shall be discussed & mutually agreed by both the parties and supplementary agreements shall be binding on both the parties and shall form the part of this agreement.
 10. This Contract Agreement shall be governed by and construed in accordance with the laws of Republic on India.

Brief particulars of the goods and services which shall be supplied/provided by the Supplier areas under:

Sr. No.	BRIEF DESCRIPTION OF GOODS & SERVICES	QUANTITY TO BE SUPPLIED*	UNIT PRICE	TOTAL PRICE	DELIVERY TERMS
					As per the supply order

*1. Actual quantity to be supplied may vary & will be strictly as per actual requirement.

2. Actual supply to take place only after & as per the supply order(s) issued by Maharashtra Medical Goods Procurement Authority, Mumbai from time to time.

Tender Document is a part & parcel of the contract.

4. All terms & conditions will apply as per Maharashtra Government Industries Department, Stores Purchase Rules issued vide Government Resolution no. 82 dated 1.12.2016 and other applicable Government Resolutions.

IN WITNESS whereof the parties hereto have caused this Agreement to be executed in accordance with their respective laws the day and year first above written.

Signed, Sealed and Delivered by the Said. (For the Authority) in the presence of:.....

Signed, Sealed and Delivered by the Said..... (For the Supplier) In the presence of....

Following documents to be submitted in original to this office

1. Proof of all documents inclusive of all Appendices and Annexures of this RFP

Address for communication:

**Office of the ---
Chief Executive Officer,
Maharashtra Medical Goods Procurement
Authority,
1st Floor, Aarogya Bhawan,
Near CSMT Railway Station,
Mumbai 400001 (Maharashtra)**

Annexure VII: Non-Blacklisting Affidavit

Undertaking for rates, specification, blacklisting status on Stamp paper duly notarized

AFFIDAVIT on Non-Judicial Stamp Paper of Rs. 500/-

(Original copy To be submitted to this office)

Undertaking for rates, specification, blacklisting status on Stamp paper duly notarized

**Reference: Tender No. E-274/MMGPA/ Equipments for District Hospital
on turnkey basis Group A**

1. I/We undertake to provide the drugs/medicines/equipment's as required by Maharashtra Medical Goods Procurement Authority, Mumbai and there will be no deviation in composition, quality, packing etc.
2. The firm(Name of the Firm) has not been found guilty of malpractices, misconduct or blacklisted/debarred/ deregistered for the quoted product by any department of Govt. of Maharashtra or by any local authority and semi Govt. organization and other State Government/Central Government's organizations/ procurement corporation as on the date of submission tender document for the quoted items."
3. The firm is not involved in any major litigation such as fraud, FEMA violations and any other civil or criminal proceedings that may have an impact of affecting or compromising the delivery of services as required under this contract.

Seal

Signature

Date

Place

Annexure VIII: Mandate Form

01	Company Name	
02	Postal Address of the company with Telephone No., Fax No. and Mail address	
03	Name of the Managing Director/ Director/Manager Mobile No./Phone No. E-mail address	
04	Name and designation of the authorized company official Mobile No./Phone No. E-mail address	

Bank Details

01	Name of the Bank Branch Name & Address; Branch Code No. Branch Manager Mobile No. Branch Telephone no. Branch E-mail ID	
02	9 digit MICR code number of the bank and branch appearing on the	

	MICR cheque issued by the bank.	
03	IFSC code of the Branch	
04	Type of Account (Current/Savings)	
05	Account Number (as appear in cheque book)	

(Please **attach the original cancelled cheque** issued by your bank for verification of the above particulars)

I/We hereby declare that the particulars given above are correct and complete. If the transaction is delayed or not effected at all for reasons of incomplete or incorrect information, I would not hold Maharashtra Medical Goods Procurement Authority, Mumbai responsible for the same. I have read the conditions of tender / agreement entered and agrees to discharge the responsibility expected of me/from the company as a tenderer/ successful bidder.

Date:

Company seal

Signature

Place:
designation)

(Name of the person signing &

CERTIFIED THAT THE PARTICULARS FURNISHED ABOVE BY THE COMPANY ARE CORRECT AS PER OUR RECORDS

Bank Seal with address

Signature of the Authorized

Official of the bank

Annexure IX: Power of Attorney for signing of Bid

Know all men by these presents, We _____ (Name of the firm

and address of the registered office) do hereby irrevocably constitute, nominate, appoint and authorize Mr./ Ms. (name), son/daughter/wife of and presently residing at _____, who is presently employed with us and holding the position of _____, as our true and lawful attorney (hereinafter referred to as the "**Attorney**") to do in our name and on our behalf, all such acts, deeds and things as are necessary or required in connection with or incidental to submission of our Bid for qualification and submission of our Bid for [***] (Project) for the [***] (the "**Authority**") including but not limited to signing and submission of all Bids, bids and other documents and writings, participate in Pre-bid and other meetings/conferences and providing information/ responses to the Authority, representing us in all matters before the Authority, signing and execution of all contracts including the Agreement and undertakings consequent to acceptance of our bid, and generally dealing with the Authority in all matters in connection with or relating to or arising out of our bid for the said Project and/ or upon award thereof to us and/or till the entering into of the Agreement with the Authority.

AND we hereby agree to ratify and confirm and do hereby ratify and confirm all acts, deeds and things done or caused to be done by our said Attorney pursuant to and in exercise of the powers conferred by this Power of Attorney and that all acts, deeds, and things done by our said Attorney in exercise of the powers hereby conferred shall and shall always be deemed to have been done by us.

IN WITNESS WHEREOF WE, _____, THE ABOVE-NAMED PRINCIPAL HAVE EXECUTED THIS POWER OF ATTORNEY ON THIS _____ DAY OF _____ 2 _____

For

(Signature, name, designation, and address)

Witnesses:

1.(Notarized)

2. Accepted

(Signature)

(Name, Title and Address of the Attorney)

Notes:

The mode of execution of the Power of Attorney should be in accordance with the procedure, if any, laid down by the applicable law and the charter documents of the executant(s) and when it is so required, the same should be under common seal affixed in accordance with the required procedure. Wherever required, the Bidder should submit for verification the extract of the charter documents and documents such as a board or shareholders' resolution/ power of attorney in favor of the person executing this Power of Attorney for the delegation of power hereunder on behalf of the Bidder. For a Power of Attorney executed and issued overseas, the document shall also have to be legalized by the Indian Embassy and notarized in the jurisdiction where the Power of Attorney is being issued. However, the Power of Attorney provided by Bidders from countries that have signed the Hague Legislation Convention 1961 are not required to be legalized by the Indian Embassy if it carries a conforming Apostille certificate.

Annexure X Technical specifications

<u>TECHNICAL SPECIFICATION OF TWO ADVANCE CATHLAB, TWO CARDIAC OPERATION THEATRE AND 20 BEDED ICU WITH EQUIPMENTS ON TURNKEY BASIS</u>		
SR. NO.	PARTICULARS	QUANTITY
B1	TURNKEY (INCIDENTAL / INTERNAL PRE-INSTALLATION) DETAILS REQUIRED FOR CARDIAC CATHLAB OR (ROOM).	
1	CATHLAB ROOM SELF LEVELLING AND ANTISTATIC PVC FLOORING	2 LOT
2	ANTIMICROBIAL PVC WALL COVERING FOR CATHLAB ROOM	2 LOT
3	CEILING SYSTEM IN CATHLAB ROOM.	2 LOT
4	SUPPLY, INSTALLATION, TESTING & COMMISSIONING OF LAMINAR AIR FLOW SYSTEM	2 NOS
5	FIRE SAFETY COMPLIANCE FOR CARDIAC CATHLAB OR	2 NOS
6	DOORS OF CATHLAB ROOM	4 NOS
7	LED ILLUMINATED CATLAB CEILING BEAUTIFUL SCENERY PANELS	2 NOS
8	ELECTRICAL INSTALLATIONS FOR CATHLAB ROOM	2 LOT
9	CATHLAB PATIENT INFORMATION MANAGEMENT SYSTEM WITH INTRA NETWORK-BASED SYSTEM.	1 NOS
B2	TURNKEY (INCIDENTAL / INTERNAL PRE-INSTALLATION) DETAILS REQUIRED FOR CARDIAC OPERATION THEATRE	
1	CARDIAC OPERATION THEATRE SELF LEVELLING AND ANTISTATIC PVC FLOORING	2 LOT
2	SET UP OF OT WALLS BY ANTIMICROBIAL 3 SECTION WALL PANELS WITH INTEGRATED SERVICE PANEL	2 LOT
3	CARDIAC OPERATION THEATER CEILING WITH ANTIMICROBIAL CEILING PANEL	2 LOT
4	STERILE AIR MANAGEMENT SYSTEM WITH 8X8 WITH AIR CONDITIONING SYSTEM	2 LOT
5	PRESSURE RELIEF DAMPERS	2 NOS
6	FIRE SAFETY COMPLIANCE FOR CARDIAC OPERATION THEATRE.	2 LOT
7	ELECTRICAL INSTALLATIONS	2 LOT

8	42 INCH DIGITAL LED TOUCH SCREEN OT CONTROL PANEL	2 NOS
9	42 INCH LED GLASS THREE PLATE LED X-RAY ILLUMINATING SCREEN	2 NOS
10	42 INCH ANTIMICROBIAL TOUGHENED GLASS MADE WRITING BOARD (OPERATING LIST BOARD)	2 NOS
11	PERIPHERAL LIGHTING	12 NOS
12	MEDICAL GAS PIPELINE (SEVEN LINE) INSIDE OT	2 LOT
13	OPERATING PATIENT INFORMATION MANAGEMENT SYSTEM AND INTEGRATION WITH INTRA NETWORK-BASED SYSTEM	1 NOS
14	DOUBLE ARM PENDANT	2 NOS
15	SINGLE ARM PENDANT	2 NOS
16	FRONT OT DOOR TO AUTOMATIC HERMETICALLY SEALED SLIDING OT DOOR MADE OF ANTIMICROBIAL TOUGHENED GLASS WITH MOTORIZED BLIND WINDOW	2 NOS
17	AUTOMATIC SENSOR BASED 3 BAY SCRUB STATION STAINLESS STEEL GRADE 304 WITH INTEGRATED PRESSURE AIR GUN	2 NOS
18	REUSABLE CAPACITIVE COUPLING CURRENT QUALITY MONITORING ELECTRODE	2 NOS
19	LED SURGICAL LIGHT FOR CARDIAC OPERATION THEATER	2 NOS
B3	TURNKEY (INCIDENTAL / INTERNAL PRE-INSTALLATION) DETAILS REQUIRED FOR 20 BEDDED ICU	
1	ICU FLOORING	1 LOT
2	ANTIMICROBIAL PVC SHEET ON ICU WALL	1 LOT
3	CEILING SYSTEM INSIDE ICU	1 LOT
4	ELECTRICAL INSTALLATION	1 LOT
5	CLEAN ROOM HERMETIC DOUBLE DOOR	3 NOS
6	CEILING PERIPHERAL LIGHTS / ICU LUMINAIRES	1 LOT
7	LED ILLUMINATED BEAUTIFUL SCENERY PANELS	2 NOS
8	WALL MOUNTED MODULAR BED HEAD PANELS WITH NURSE CALL SYSTEM	20 NOS

9	U TRACK CURTAIN SYSTEM WITH CURTAIN	20 NOS
10	HVAC SYSTEM	1 LOT
11	ANCILLARY AREA OF CARDIAC CARE CENTER	1 LOT
B4	TURNKEY (INCIDENTAL / INTERNAL PRE-INSTALLATION) DETAILS REQUIRED FOR PRE/POST CATH PATIENT HOLD ROOM 10 BEDED	
1	FLOORING	1 LOT
2	ANTIMICROBIAL PVC SHEET ON WALL	1 LOT
3	CEILING SYSTEM	1 LOT
4	ELECTRICAL INSTALLATION	1 LOT
5	CLEAN ROOM HERMETIC DOUBLE DOOR	1 NOS
6	CEILING PERIPHERAL LIGHTS / ICU LUMINAIRES	1 LOT
7	WALL MOUNTED MODULAR BED HEAD PANELS WITH NURSE CALL SYSTEM	10 NOS
8	U TRACK CURTAIN SYSTEM WITH CURTAIN	10 NOS
9	HVAC SYSTEM	1 LOT
B5	LIST OF CAPITAL EQUIPMENT'S FOR CARDIAC CATHLAB UNIT ON TURNKEY BASIS	
1	ADVANCED CATHLAB SYSTEM DESCRIPTION OF THE EXPECTED FUNCTION	2 SET
2	OPERATIONAL REQUIREMENTS WITH MINIMUM SPECIFICATION	2 NOS
3	C-ARM/G-ARM MULTI-DIRECTIONAL FLOOR/CEILING MOUNTED:	2 NOS
4	PATIENT TABLE	2 NOS
5	X-RAY GENERATOR	2 NOS
6	X-RAY TUBE	2 NOS
7	RADIATION SAFETY	2 NOS
8	DIGITAL IMAGE ACQUISITION CHAIN	2 NOS
9	MONITORS / DISPLAY	2 NOS
10	DIGITAL ARCHIVING	2 NOS
11	CATHLAB HEMODYNAMIC RECORDING SYSTEM	2 NOS
12	STANDARDS, SAFETY AND TRAINING	2 NOS
13	ONLINE UPS REQUIRED FOR ADVANCED CATHLAB SYSTEM	2 NOS

14	OPERATION SUPPORT	1 NOS
B6	TECHNICAL SPECIFICATIONS OF CARDIAC OPERATION THEATRE EQUIPMENT'S	
1	CARDIAC OPERATION TABLE	2 NOS
2	ANESTHESIA WORKSTATION WITH PATIENT MONITOR	2 NOS
3	ELECTROSURGICAL GENERATOR	2 NOS
4	ELECTRIC STERNUM SAW MACHINE	2 NOS
5	ELECTRIC SUCTION MACHINE	2 NOS
6	SET OF CVTS INSTRUMENTS MAJOR	2 NOS
7	SET OF CVTS INSTRUMENTS MINOR	2 NOS
B7	CARDIAC ICU AND PRE POST HOLD ROOM EQUIPMENT & INSTRUMENTS	
1	MOTORISED MODULAR ICU BEDS WITH SIDE BOARD, HEAD BOARD & FOOT BOARD	30 NOS
2	MATTRESS 100 MM	30 NOS
3	BED SIDE INFUSION POLE ASSLY ADJUSTABLE WITH 2 HOOKS	30 NOS
4	BED SIDE LOCKER	30 NOS
5	OVER BED TABLE	30 NOS
6	CRASH CART	3 NOS
7	INSTRUMENT TROLLY WITH BOWEL BUCKET	3 NOS
8	EMERGENCY RECOVERY TROLLY WITH MATTRESS	3 NOS
9	LED X-RAY VIEW SCREEN	1 NOS
10	MAGNETIC WRITING BOARD (WHITE)	1 NOS
11	CENTRAL MONITORING STATION	2 NOS
12	ECG MACHINE	3 NOS
13	SYRINGE INFUSION PUMP	30 NOS
14	DEFIBRILLATOR	3 NOS

15	MULTIPARA PATIENT MONITOR WITH IBP & ETCO2	10 NOS
16	PULSE OXIMETER	3 NOS
17	VIDEO LARYNGOSCOPE	2 NOS
18	TEMPORARY EXTERNAL DUAL CHAMBER PACEMAKER	1 NOS
19	INTRA-AORTIC BALLOON PUMP (IABP) MACHINE	2 NOS
20	SINGLE CHAMBER TEMPORARY EXTERNAL PACEMAKER	1 NOS
21	ECHO MACHINE PREFERABLY PORTABLE ECHO WITH 2 PORTS WITH ADULT AND PAEDIATRIC PROBE	1 NOS
22	ABG MACHINE	1 NOS
23	VENTILATOR	5 NOS
24	MULTIPARA PATIENT MONITOR	20 NOS

S. No	GMDN Name	Technical Specification
B1	TURNKEY (INCIDENTAL / INTERNAL PRE-INSTALLATION) DETAILS REQUIRED FOR CARDIAC CATHLAB OR (ROOM).	
1	CATHLAB ROOM SELF LEVELLING AND ANTISTATIC PVC FLOORING	Floor of CATHLAB should be antistatic conductive flooring. It should be 2mm antistatic seamless PVC flooring. Floor should be smooth, non-slip, impervious material conductive enough to dissipate static electricity but not conductive enough to endanger personnel from electric shock. Electrostatic charge dissipation combat PVC seamless flooring of very high quality should be provided Thickness not less than 2mm. Continuous roll should be used and joints should be welded by special PVC thermal welding units using PVC welding bars of same color. The sheets should be highly durable with resistance to shock and indentation. It should be scratchproof also. The conductive material should be uniformly impregnated as grains It should be inert to body fluids, chemicals and disinfectants. Should not be affected by temperature variation within the OT. The floor should efficiently discharge electric charges up to 2 kV Flooring installation should be done by skilled workers of accredited agencies authorized by the supplier of PVC sheets. The electrical

		resistance (point to ground) should be within 2.5×10^4 to 5×10^6 ohms. The floor should not allow build-up of electrical charge beyond 100 volts due to antistatic effect. The corners should not be terminated sharply and concealed cove-former (aluminium) should be used overlap the wall panel to a height of approx. 25mm and sealed perfectly and uniformly. Self-levelling compounds should be used for this purpose. The conductive copper grid laid underneath the PVC sheet should be supported by liquid epoxy compounds allowed to set as a uniform and level surface. The copper strips to be made visible by grinding and no copper strip should project more than 0.5mm above level surface to avoid damage to the PVC sheet. One earthing lead should be brought out from every 150 sq. ft area and attaching it to the main earthing strip/ground. Copper grounding strips (0.05 mm thick, 50 mm width) should be laid flat on the floor in the conductive adhesive and connected to copper strip of grounding. The connection from copper grid should be brought out uniformly at places to form equipotential grid. Flooring should be mechanically shock proof, scratch proof, flame retardant and anti-microbial. Corners should be uniformly curved. Final surface should be non-corrosive to biological fluids and detergents. Colour should be uniform pleasant and matching with ambience. Bidder has to use self-levelling material (if required) in order to have flooring in uniform level.
2	ANTIMICROBIAL PVC WALL COVERING FOR CATHLAB ROOM	Supply & Installation of antimicrobial flexible vinyl sheet wall covering of 1.0mm thick 100% recycled PVC flexible, homogeneous of total weight 1750 g/m² in sheet of size 2mtrs. X 40 metres. in approved pattern & colour combination with PUR surface treatment fully resistant to impact, as it acts a buffer against damage from beds, trolleys and indoor motorized vehicles with Anti-bacterial and Fungicidal properties & should create safe and hygienic environment in ICU. The wall covering shall confirm the fire rating M1 class as per NFP 92 506. The vinyl wall covering shall be fixed with water-based adhesive based on acrylic type co polymer with 40000 to 60000 cps viscosity. Wall should be without any undulation if any & if so then it should be repaired with Wall Putti with primer to make the wall smooth with proper edged corners.
3	CEILLING SYSTEM IN	The prefabricated clean Room Ceiling should be free hanging

	CATHLAB ROOM.	structure from composite free hanging insulated antimicrobial PPGI Double skin clean room rock wool panels. The ceiling will be constructed using 50 mm thick double skin PPGI rock wool panel. It should have high pressure injected puf (40kg/cum density). The individual wall panels shall use the tongue and groove technology for joining two panels, no welding should be allowed. The gaps between panels shall be suitably filled with metal filler/epoxy and sanded flush. Ceiling elements should be resistant to all standard cleaning agents, disinfectants and fumigation agents. Ceiling element should be able to be disassembled and reinstalled. Panel should be covered with protective sheath to prevent scratch during installation. Colour of Ceiling panel should be as per the choice of User
4	SUPPLY, INSTALLATION, TESTING & COMMISSIONING OF LAMINAR AIR FLOW SYSTEM	Terminal HEPA filter module with HEPA filter of H 14 grade with perforated /slotted Aluminum extruded construction for class 1,0000 areas 610 x 610 mm (2'x2' ft – quantity of Terminal Hepa filter module will be as per the size of Cath lab room to achieve desired class) suitable for external duct Connection and hanging arrangement. - The ceiling filtration system will be designed to ensure unidirectional distribution of sterile air with differential flow velocities decreasing from center to perimeter of the CATHLAB to ensure the cleanliness of all the area covered by the air flow. The Air system should comprise of thick extruded aluminum profiles frame and sealed gasket. These trickles should meet following specification. Protective grids: white epoxy painted micro drawn grid Separators: continuous thermo plastic chord Sealant: Polyurethane Gasket: One-piece polyurethane MPPS average efficiency: > 99.95% 3 Micron DOP efficiency > 99.99% Final Pressure drop: 600 pa max) Maximum Operating Temp: 60-degree Celsius Maximum RH:40-50% - The ceiling system will be equipped with "S" class HEPA filters with different performances according to their position in the ceiling to achieve 0.25m/sec flow velocities. The complete filtration ceiling system will be factory assembled. Its holding structure, trickle frames and top plenum will be made of AISI 304 stainless steel. - The filtration ceiling system should have flow equalizer to achieve uniform & constant air distribution over the whole surface.

• The air management system will be designed to achieve the following parameters:

- F.S. 209 classification = 100 (100 particles/ft³)

- Bacteriological class =B (5 CFU/m³) *

- Particle decontamination kinetics CP =5 min

- Biological decontamination kinetics CB = 5min

- ECG-GMP Annex 1 classification = Class A

- ISO 14644/1 classification = ISO 5

TERMINAL HEPA FILTER BOX

16g Aluminum Terminal housing box for GEL SEAL Miniplate HEPA filters to suit for the installation in Clean Room FC and suitable for bottom loading of following Hepa Filter Sizes. Complete with Aluminum Aero foil Damper on Top Connection With Beaver Gear operating system from Bottom, DOP port, Pressure Plate, Hangers, 18 G S.S.304 Perforated sheets.

FILTER DETAILS :

Minipleat Hepa Filter (Gel Seal Type) Type : Gel/Box Type

Temperature : Ambient

Construction : Aluminium

Efficiency : 99.997 % Down to 0.3 Microns.

Initial Pressure Drop: 25 MM

Final Pressure Drop : 60 MM

Separators : Hot Melt Thread

Media : Glass Fibre Filter Paper Media

Supply, Installation, Testing & Commissioning of External Air Handling Unit (AHU) of 4000 CFM each with UV Sterilization with Humidity Control with shed and foundation.

Supply, Installation, Testing and Commissioning of Double skin Air Handling Units (Single Decker) constructed with minimum 43+ 2 mm thick PUF (Non CFC with minimum density 40+ 2 kg/m³) sandwiched insulation panel with inner skin of 0.8 mm thick GI sheet and outer skin of 0.8 mm thick pre-plasticized / pre-painted GSS sheets complete with thermal break profile.

AHU to comprise of various sections as described below sequentially in the direction of airflow. AHU to be mounted on anti- vibration mounts. Each section to be properly sized to accommodate below mentioned components:

Air Handling Unit: Supply Air Fan Capacity – in CFM as per the size of the room x 4, Total Supply side Static, Pa : As per the size of the room.

Design Conditions: Temp $22 \pm 2^{\circ}\text{C}$, RH $50 \pm 5\%$

Mixing Section: Low Leakage extruded aluminum aero foil opposed blade type Motorized fresh air damper with extended stem suitable for mounting of ON/OFF actuator. Low Leakage extruded aluminum aero foil type opposed blade type return air damper suitable for manual operation.

- Flanged type F-5 Pre filters • Flanged type G4 Fresh air filter • Leak proof Hinged service door

- Pressure Measurement nozzles across F-5 filter with Magnehaulic Gauge (0-300 Pa and PU Tube tubing. Magnehaulic Gauge to be properly enclosed in a box made from 0.8 thick GI sheet, of AHU body color.

Note: Air Face Velocities across H-13 & F-5 filters should not exceed 2.5 m/s. Plasma filter section : 75 mm thick plasma filter

Cooling Coil Section: D-X cooling coil 4 row with copper tubes and aluminum fins. • 18 gauge SS-304 insulated: minimum 25 mm thick insulation (MOC of insulation shall be as per AHU manufacturer standard)) condensate tray with drain pipe & G.I. U trap

- Leak proof Hinged service door/Removable Panel with handles. Note: • Air Face Velocities across cooling coil should not exceed 2.5 m/s.

- Sine wave type fins shall be install & fins spacing shall be 12 fins per inch.

- Bypass factor (B.F.) of coil should not be more then 0.05.

Supply Air Fan Section: Properly balanced (statically and dynamically) Plug Fan/s with pressure ports and directly coupled to IE 2Type Motors and anodized aluminum/ stainless steel Bell mouth air outlet. Fan housing with motor to be mounted on a common steel base on anti-vibration springs mounts.

	•Leak proof Hinged service door. •Flow measurement device comprising of Calibrated Nozzle and Differential Pressure Transmitter •Lamp, Limit Switch & Wiring •Double Glazed inspection window made from polycarbonate. Each glazing to be of minimum 6 mm thickness. Fine Filter / Bleed & Discharge supply section: Flanged type F-7 fine filter. • Flanged type H-13 bleed air filter • Leak proof Hinged service door. • Pressure Measurement port across F-7 filter. •Low Leakage extruded aluminum aero foil opposed blade type bleed air damper with G4 filter suitable for manual operation. • Leakage extruded aluminum aero foil type opposed blade type supply air damper suitable for manual operation. Note: • Air Face Velocities across F-9 filters should not exceed 2.5m/s. Thyristor controlled heater bank: Re-Heat banks, duct mounted & installed such that they are accessible. The banks must be provided with Thyristor control for heaters. The Duct Mounted bank will modulate heaters using Thyristor to control RH depending upon sensing of return RH condition. The heater bank must come with proper safety protection, overload trip protection and an electric panel with all the relevant components including switchgears and cabling Supply, Installation and Testing of CNC machine fabricated G.S.S. Ducting with insulation with supports, with GI rivets, nut-bolts, with Epoxy painted MS angle Flanges, with 5mm thick neoprene gaskets duly installed between flanges. Food grade silicon sealant shall be applied in the longitudinal length of a ducts & for all angle flanges. Condensing Unit, 8.5TR with standby ODU Supply, Installation, Testing & Commissioning of Air-cooled condensing unit. Outdoor unit should be completed with copper piping, filled with R410a / 407C / R 32 refrigerant gases, including nitrile rubber Insulation, electrical cabling,
--	--

thermostatic expansion valves, liquid line strainer, HP, LP switches, control panel along with all other required electrical and refrigeration accessories to complete the system with supports, tray MS stands etc. Consider 15 meter length between AHU & O• Stand-by system -Each condensing unit should have standby compressors with multiple refrigeration circuits and components.

Refrigerant piping & Drain Piping

Compliance with ASME B31.5

Supply, Installation, Testing & Commissioning of copper piping with all necessary fittings for refrigerants

- Copper tubing, Expansion Valve, Dryer Filter, Gas charging etc. refrigeration accessories Supply, Installation & Testing of Drain Pipe
- Insulated GI 'B' class drain piping with aluminium foil faced nitrile rubber • insulation, with SORF flanges, nut-bolts, supports with wooden block etc. duly installed.

Condensing Unit, 5.5TR with standby ODU

Supply, Installation, Testing & Commissioning of Air-cooled condensing unit. Outdoor unit should be completed with copper piping, filled with R410a / 407C / R 32 refrigerant gases, including nitrile rubber Insulation, electrical cabling, thermostatic expansion valves, liquid line strainer, HP, LP switches, control panel along with all other required electrical and refrigeration accessories to complete the system with supports, tray MS stands etc. Consider 15 meter length between AHU & Outdoor Unit. Condensing Units / Air Conditioning ODU (with stand-by facility)

- Stand-by system -Each condensing unit should have standby compressors with multiple refrigeration circuits and components.

Refrigerant piping & Drain Piping

Compliance with ASME B31.5

Supply, Installation, Testing & Commissioning of copper piping with all necessary fittings for refrigerants

- Copper tubing, Expansion Valve, Dryer Filter, Gas

		charging etc. refrigeration accessories Supply, Installation & Testing of Drain Pipe - Insulated GI 'B' class drain piping with aluminium foil faced nitrile rubber • insulation, with SORF flanges, nut-bolts, supports with wooden block etc. duly installed. Supply and installation of GI, Pre-fabricated rectangular ducts, complete with MS flanges and bracing (as specified), necessary supports using thread rods (as directed) and anchor bolts, supply air collars, vanes, splitters dampers duly painted of the ducts and as per specification for Air Conditioned Areas; all sheets shall be supplied with Mfr Test Certificates with delivery. Ducts shall be made of galvanized steel sheets. GSS sheets shall conform to IS 277-1865 . Thickness is as specified below: - For the ducts having width more than 36" to 45"-- 0.7mm - For the ducts having width less than 36" -- 0.6mm Make of Galvanized steel Sheets: Lloyd steel/ Tata/ JSW or equivalent outdoor Unit. Condensing Units / Air Conditioning ODU (with stand-by facility)
5	FIRE SAFETY COMPLIANCE FOR CARDIAC CATHLAB OR	Supply, Installation of DUCT Thermal Insulation -Should Insulate ducts with fire retardant XLPE Duct Insulation with site-glued, Aluminum foil faced, • Closed cell fire rated (FM approved) Nitrile Rubber Insulation of suitable density (40 - 60 kg / m³), - Class "O" insulation as per thickness specified, - All joints and corners should be finished with 50 MM wide cross linked oven type Aluminum Self-Adhesive Tape. - Size: 19mm for Supply Air Ducts, 13mm for Return Air & Exhaust Air Ducts
6	DOORS OF CATHLAB ROOM	CATHLAB Hermetic Double Door (LEAD PROTECTED) Clean room PPGI PUF Double Door made of double skin 50 mm thick double skin clean room PPGI puf panel (0.8 mm both side) size of the door should be 1800 X 2100 mm having viewing window on both the shutters of sizes 300X300mm. The Door frame is made of Extruded Aluminium Profile having Gasket to provide Leak less mechanism on three. Should have door auto closer system, colour combination of the doors will be decided

		by the user department. CATHLAB Single Leaf Door (LEAD PROTECTED) Clean room PPGI PUF Single Door made of double skin 50 mm thick double skin clean room PPGI puf panel (0.8 mm both side) size of the door should be 900 X 2100 mm having viewing window of sizes 300X300mm. The Door frame is made of Extruded Aluminium Profile having Gasket to provide Leak less mechanism on three. Should have door auto closer system, colour combination of the doors will be decided by the user department.
7	LED ILLUMINATED CATLAB CEILLING BEAUTIFUL SCENERY PANELS	In the ceiling for better ambiance Ceiling mounted LED illuminated scenery panel of size 4 ft x 2 ft as per the user choice.
8	ELECTRICAL INSTALLATIONS FOR CATHLAB ROOM	Electrical installation in CATHLAB should be latest & contempory. Bidder is responsible to provide all required Distribution box, isolation transformer, MCB's, leakage relays, cable tray, etc and all internal wiring, earthling inside the CATHLAB. Power distribution within the CATHLAB should be "provided" from distribution boards located local to each theatre. Sub mains power to these panels should be by the general electrical contractor. From these panels all distribution services within the departments should be run. DISTRIBUTION BOARD - All high voltage equipment should be installed in a separate enclosure. - The remote cabinet should house the operating lamp transformers, mains failure relays, UPS, electrical distribution equipment & circuit protection equipment for all circuits within the operating theatre. - All internal wiring should terminate in connectors with screw & clamp spring. - Connections of the clip- on type mounted, on a CE approved rail & labelled with indelible proprietary labels. Complete schematics should be provided. Earthed equipotent bonding of all exposed metalwork should be provided. Power sockets within the Operating Theatres & ancillary areas should

		meet required quantity Light fittings within the clinical areas should be recessed LED type with control gear Fittings should be sealed In accordance with the standard IP54.
9	CATHLAB PATIENT INFORMATION MANAGEMENT SYSTEM WITH INTRA NETWORK-BASED SYSTEM.	Patient Information Management System should be web based and it should have server client-based system and install on modular cart and ancillary system should be mounted on wall inside Cath lab and Latest Hardware & color printer should be provided. Web based system should be designed to store all the information related to Cath lab procedure in digital format it should include all field which required for maintaining all procedure record with captured procedure images and videos. .This software with latest camera should be installed with latest generation computer with printer .Software should provide analytical, statistical data procedure wise, unit wise, Doctor wise , month wise, day wise and year wise. It should also show number of procedures performed by particular doctors, staff assisted etc. It should also shows all informative data of the patient, lab records, imagine records on system which is mounted on any wall inside Cathlab and it should have facility to check edit and update from panel system. It should have visual and image recording facility also. It should have a facility to view and study patients radiology data (X-Ray,CT,MRI,USG) in dicom . CATHLAB INFORMATION SERVER (CIS)and CATHLAB INFORMATION CLIENT (CIC) system should be installed over intra network and from CATHLAB INFORMATION SERVER to CATHLAB INFORMATION CLIENT static network should be installed by any mode of wired network system. CATHLAB INFORMATION CLIENT should be install on wall panel inside CATHLAB with flip tray. And CATHLAB INFORMATION SERVER should be install on modular cart. Network switch has to be installed for networking between CATHLAB INFORMATION SERVER and CATHLAB INFORMATION CLIENT . 100/1000 MBPS Network Switch should be installed for support of mixed working modes. Contractor is responsible to established all network for CATHLAB INFORMATION SERVER and CATHLAB INFORMATION CLIENT like cable erection and installation.
B2	TURNKEY (INCIDENTAL / INTERNAL PRE-INSTALLATION) DETAILS REQUIRED FOR CARDIAC OPERATION THEATRE	

1	CARDIAC OPERATION THEATRE SELF LEVELLING AND ANTISTATIC PVC FLOORING	Floor of operation theatre should be antistatic conductive flooring . It should be 2mm antistatic seamless PVC flooring. Floor should be smooth, non-slip, impervious material conductive enough to dissipate static electricity but not conductive enough to endanger personnel from electric shock. Electrostatic charge dissipation combat PVC seamless flooring of very high quality should be provided Thickness not less than 2mm. Continuous roll should be used and joints should be welded by special PVC thermal welding units using PVC welding bars of same colour. The sheets should be highly durable with resistance to shock and indentaation. It should be scratchproof also. The conductive material should be uniformly impregnated as grains It should be inert to body fluids, chemicals and disinfectants. Should not be affected by temperature variation within the OT. The floor should efficiently discharge electric charges up to 2 kV Flooring installation should be done by skilled workers of accredited agencies authorized by the supplier of PVC sheets. The electrical resistance (point to ground) should be within 2.5×10^4 to 5×10^6 ohms. The floor should not allow build-up of electrical charge beyond 100 volts due to antistatic effect. The corners should not be terminated sharply and concealed cove-former (aluminium) should be used overlap the wall panel to a height of approx.25mm and sealed perfectly and uniformly. Self- levelling compounds should be used for this purpose. The conductive copper grid laid underneath the PVC sheet should be supported by liquid epoxy compounds allowed to set as a uniform and level surface. The copper strips to be made visible by grinding and no copper strip should project more than 0.5mm above level surface to avoid damage to the PVC sheet. One earthing lead should be brought out from every 150 sq. ft area and attaching it to the main earthing strip/ground. Copper grounding strips (0.05 mm thick, 50 mm width) should be laid flat on the floor in the conductive adhesive and connected to copper strip of grounding. The connection from copper grid should be brought out uniformly at places to form equipotential grid. Flooring should be mechanically shock proof, scratch proof, flame retardant and anti- microbial Corners should be uniformly curved Final surface should be non-corrosive to biological fluids and detergents. Colour should be uniform pleasant and matching with ambience. Bidder has to use self-levelling material (if required) in order to have flooring in
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		uniform level.
2	SET UP OF OT WALLS BY ANTIMICROBIAL 3 SECTION WALL PANELS WITH INTEGRATED SERVICE PANEL	Walls of operation theatre should be installed with panels which shall be made of SS304 that shall be easy to clean and extremely hygienic. Operation theatre shall not have any sharp edges, corners and shall not support bacteriological or fungicidal growth and shall be resistant to most chemicals, commonly used in Hospital Departments. Joints in the panels in the operation theatre shall be sealed by means of Gasket application. The function of sealing shall assure an airtight environment in the room and eliminate services to prevent dust accumulation. Wall Paneling System shall be 100% modular in nature and shall comprise of free- standing sub Frames. All four edges of tile shall be flanged at right angles. The tile shall have backing of 18mm thick soaked Polyurethane Foam (PUF) insulation. This insulation shall give rigidity & strength to metal tile. Modular wall panels tiles shall be made of at-least 1.00 mm thick sheet. Wall Panel shall be made in grids of three sections with three different colour as per the choice of user : - - Lower wall element (approx. 900mm high). - Upper wall element (approx. 1800mm high). - Customizable installation module of 200 mm service panel between the lower and upper wall element to provide access to medical gas lines and other facilities. Panels shall have design feature of quick & easy demounting and reinstallation of individual panels without removing the adjacent tiles. Modular wall panels tiles shall be made of SS304 , finished with 60-80-micron Anti- bacterial powder coating with addition of silver ions. Wall panel shall have flanged edges to make a tile of at least 18 mm thick. Panels shall be mounted on a structure made of galvanized steel and shall enable the distribution of medical gases, electricity, sewerage inside the wall. The corner profile shall be made of curvilinear and precisely extruded aluminum profile with colour surface treatment to match the colour shade of the wall panels. The wall panels shall

		be inserted into this profile in the vertical direction and shall be sealed with expansion sealing inserted into the corner profile. Vertical gap / joint between the wall panels shall be 10 mm maximum and shall be filled with removable extruded gasket sealant matching the colour of the wall panels. The anti-bacterial powder coating with added silver ions shall have zero solvents or VOCs to ensure that the system shall not affect/damage to the environment of Modular Operation Theatre. The finishing panel shall permit subsequent installation of flooring with suitable upward curvature up to a nominal level of 100 mm to ensure zero dirt accumulation. System shall be 100% modular to ensure quick and easy installation, maintenance, retrofitting and up gradation. Proposed system shall be installed at site without any welding. The partitions shall not have corners; adjacent surfaces shall be molded flush. Upper wall element shall have sufficient height to reach the lower edge of the prefabricated ceiling. Vertical level shall be adjusted with the aid of laser measuring systems. There shall be a possibility of wide variety of colors to be used on the wall elements to give the aesthetic and state of the art look to the Operating room.
3	CARDIAC OPERATION THEATER CEILING WITH ANTIMICROBIAL CEILING PANEL	Ceiling of operation theatre should be 50 mm thick Ceiling panels having composite construction of two skins one side SS with 0.8 mm thick SS304 sheets and back side should be made of 0.5 mm PPGI and core consisting of rigid polyurethane foam, which has been injected under high pressure, with a minimum density of 40 Kg/m³ shall be provided for the Operation theatre. Ceiling panels shall be made of SS304, finished with 60-80-micron Anti-bacterial powder coating with addition of silver ions. The individual ceiling panels shall use the tongue and groove technology for joining two panels, no welding shall be allowed. There should be a separate aluminium Ceiling jointer (H Type) provided for joining adjacent panels. Room lighting, air supply inlet, ceiling service units, return air outlets etc. as should be integrated with ceiling system. The cavity between the inner and outer Panels should be left with minimum obstructions for the possible addition of equipment at a later date and to enable services, pipes, conduits etc. to be run

		within the cavity. All the sharp edges and corners should be chamfered to avoid bacterial contamination. Panels shall be free from scratches & dents, resistant against humidity and cleaning detergent. Paneling should be easy to maintain, durable, antistatic/conductive and fire retardant.
4	STERILE AIR MANAGEMENT SYSTEM WITH 8X8 WITH AIR CONDITIONING SYSTEM	The ceiling filtration system should be designed to ensure unidirectional distribution of sterile air with differential flow velocities decreasing from centre to perimeter of the surgical theatre to ensure the cleanliness of all the area covered by the air flow. The Sterile Air management system should comprise of thick extruded aluminium profiles frame and sealed gasket. Size of LAF should be 2400 x2400 mm .Trickles should meet following specification: Protective grids: white epoxy painted micro drawn grid Separators: continuous thermo plastic chord Sealant: Polyurethane Gasket: One piece polyurethane MPPS average efficiency: > 99.95% 3 Micron DOP efficiency > 99.99% Final Pressure drop: 600 pa max Maximum Operating Temp:60 degree Celsius Maximum RH: 40-50 % The ceiling system should be equipped with “S” class HEPA filters with different performances according to their position in the ceiling to achieve 0.25m/sec flow velocities The complete filtration ceiling system should be factory assembled. Its holding structure, trickle frames and top plenum should be made of 304 stainless steel. The filtration ceiling system should have flow equalizer to achieve uniform & constant air distribution over the whole surface .it should also have connection for surgical lamp to be fitted in place of any trickle The air management system should be designed to achieve the following parameters: F.S. 209 classification = 100 (100 particles/ft3) Bacteriological class =B (5 CFU/m3)* Particle decontamination kinetics CP =5 min Biological decontamination kinetics CB = 5min ECG-GMP Annex 1

		classification = Class A ISO 14644/1 classification = ISO 5 The positive pressure should be maintained inside the OT to prevent contamination due to air from outside the OT The design, drawings, materials, construction features, handling at site, erection, testing, commissioning, performance/ testing and handing over of of Laminar air flow of 8x8 ft & Air conditioning, Ductwork ventilation System (DVS) / Equipment, Ducting, condensing unit will be the responsibility of bidder . All ductwork should be made of aluminium with proper insulation .The vendor shall carry out dismantling of the existing AC components and their diversion to designated adjacent area with approval from Dean ,GMCH . It should be Microprocessor based air-cooled package units reciprocating Compressors, DX cooling coil, squirrel cage blower, pre trickle & expansion valve, Air-cooled condenser with fan. 14 TR nominal capacity for O.T. The Ductwork ventilation System (DVS) shall be of double skin construction, draw through type in sectionalized construction consisting of Blower section, Coil -section, Filter section and Insulated drain pan. The unit shall be Horizontal type. The panels shall be of double skin construction with both inner and outer steel sheets being a minimum of 0.6mm thick Pre Coated. The sheets shall be sandwiched with 25 mm thick PUF Insulation. The PUF Insulation density shall be 40 kg/m3. The units shall be made of extruded aluminium hollow profile frames. The profile box size shall be of minimum 30-50 mm for capacities up to 4500 to 5000 CFM, such that it provides the required mechanical strength and Rigidity. The unit should be devoid of any welded construction and should be of cabinet type. All the frames should be assembled using pressure die cast aluminium joints/corners to make a self-supporting Frame. It should also have UV Chamber in AHU for sterilisation of air with UV light
5	PRESSURE RELIEF DAMPERS	One Pressure relief dampers should be provided in each room to prevent contamination of air from clean and dirty areas Suitably sized air pressure relief damper should be strategically placed, enabling differential room pressure to be maintained and ensure that when doors are opened between clean and dirty areas. Counter- weight balancing system should be provided in the

		PRD to maintain positive pressure inside the operation room. Air pressure stabilizers should have unique capability of controlling differential pressure to close tolerance. The PRD should remain closed at pressure below the set pressure and should open fully at a pressure only fractionally above the threshold pressure. The body should be epoxy powder coated as per standard BS colours. High grade electrolyzed steel plate should be used for body and high grade SS304 stainless steel for blades
6	FIRE SAFETY COMPLIANCE FOR CARDIAC OPERATION THEATRE.	Supply, Installation of DUCT Thermal Insulation -Should Insulate ducts with fire retardant XLPE Duct Insulation with site-glued, Aluminum foil faced, • Closed cell fire rated (FM approved) Nitrile Rubber Insulation of suitable density (40 - 60 kg / m³), • Class "O" insulation as per thickness specified, • All joints and corners should be finished with 50 MM wide cross linked oven type Aluminum Self-Adhesive Tape. • Size: 19mm for Supply Air Ducts, 13mm for Return Air & Exhaust Air Ducts
7	ELECTRICAL INSTALLATIONS	Electrical installation in operation theatre should be latest & contemporary. Bidder is responsible to provide all required Distribution box, isolation transformer, MCB's, leakage relays, cable tray, etc and all internal wiring, earthing inside the OT .Power distribution within the OT should be "provided" from distribution boards located local to each theatre. Sub mains power to these panels should be by the general electrical contractor. From these panels all distribution services within the departments should be run. Institute will provide one point supply for three phase and/or single phase outside of OT corridor/area.^[1]_[SEP] DISTRIBUTION BOARD a) All high voltage equipment should be installed in a separate enclosure. b) The remote cabinet should house the operating lamp transformers, mains failure relays, UPS, electrical distribution equipment & circuit protection equipment for all circuits within the operating theatre. c) All internal wiring should terminate in

		connectors with screw & clamp spring. Connections of the clip- on type mounted, on a CE approved rail & labelled with indelible proprietary labels. Complete schematics should be provided. Earthed equipotent bonding of all exposed metalwork should be provided. Power sockets within the Operating Theatres & ancillary areas should meet required quantity Light fittings within the clinical areas should be recessed LED type with control gear Fittings should be sealed In accordance with the standard IP54.
8	42 INCH DIGITAL LED TOUCH SCREEN OT CONTROL PANEL	In order to have organized operating system ,operation theatre should be installed with One OT control panel which should be designed to cope with changing technology & equipment in operating environments. Control Panel should be user friendly & ease of operating & maintaining purpose. The panel should be digital and touch screen LED not less than 42 inches ; configured to incorporate all the services that operation room staff required and should be able to adapt new technologies . It should have android/windows based operating system It should be able to add new interfaces, controls by simply modifying software installed in the system. Screen should be designed to withstand cleaning agent commonly used in Operation Theatre The Panel should contain below features : 1. Date Time-Real Time Clock 2. Operation Time - Elapse Time Clock 3. Anaesthesia Timer – Count Down Timer 4. Peripheral Lighting System with Deamer 5. OT Light On/Off Controls 6. HVAC On/Off Controls 7. Medical Gas Alarm 8. Hand Free Telephone 9. Temperature & humidity indicator with controller 10. HEPA Filter Status module

		11. Room Pressure Indicator 12. Differential Pressure Indicator 13. Music/Video Player 14. USB Port 15. Hospital Logo /Name of Department at power on 16. Resolution should be 1920x1080 pixel HD 17. Brightness should be 450 cd/m2 min 18. Contrast should be 1000:1 19. Viewing angel should be Horizontal/Vertical :178 Deg 20. Weight of system should not be more than 30 kg 21. should have RAM not less than 2 GB,not less than 60 GB SSD 22. Should have VGA, HDMI Graphics The medical gas alarm should indicate High, Normal & Low gas Pressure for each gas service present in the operating system & should have an audible buzzer with mute facility. Pressure sensors should be connected to MGPS for monitoring the pressures. Control Panel should be flushed to the wall panel of the operating room
9	42 INCH LED GLASS THREE PLATE LED X-RAY ILLUMINATING SCREEN	Operating room wall panel should be installed with One LED Three Plate X-Ray Illuminating Screen not less than 42 inch which should have electrical safety codes for high & low voltage system. The theatre should be equipped with a 3-plate X-ray viewing screen; It should be designed to provide flicker free luminance for the film viewing purpose. It should be installed flushed with theatre wall for hygienic and ease of cleaning purpose. The X-ray viewing screen should be designed for the purpose offront access. The X-ray viewing screen should be illuminated by high frequency fluorescent lamps or LED and the dimming is controlled by the usage of dimming control with the PCB that is mounted inside the box. The diffuser should be able to diffuse the light evenly and to provide enough luminance for film viewing.

		It should be made of high quality toughened Glass . The film should be held firmly by using spring loaded clips for ease of mounting and dismounting. The body should be built by using electrolyzed steel with powder coating. It should work on PCB button control system. X-Ray Viewer should be flushed to the modular wall panel of the operating room
10	42 INCH ANTIMICROBIAL TOUGHENED GLASS MADE WRITING BOARD (OPERATING LIST BOARD)	Operating list board should be made of 42 inch antimicrobial toughened Glass panel provided in each operating theatre should be flushed to the modular wall panel of the operating room
11	PERIPHERAL LIGHTING	Peripheral lighting in operation theatre should be up graded to provide peripheral LED light intensity of min 500 Lux.It should be in the luminaries fitted CG frame should be total 8 in numbers each OR of size 2 feet x 2 feet. Luminaries cover should be made of highly resistant, disinfectant proof laminated safety glass with stylish fine grained surface, glass panel with white coated steel frame. Out of 8 lights 2 lights should have scenic view of sky/flowers etc The reflectors should be of high quality, cleanable and non-deteriorating. The white luminaries" body should be made of sheet steel/ perfectly powder coated, supplied ready for connection optionally for individual. The fitting should be flush with the ceiling and should be removable form top or bottom. The light fitting should be uniformly and aesthetically distributed on the ceiling to provide uniform illumination in the OR. Light should not interfere when green mode endoscopy is performed. Peripheral lighting should be done according to IP65 (international protection rating 65) Control Equipment for the general lighting and the light dimming should be provided in the theatre control panel
12	MEDICAL GAS PIPELINE (SEVEN LINE) INSIDE OT	a) The bidder should ensure that all works carried out as per DIN/ISO standard b) Bidder should provide Oxygen, Air4, Air7, Co2, Vacuum, AGSS, and Nitrous Oxide, etc. supply to Operation Theatres from the existing lines terminated outside the Cardiac Care

		Centre . c) Bidder shall be responsible for supply, installation, testing and commissioning of complete MGPS system inside the operation theatre including Distribution piping, connection to Pendants, outlets and other essential accessories. d) Copper pipes should be of solid drawn, seamless, deoxidized, non-arsenical, half hard, tempered and degreased copper pipe. All copper pipes should be degreased & delivered capped at both ends. The pipes should be accompanied with manufacturers test certificate for the physical properties & chemical composition. The copper pipe should comply with EN 13348 e) Copper pipe must have reputed third party inspection certificate (Eg. Lloyd's, TUV, SGS). f) Fittings should be made of copper and suitable for a working Pressure of up to 17bar and especially made for brazed socket type connections. g) The copper fitting should comply with EN 1254-1 h) The Brazing filler material should comply with EN standards
13	OPERATING PATIENT INFORMATION MANAGEMENT SYSTEM AND INTEGRATION WITH INTRA NETWORK-BASED SYSTEM	Patient Information Management System should be web based and it should have server client-based system and install on modular cart and ancillary system should be mounted on panel inside OT with Latest Hardware & colour printer should be provided . Web based system should be designed to store all the information related to surgical procedure in digital format it should include all field which required for maintaining all surgical procedure record with captured procedure images. .This software with latest camera should be installed in with latest generation computer with printer .Software should provide analytical, statistical data procedure wise, unit wise, surgeon wise , month wise, day wise and year wise. It should also show number of surgeries performed by particular doctors, staff assisted etc. It should also shows all informative data of the patient, lab records, imagine records on system which is mounted on panel inside OT and it should have facility to check edit and update from panel system. It should have visual and image

recording facility also. It should have a facility to view and study patients radiology data (x-ray,CT,MRI,USG) in dicom . OPERATING ROOM INFORMATION SERVER and OPERATING ROOM INFORMATION CLIENT system should be installed over intra network and from OPERATING ROOM INFORMATION SERVER to OPERATING ROOM INFORMATION CLIENT static network should be installed by any mode of wired network system. OPERATING ROOM INFORMATION CLIENT should be install on panel of OT with flip tray. And OPERATING ROOM INFORMATION SERVER should be install on modular cart. Network switch has to be installed for networking between OPERATING ROOM INFORMATION SERVER and OPERATING ROOM INFORMATION CLIENT . 100/1000 MBPS Network Switch should be installed for support mixed working modes. Bidder has responsibility to established all network for OPERATING ROOM INFORMATION SERVER and OPERATING ROOM INFORMATION CLIENT like cable erection and installation.

OPERATING ROOM INFORMATION SERVER SPECIFICATION

Intel® Core™ i3 Processors, total core 2 total threads 4 Processor Base Frequency 3.40 GHz Cache 3 MB Intel® Smart Cache Bus Speed 8 GT/s TDP 35 W Max Memory Size 8gb Memory TypesDDR3L-1600, DDR4-2400 Max # of Memory Channels2 Max Memory Bandwidth34.1 GB/s Processor Graphics fiIntel® HD Graphics 630 Graphics Base Frequency350 MHz PCI Express Revision3.0 PCI Express Configurations ffi1x16,2x8,1x8+2x4 Max # of PCI Express Lanes16 Sockets SupportedFCLGA1151 Instruction Set64-bit Instruction Set ExtensionsIntel® SSE4.1, Intel® SSE4.2, Intel® AVX2. Intel express choperating room information server et 2 x DDR4 DIMM sockets supporting up to 32 GB of system memory. Dual channel memory architecture. Support for DDR4 2400/2133 MHz memory modules Support for ECC UDIMM 1Rx8/2Rx8 memory modules (operate in non-ECC mode) Support for non-ECC UDIMM 1Rx8/2Rx8/1Rx16 memory modules. Integrated Graphics Processor - Intel® HD Graphics support: 1 x HDMI port, supporting a maximum resolution of 4096x2160@24 Hz * Support for HDMI 1.4 version. Maximum shared memory of 1024 MB Realtek® ALC887 codec High

	Definition Audio 2/4/5.1/7.1- channel * To configure 7.1-channel audio, you have to use an HD front panel audiomodule and enable the multi-channel audio feature through the audio driver. Support for S/PDIF Out Realtek® GbE LAN chip (10/100/1000 Mbit) 1 x PCI Express x16 slot, running at x16 (PCIEX16) (The PCI Express x16 slot conform to PCI Express 3.0 standard.) 2 x PCI Express x1 slots (All of the PCI Express x1 slots conform to PCI Express 2.0 standard.) 4 x SATA 6Gb/s connectors 4 x USB 3.0/2.0 ports (2 ports on the back panel, 2 ports available through the internal USB header) 6 x USB 2.0/1.1 ports (4 ports on the back panel, 2 ports available through the internal USB header) 1 x 24-pin ATX main power connector 1 x 4-pin ATX 12V power connector 4 x SATA 6Gb/s connectors 1 x CPU fan header 1 x system fan header 1 x front panel header 1 x front panel audio header 1 x S/PDIF Out header 1 x USB 3.0/2.0 header 1 x USB 2.0/1.1 header 1 x Trusted Platform Module (TPM) header 1 x Clear CMOS jumper 1 x PS/2 mouse port 1 x PS/2 Keyboard port 1 x HDMI port 2 x USB 3.0/2.0 ports 4 x USB 2.0/1.1 ports. 1 x RJ-45 port 3 x audio jacks (Line In, Line Out, Mic In) System voltage detection CPU/System temperature detection CPU/System fan speed detection CPU/System overheating warning CPU/System fan fail warning CPU/System fan speed control. Support minimum 1 tb HDD, having 4GB RAM, 24INCH HD LED Monitor, wireless Keyboard Mouse, SMPS, assembly box, speakers, required audio visual readers, 1080p hd camera.
	OPERATING ROOM INFORMATION CLIENT SPECIFICATION Intel® Core™ i3 Processors, total core 2 total threads 4 Processor Base Frequency 3.40 GHz Cache 3 MB Intel® Smart Cache Bus Speed 8 GT/s TDP 35 W Max Memory Size 8gb Memory TypesDDR3L-1600, DDR4-2400 Max # of Memory Channels2 Max Memory Bandwidth34.1 GB/s Processor Graphics ffiIntel® HD Graphics 630 Graphics Base Frequency350 MHz PCI Express Revision3.0 PCI Express Configurations ffi1x16,2x8,1x8+2x4 Max # of PCI Express Lanes16 Sockets SupportedFCLGA1151 Instruction Set64-bit Instruction Set ExtensionsIntel® SSE4.1, Intel® SSE4.2, Intel®

AVX2. Intel express choperating room information server et 2 x DDR4 DIMM sockets supporting up to 32 GB of system memory. Dual channel memory architecture. Support for DDR4 2400/2133 MHz memory modules Support for ECC UDIMM 1Rx8/2Rx8 memory modules (operate in non-ECC mode) Support for non-ECC UDIMM 1Rx8/2Rx8/1Rx16 memory modules. Integrated Graphics Processor - Intel® HD Graphics support: 1 x HDMI port, supporting a maximum resolution of 4096x2160@24 Hz * Support for HDMI 1.4 version. Maximum shared memory of 1024 MB Realtek® ALC887 codec High Definition Audio 2/4/5.1/7.1- channel * To configure 7.1-channel audio, you have to use an HD front panel audio module and enable the multi-channel audio feature through the audio driver. Support for S/PDIF Out Realtek® GbE LAN chip (10/100/1000 Mbit) 1 x PCI Express x16 slot, running at x16 (PCIEX16) (The PCI Express x16 slot conform to PCI Express 3.0 standard.) 2 x PCI Express x1 slots (All of the PCI Express x1 slots conform to PCI Express 2.0 tandard.) 4 x SATA 6Gb/s connectors 4 x USB 3.0/2.0 ports (2 ports on the back panel, 2 ports available through the internal USB header) 6 x USB 2.0/1.1 ports (4 ports on the back panel, 2 ports available through the internal USB header) 1 x 24-pin ATX main power connector 1 x 4-pin ATX 12V power connector 4 x SATA 6Gb/s connectors 1 x CPU fan header 1 x system fan header 1 x front panel header 1 x front panel audio header 1 x S/PDIF Out header 1 x USB 3.0/2.0 header 1 x USB 2.0/1.1 header 1 x Trusted Platform Module (TPM) header 1 x Clear CMOS jumper 1 x PS/2 mouse port 1 x PS/2 Keyboard port 1 x HDMI port 2 x USB 3.0/2.0 ports 4 x USB 2.0/1.1 ports. 1 x RJ-45 port 3 x audio jacks (Line In, Line Out, Mic In) System voltage detection CPU/System temperature detection CPU/System fan speed detection CPU/System overheating warning CPU/System fan fail warning CPU/System fan speed control. Support minimum 1 tb HDD, having 4GB RAM, 24INCH HD LED Monitor, wireless Keyboard Mouse, SMPS, assembly Back site box panel, speakers, required audio visual readers, 1080p hd camera, flip panel, mounting panel for system.

NETWORK SPECIFICATION

Network Switch 5 10/100/1000Mbps RJ45 Ports AUTO Negotiation/AUTO MDI/MDIX 10BASE-T: UTP category 3, 4, 5 cable (maximum 100m) EIA/TIA-568 100Ω STP (maximum 100m) 100BASE-TX: UTP category 5, 5e cable (maximum

100m) EIA/TIA-568 100Ω STP (maximum 100m) 1000BASE-T: UTP category 5, 5e, 6 or above cable (maximum 100m) EIA/TIA-568 100Ω STP (maximum 100m) Fanless Standard: 802.3 af compliant PoE Ports: Port1- Port4 Power Supply: 56W 10Gbps Compatible With IEEE 802.3af Compliant PDs Priority Function Mac Address Auto- Learning And Auto-Aging IEEE802.3x Flow Control 802.1p/DSCP QoS IGMP Snooping Operating Temperature: 0°C~40°C (32°F~104°F) Storage Temperature: - 40°C~70°C (-40°F~158°F) Operating Humidity: 10%~90%RH non-condensing Storage

Humidity: 5%~90%RH non-condensing, CAT 6 Cable, RJ45 Connectors. All the ports should be statically configured.

The Multi-channel OT Integration Console should have the following specifications.

1. The Integration system should receive the signal from different sources like Room camera, Endoscopy camera, Overhead camera, Archiving System, Auxiliary devices like C-Arm, Video Microscope, Mobile ultrasound, microphones, AUX-IN & video conferencing, etc. and able to integrate all signal and give flexibility to route the signals/videos at desire destination/monitors.
2. The system should possess the capability to seamlessly integrate all available video signals within the OT and support for simultaneous inputs from up to four video sources, including Full HD (1920 x 1080p) /4K (3840 x 2160p) with HDR capabilities and progressive scan for 25/30 frames.
3. The system should enable a plug-and-play connection for various video sources, with vendor-independent compatibility, encompassing cameras, endoscopes, microscopes, and PC computers.
4. It should offer support for Full HD/4K video display on the local OT monitor, allowing surgeons to view the surgical procedure in high resolution.
5. The system should incorporate a centralized control module equipped with a touchscreen interface for managing all audio and video signals within the OT. Surgeons should have the flexibility to view multiple images simultaneously in Picture-in-Picture (PIP), Picture and Picture (PAP), and Quad view modes,

with the ability to customize the positioning of these images.

6. It should facilitate integrated audio capture from a separate surgeon's microphone, synchronized with the selected video feed.

7. Real-time display switching should be achievable through the centralized control module. The Audio/Video Router/Switch system should have a minimum of 16 I/Os with open architecture. It should support the input types such as DVI, HD-SDI, S-Video, VGA and HDMI.

8. The system should offer integrated control for the room camera via the centralized control module, with the potential to control the OT light camera if it adheres to a generic control protocol.

9. The Full High-Definition Digital Documentation System should be a high-end Windows 11-based computer system with built-in access security, purpose-built for recording, managing, and archiving surgical images and videos in native full HD resolution.

10. Integration of equipment/Signals/Sources with the Central Control System in such a way that the central control system is capable to route any running high-definition surgical videos, which is being recorded in it, onto any display device in an operating room.

11. It should include a 21.5" or more Full HD (1920 x 1080p) PCAP touchscreen medical-grade monitor bundled with recording software to ensure crystal-clear image viewing.

12. The system should come with integrated storage, capable of archiving video and images up to 1 TB, utilizing the efficient H.264/Mp4 format with compact file sizes.

13. It should feature intelligent and adaptive storage management, with automatic background storage to minimize downtime between surgical procedures.

14. Recording functionalities should include video zoom and vary recording speed for enhanced viewing angles and analysis.

15. The system should support the capture of still images in real-time during procedures.

16. Patient and image data should be able to call up and

distributed to required monitors in the operating room. It should feature a unique Patient and Exam entry management system, with robust search and sorting capabilities.

17. Post-exam playback and review should be supported, with the option to integrate doctor's notes.

18. Captured high-definition images and videos should be easily accessible from the hard drive for printing or saving to various external media, including USB storage media via 2.0 and 3.0 optical media, the network drive and the PACs server.

19. Video Conferencing system should be offered, and the system should be able to transfer high-quality real-time images and audio signals from multipoint at a minimum speed of 2Mbps. The system should be compatible with 1080p full HD resolution for transmission.

20. The conferencing system should be controlled via the touch screen of the integration system from the OT.

21. The system should seamlessly integrate with popular video conferencing platforms like Zoom, Teams, Skype, enabling easy video conferencing from within the OT.

22. It should support live streaming of video feeds to multiple displays within the hospital network, including integrated audio feed over the local IP network.

23. The system should include integrated security software to protect against malware, operating independently of OS security patches, and exclusively running certified software.

24. The centralized control module should offer customization options to display the hospital name and/or OT name on the control screen.

25. The system should have the flexibility to be mounted on a trolley for enhanced mobility within the OT.

26. The system architecture should be designed with scalability in mind, allowing for future expansion as needed.

27. The project should include comprehensive project management and workspace design services aimed at enhancing OR workflow during both the design and installation phases.

Ongoing on-site and remote support, including necessary

		software updates and on-site training, should be included as part of the package.
14	DOUBLE ARM PENDANT	1. Pendant should have safety factor of 3 2. The length of the drop tube from the extension arm should be suitable to the OT height Double Arm Pendant should have total length of 1500mm arm 3. Weight carrying capacity of the arm should not be less than 140 Kg 4. The pendant should have a friction braking used should be of high strength aluminium alloy 5. Arm should be capable of 330 degrees of rotation, which can be easily adjusted to suit the desired mode of operation 6. The distribution column should be at least 1200 mm in height & it should be capable of accepting a range of shelves, infusion poles, electrical sockets, gas outlets other accessories as asked in tender 7. Electrical & Gas are separated in different chambers in the distribution column 8. The Pendant should support the range of Physiological Monitor/ Patient Monitor Mounting Solutions 9. Pendant should be supplied of gas outlets with DIN Standard as mentioned below • Oxygen Outlets – 1 nos. • Vacuum Outlets – 2 nos. • Air(4 bar) Outlets - 1 nos. • Co2 outlet - 1 no • Electrical sockets - 10 nos. • All Gas Outlets should come fitted from the factory • Shelf 50 cms x 50cms with two rails one on each side – 3 no. , Each shelf should have weight capacity of 80 Kg • Shelf 50 cms x 50cms with drawer – 1 no.

		• Data socket RJ-45 -2 nos Certificates ISO 13485
15	SINGLE ARM PENDANT	1. Pendant should have safety factor of 3 2. The length of the drop tube from the extension arm should be suitable to the OT height 3. Single Arm Pendant should have length of 900mm arm 4. Weight carrying capacity of the arm should not be less than 200 Kg 5. The pendant should have a friction braking used should be of high strength aluminum alloy 6. Arm should be capable of 330 degrees of rotation, which can be easily adjusted to suit the desired mode of operation 7. The distribution column should be at least 800 mm in height & it should be capable of accepting a range of shelves, infusion poles, electrical sockets, gas outlets other accessories as asked in tender 8. Electrical & Gas are separated in different chambers in the distribution column 9. Pendant should be supplied of gas outlets with DIN Standard as mentioned below ☐ Oxygen Outlets – 1 nos. ☐ Vacuum Outlets – 2 nos. ☐ Nitrous oxide – 1 nos. ☐ Air(4 bar) Outlets - 1 nos. ☐ Electrical sockets - 8 nos. ☐ All Gas Outlets should come fitted from the factory ☐ Shelf 50 cms x 50cms with two rails one on each side – 3 no. , Each shelf should have weight capacity of 80 Kg ☐ Shelf 50 cms x 50cms with drawer – 1 no. ☐ IV Fluid Pole with 4 hooks – 1No. ☐ Data socket RJ-45 -2 nos Certificates ISO 13485
16	FRONT OT DOOR TO AUTOMATIC HERMETICALLY SEALED SLIDING OT DOOR MADE OF ANTIMICROBIAL TOUGHENED GLASS WITH MOTORIZED BLIND WINDOW	It should allow the partition of the surgical area for the shared use in several plain or hybrid operating rooms. Technical specifications: Lock : cylindrical lock Handle : SS – 304 Thickness of Door : 55mm to 60mm Colour : As per requirement Motor : DC- Brush less motor View window : 300 x 300mm , 400 x 400mm toughen glass of 5mm thickness Clear opening : 800-2500mm Gasket : Synthetic /Rubber PVC ,Soft PVC Gasket Operation :

		microprocessor based controller Frame material : Aluminium Extruded profile Door : Aluminium Extruded profile with Toughened Glass Infill : Puff or Honeycomb Sliding Mechanism : High impactive rollers of nylon insert bearing system Sliding system : Aluminium Extruded profile with high smoothness Colour : as per the choice of the Hospital
17	AUTOMATIC SENSOR BASED 3 BAY SCRUB STATION STAINLESS STEEL GRADE 304 WITH INTEGRATED PRESSURE AIR GUN	One unit of compact 3 Bay surgical scrub sink should be installed for Pre-OT scrub up. Each fixture should be fabricated out of heavy gauge stainless steel grade 304 and should be seamless welded construction, polished to a satin finish. The scrub sink should be provided with a front access panel which should be easily removed for access to the water controlled valve, waste connections, stoppers and strainers. Hands free operation should include infra-red sensors with programmable adjustment. Thermostatic mixing, valve control should be located behind the access panel and maintain constant water temperature. Timing should be adjustable to meet individual application requirements. Provided with infrared sensors, thermostatic control taps with fail safe temperature controls. All units should have reduced anti- splash fronts. Should have provision for soap/disinfection scrub solutions. Knee/foot operated switch should be provided additionally and it should be integrated with air pressure gun and air pressure compressor
18	REUSABLE CAPACITIVE COUPLING CURRENT QUALITY MONITORING ELECTRODE	• Reusable Capacitive coupling current quality monitoring electrode made of viscoelastic polymer. • Should have Current limiting nature & hence eliminate Patient pad site burns • Should be based on Capacitive coupling principle • Should made of akton polymer Can be used for all patient"s weight >350 grams • Should be Radiolucent & latex free, no adhesive related irritation to patient skin. • Should be US FDA/ CE Notified body approved • Should be compatible to any Electrosurgical generator Size: 36" L x 20"W x 1/8"thickness with duel cord

19 LED SURGICAL LIGHT FOR CARDIAC OPERATION THEATER	1. GENERAL REQUIREMENTS a) The light shall adopt the latest LED technology to create a homogenous light patch. When the optical path is blocked, the shape of the spot does not change. The max light field uniformity reaches 70%. b) The light system shall have double light heads, one major and the other satellite. c) The major light shall be configured with automatic illumination control system and sensors on the light head. when a block is sensed, the main light will transmit a signal to the satellite light head allowing both light heads to compensate the blocked illuminance. Specially designed software will ensure a smooth change in intensity without any flash effect. Light intensity shall be adjustable at least between 3%-100% and at least 10 different levels. d) The light can reduce the contrast between the surgical site and peripheral region which reduces eye fatigue and improves visual performance. It provides a gradual transition between the focus illuminated surgical area and ambient lighting in the operating room. e) The light shall be configured with 6 options for different surgery modes, including general lighting mode, full lighting mode and ambient lighting mode for minimally invasive surgery. One-button switchover to different surgery modes helps save clinical time with an intuitive & icon-based user interface touch screen. f) The surgical light can be equipped with a powerful impedance sensor integrated in the control handle. This allows two functions to be controlled directly from the sterile handle, simply rotate to control the illuminance and light field size. There is no need to reset on the control panel. g) The light head shall be preferably “X” or “Y” shape or of shapes which should avoid laminar flow influence by turbulence, with verified certificate Din-1946 Part 4. h) The maximum movement angle of the spring arm shall be at least up to 45° and down to 50°. i) The maximum movement range of the horizontal arm &
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	spring arm should be at least 1,610 mm. j) The diameter of the light head shall be no more than 700mm. k) Integrated camera Full-HD(2 mega-pixel,1080P) l) Variable color temperature adjustment can be chosen as an optional configuration, from 3,500-5,100K in 5 ranks. m) With exceptional mobility and modular design, the modular suspension system enables display holders, cameras, light heads or other tools to be seamlessly integrated into the existing lighting system TECHNICAL REQUIREMENTS Central Illuminance (lx) $\geq 160,000$ lx Light Field Diameter (D10)(mm), adjustable from 140~320mm Color Temperature 4350K or adjustable from 3,500-5,100K in 5 ranks as an option. Color Rendering Index Ra ≥ 97 Color Rendering Index R9 ≥ 97 Depth of Illumination(L1+L2) (mm) $\geq 1,200$mm Dimming Range: 3~100% (MIS Lighting mode included) Ambient (Endoscopy) Illumination 500lx Radiant energy(average) $\leq 3.6\text{mW}/(\text{m}^2 \cdot \text{lx})$ Shadow dilution with tube $\geq 100\%$ (with AICS) Shadow dilution with one mask $\geq 100\%$ (with AICS) Shadow dilution with tube and one mask $\geq 100\%$ (with AICS) Shadow dilution with two masks $\geq 100\%$ (with AICS) Shadow dilution with tube and two masks $\geq 100\%$ (with AICS) Number of LED Bulbs on the Light Head: 78 LED Service Life: $\geq 60,000$hrs Light Head Dimension: ≤ 700mm
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	Typical power consumption of all light sources $\leq 54W$ Power Supply: 100~240VAC, 50~60Hz Central Illuminance (lx) $\geq 140,000$ lx Light Field Diameter (D10)(mm), adjustable from 140~320mm Color Temperature 4350K or adjustable from 3,500-5,100K in 5 ranks as an option. Color Rendering Index Ra ≥ 97 Color Rendering Index R9 ≥ 97 Depth of Illumination(L1+L2) (mm) $\geq 1,200$mm Dimming Range: 3~100% (MIS Lighting mode included) Ambient(Endoscopy) Illumination 500lx Radiant energy(average) $\leq 3.6mW/(m^2 \cdot lx)$ Shadow dilution with tube $\geq 100\%$ Shadow dilution with one mask $\geq 60\%$ Shadow dilution with tube and one mask $\geq 60\%$ Shadow dilution with two masks $\geq 52\%$ Shadow dilution with tube and two masks $\geq 52\%$ Number of LED Bulbs on the Light Head: ≥ 60 LED Service Life: $\geq 60,000$hrs Light Head Dimension: ≤ 700mm Typical power consumption of all light sources $\leq 50W$ Power Supply: 100~240VAC, 50~60Hz 2. Integrated wireless camera Should be wireless and modular integrated in one dome Camera- 2 Mega pixel Picture Quality 1080p(1920×1080) Lens f=4.7-47mm, F1.6-3.0
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		Optical Zoom- 10X Digital Zoom- 12 X Video Output HDMI/DVI (Direct) SDI (Duo output) 3. Quality Standards a) ISO 9001:2015 b) ISO 13485:2016 c) CE Certificate d) Verified Certificate Din-1946 Part 4
B3	TURNKEY (INCIDENTAL / INTERNAL PRE-INSTALLATION) DETAILS REQUIRED FOR 20 BEDDED ICU	
1	ICU FLOORING	PVC Flooring with Colour differentiated pathways and areas – supply & installation of of 2mm thick imported vinyl flooring, 100% recycled flexible homogeneous and monolayer in construction of weight 2800 g/m² and should be manufactured by calendering and pressing process of size 2mtrs. X 20mtrs. In approved pattern, to ensure a dense, smooth surface and non-directional design, colour dyed as a raw mixture to ensure even color throughout the thickness and its surface should be densely compacted for improving wear and ease of maintenance with Anti-bacterial and Fungicidal properties. The flooring shall incorporate a specially formulated PUR + Iodine strain free Surface Treatment having wear resistance of $\leq 2.0\text{mm}^3$ as per EN 660.2 and Wear Group „ T „, as per EN-649 and should have a residual indentation of – 0.03mm confirming to EN-433. The laid flooring shall confirm the fire rating B1 class as per EN 13501-1. It should have low VOC contain as TVOC after 28 days <10 µg/m³ as per ISO 16000-6. The floor finish should terminate at the room perimeter passing over a concealed cove former and continuing up the wall for 100mm. The joints in the flooring should be sealed by using a PVC welding bar of matching colour, using a hot air gun for fusion of welding bar with flooring. The vinyl sheet shall be laid & fixed with water based adhesive preferably on acrylic type co polymer with 40000 to 60000 cps viscosity.
2	ANTIMICROBIAL PVC SHEET ON ICU	Supply & Installation of antimicrobial flexible vinyl sheet wall covering of 1.0mm thick 100% recycled PVC flexible,

	WALL	homogeneous of total weight 1750 g/m ² in sheet of size 2mtrs. X40 metres. in approved pattern & colour combination with PUR surface treatment fully resistant to impact, as it acts a buffer against damage from beds, trolleys and indoor motorized vehicles with Anti-bacterial and Fungicidal properties & should create safe and hygienic environment in ICU. The wall covering shall confirm the fire rating M1 class as per NFP 92 506. The vinyl wall covering shall be fixed with water-based adhesive based on acrylic type co polymer with 40000 to 60000 cps viscosity. Wall should be without any undulation if any & if so then it should be repaired with Wall Putti with primer to make the wall smooth with proper edged corners.
3	CEILING SYSTEM INSIDE ICU	The prefabricated clean Room Ceiling should be free hanging structure from composite free hanging insulated antimicrobial PPGI Double skin clean room rock wool panels. The ceiling will be constructed using 50 mm thick double skin PPGI rock wool panel. It should have high pressure injected puf (40kg/cum density). The individual wall panels shall use the tongue and groove technology for joining two panels, no welding should be allowed. The gaps between panels shall be suitably filled with metal filler/epoxy and sanded flush. Ceiling elements should be resistant to all standard cleaning agents, disinfectants and fumigation agents. Ceiling element should be able to be disassembled and reinstalled. Panel should be covered with protective sheath to prevent scratch during installation. Colour of Ceiling panel should be as per the choice of User.
4	ELECTRICAL INSTALLATION	Bidder is responsible to provide all required Distribution box, isolation transformer, RCCB, MCB's, leakage relays, cable tray, etc and all internal wiring, earthing inside the ICU. Power distribution within the ICU should be "provided" from distribution boards located in ICU. From these panels all distribution services within the departments should be run. Institute will provide one point supply for three phase and/or single phase outside of ICU with Voltage Stabilizer. Each ICU bed should be with UPS supply. Electrical board and oxygen gas point should be away from each other by 1 feet. Stand by supply arrangement to each bed by DG set of proper KVA.

		For lighting load digital inverter may be used in absence of DG set. Switch gear panel should be earthed by copper plate earthing"s
5	CLEAN ROOM HERMETIC DOUBLE DOOR	Clean room PPGI PUF Double Door made of double skin 50 mm thick double skin clean room PPGI puf panel (0.8 mm both side) size of the door should be 1800 X 2100 mm having viewing window on both the shutters of sizes 300X300mm. The Door frame is made of Extruded Aluminium Profile having Gasket to provide Leak less mechanism on three. Should have door auto closer system, colour combination of the doors will be decided by the user department.
6	CEILING PERIPHERAL LIGHTS / ICU LUMINAIRE	Clean Room Luminaires, IP 65, recessed type to be provided for general illumination The light fixture will be hermetically sealed from top side (ceiling side) with bottom opening for repair & maintenance. Magnetic locking with the frame with no screws visible from the bottom. Size : 2ft. x 2ft. in Corridor , and size 1ft x 1 ft in on every patient bed
7	LED ILLUMINATED BEAUTIFUL SCENERY PANELS	in the ceiling for better ambience Ceiling mounted LED illuminated scenery panel of size 4 ft x 2 ft as per the user choice.
8	WALL MOUNTED MODULAR BED HEAD PANELS WITH NURSE CALL SYSTEM	It should be powder coated aluminium body. It should have electrical switches and sockets compatible for medical equipment's on front panel and wiring panel. It should have wiring panel on back side with utmost safety and standard. It should have 4 gas outlets on front panel. It should have UPS outlet and power outlet. It should be beautifully designed and integrated with nurse call system with nurse calling device.
9	U TRACK CURTAIN SYSTEM WITH CURTAIN	curtain tracks with curtain and hardware should be ideal for use in Hospital as a cubicle curtains. 1. curtain tracks should be designed for ceiling as well as wall mount and include rigid metal tracks as well as curved and flexible curtain tracks. 2. curtain tracks should be perfect for Hospital use, especially when hanging large heavy draperies and for high ceiling applications. 3. Cubicle curtain tracks should offer offered buttery smooth traversing drapery track. 4. Should be supplied with hardware and curtain cloth and

		color of curtain should be as per choice of Hospital administration.
10	HVAC SYSTEM	SCOPE OF WORK Supply, installation, testing, and commissioning of Ductable Air Conditioning System with complete ducting, insulation, and accessories as per the approved drawings and layout DUCTABLE AC UNITS Type: Ductable Split / Packaged AC • Tonnage: As per the approved layout and heat load calculation. • Refrigerant: R-410A / R-32 (Eco-friendly, Non-Ozone Depleting) • Indoor Unit: Ceiling-mounted ductable type with a high-efficiency coil. • Outdoor Unit: Weatherproof casing with rotary/scroll compressor. • Airflow: High static pressure blower suitable for ducting. • Control System: Microprocessor-based digital controller with remote control / BMS compatibility. • Electrical: 3 Phase, 50 Hz / As per site requirements. - Voltage Scanner required in Outdoor unit - Inbuilt Electrical Safety : Surge Protection, Protection against Reverse Phase Sequence, Undervoltage Protection, Phase Loss Protection, Over voltage protection, inbuilt compressor overload protection. - Wired Remote should be with inbuilt IR Receiver. - Filter Drier for liquid line required DUCTING WORK Material: GI sheet, as per IS: 277 standards. • Thickness:

	• Up to 750 mm: 0.63 mm (24G) • 751 mm to 1500 mm: 0.80 mm (22G) • Above 1500 mm: 1.0 mm (20G) • Fabrication: Slip-on flange type with proper reinforcement. • Sealing: Joints to be sealed with aluminum foil tape & mastic sealant to prevent leakage. • Hangers & Supports: As per SMACNA standards. INSULATION Duct Insulation (Thermal): Nitrile Rubber / Glass Wool, 13mm thick (Indoor), 19mm thick (Outdoor) Acoustic Insulation: Fiber glass insulation of 25mm thick inside ducts near AHU for noise reduction. GRILLES, DIFFUSERS & DAMPERS Supply & Return Air Grilles/Diffusers: Powder-coated aluminum with volume control dampers. Fire Dampers: As per NBC & NFPA standards, UL-listed. VCD (Volume Control Dampers): GI construction, opposed blade type with locking quadrant. INSTALLATION & TESTING Proper mounting of indoor and outdoor units with anti-vibration supports. Copper piping with proper insulation and pressure testing. Electrical wiring & conduit work as per IS standards. Commissioning with airflow balancing, refrigerant charging & performance testing. APPROVED MAKES AC Units: Carrier Ducting: Tata / Jindal / Equivalent Insulation: K-Flex / Armacell / Equivalent Grilles & Diffusers: Caryaire / Air Master / Equivalent
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11	ANCILLARY AREA OF CARDIAC CARE CENTER	a. Receptions & Waiting area – one Reception table of 6 ft x 4ft x 3 ft with two executive revolving chair b. Doctor Consultation Room -,Executive Table 4 ft x 3 ft ,Executive revolving chair and two non revolving executive chair c. Doctor Changing room -,Locker with minimum 8 lockers d. Console Room – PVC Flooring, False Ceilling ,Lead protected Glass for viewing inside cathlab of size as per requirement ,executive table 4 x 2 and 4 executive revolving chair e. Cath lab Store – 3 units of Modular storage cup boards with Locks of size 6ft x 2 ft x 4 ft f. Nurses Rooms - Locker with minimum 8 lockers , Standard sofa cum bed of size 6 ft x 3 ft x 2 ft , Executive Table 4 ft x 3 ft ,Executive revolving chair and Two non revolving executive chair , Two storage cup boards with Locks of size 6ft x 2 ft x 4 ft g. Doctors Lounge - Standard sofa cum bed of size 6 ft x 3 ft x 2 ft , Standard Three seater Sofa set of 6 ft x 3 ft and two storage cup boards with Locks of size 6ft x 2 ft x 4 ft
B4	TURNKEY (INCIDENTAL / INTERNAL PRE-INSTALLATION) DETAILS REQUIRED FOR PRE/POST CATH PATIENT HOLD ROOM 10 BEDED	
1	FLOORING INSIDE CATH PATIENT HOLD ROOM	PVC Flooring with Colour differentiated pathways and areas – supply & installation of of 2mm thick imported vinyl flooring, 100% recycled flexible homogeneous and monolayer in construction of weight 2800 g/m2 and should be manufactured by calendering and pressing process of size 2mtrs. X 20mtrs. In approved pattern, to ensure a dense, smooth surface and non-directional design, colour dyed as a raw mixture to ensure even color throughout the thickness and its surface should be densely compacted for improving wear and ease of maintenance with Anti-bacterial and Fungicidal properties. The flooring shall incorporate a specially formulated PUR + Iodine strain free Surface Treatment having wear resistance of $\leq 2.0\text{mm}^3$ as per EN 660.2 and Wear Group ,, T ,, as per EN-649 and should have a residual indentation of – 0.03mm confirming to EN-433. The laid flooring shall confirm the fire rating B1 class as per EN 13501-1. It should have low VOC contain as TVOC after 28

		days <10 µg/m ³ as per ISO 16000-6. The floor finish should terminate at the room perimeter passing over a concealed cove former and continuing up the wall for 100mm. The joints in the flooring should be sealed by using a PVC welding bar of matching colour, using a hot air gun for fusion of welding bar with flooring. The vinyl sheet shall be laid & fixed with water based adhesive preferably on acrylic type co polymer with 40000 to 60000 cps viscosity.
2	ANTIMICROBIAL PVC SHEET ON WALL	Supply & Installation of antimicrobial flexible vinyl sheet wall covering of 1.0mm thick 100% recycled PVC flexible, homogeneous of total weight 1750 g/m ² in sheet of size 2mtrs. X40 metres. in approved pattern & colour combination with PUR surface treatment fully resistant to impact, as it acts a buffer against damage from beds, trolleys and indoor motorized vehicles with Anti-bacterial and Fungicidal properties & should create safe and hygienic environment in ICU. The wall covering shall confirm the fire rating M1 class as per NFP 92 506. The vinyl wall covering shall be fixed with water-based adhesive based on acrylic type co polymer with 40000 to 60000 cps viscosity. Wall should be without any undulation if any & if so then it should be repaired with Wall Putti with primer to make the wall smooth with proper edged corners.
3	CEILING SYSTEM	The prefabricated clean Room Ceiling should be free hanging structure from composite free hanging insulated antimicrobial PPGI Double skin clean room rock wool panels. The ceiling will be constructed using 50 mm thick double skin PPGI rock wool panel. It should have high pressure injected puf (40kg/cum density). The individual wall panels shall use the tongue and groove technology for joining two panels, no welding should be allowed. The gaps between panels shall be suitably filled with metal filler/epoxy and sanded flush. Ceiling elements should be resistant to all standard cleaning agents, disinfectants and fumigation agents. Ceiling element should be able to be disassembled and reinstalled. Panel should be covered with protective sheath to prevent scratch during installation. Colour of Ceiling panel should be as per the choice of User.
4	ELECTRICAL INSTALLATION	Bidder is responsible to provide all required Distribution box, isolation transformer, RCCB, MCB's, leakage relays, cable tray, etc and all internal wiring, earthing inside the ICU. Power

		distribution within the ICU should be "provided" from distribution boards located in ICU. From these panels all distribution services within the departments should be run. Institute will provide one point supply for three phase and/or single phase outside of ICU with Voltage Stabilizer. Each ICU bed should be with UPS supply. Electrical board and oxygen gas point should be away from each other by 1 feet. Stand by supply arrangement to each bed by DG set of proper KVA. For lighting load digital inverter may be used in absence of DG set. Switch gear panel should be earthed by copper plate earthing"s
5	CLEAN ROOM HERMETIC DOUBLE DOOR	Clean room PPGI PUF Double Door made of double skin 50 mm thick double skin clean room PPGI puf panel (0.8 mm both side) size of the door should be 1800 X 2100 mm having viewing window on both the shutters of sizes 300X300mm. The Door frame is made of Extruded Aluminium Profile having Gasket to provide Leak less mechanism on three. Should have door auto closer system, colour combination of the doors will be decided by the user department.
6	CEILING PERIPHERAL LIGHTS / ICU LUMINAIRES	Clean Room Luminaires, IP 65, recessed type to be provided for general illumination The light fixture will be hermetically sealed from top side (ceiling side) with bottom opening for repair & maintenance. Magnetic locking with the frame with no screws visible from the bottom. Size : 2ft. x 2ft. in Corridor , and size 1 ft x 1 ft in on every patient bed
7	WALL MOUNTED MODULAR BED HEAD PANELS WITH NURSE CALL SYSTEM	It should be powder coated aluminium body. It should have electrical switches and sockets compatible for medical equipment's on front panel and wiring panel. It should have wiring panel on back side with utmost safety and standard. It should have 4 gas outlets on front panel. It should have UPS outlet and power outlet. It should be beautifully designed and integrated with nurse call system with nurse calling device.
8	U TRACK CURTAIN SYSTEM WITH CURTAIN	curtain tracks with curtain and hardware should be ideal for use in Hospital as a cubicle curtains. 1. curtain tracks should be designed for ceiling as well as wall mount and include rigid metal tracks as well as curved and flexible curtain tracks.

		2. curtain tracks should be perfect for Hospital use, especially when hanging large heavy draperies and for high ceiling applications. 3. Cubicle curtain tracks should offer offered buttery smooth traversing drapery track. 4. Should be supplied with hardware and curtain cloth and color of curtain should be as per choice of Hospital administration.
9	HVAC SYSTEM	SCOPE OF WORK Supply, installation, testing, and commissioning of Ductable Air Conditioning System with complete ducting, insulation, and accessories as per the approved drawings and layout DUCTABLE AC UNITS Type: Ductable Split / Packaged AC • Tonnage: As per the approved layout and heat load calculation. • Refrigerant: R-410A / R-32 (Eco-friendly, Non-Ozone Depleting) • Indoor Unit: Ceiling-mounted ductable type with a high-efficiency coil. • Outdoor Unit: Weatherproof casing with rotary/scroll compressor. • Airflow: High static pressure blower suitable for ducting. • Control System: Microprocessor-based digital controller with remote control / BMS compatibility. • Electrical: 3 Phase, 50 Hz / As per site requirements. - Voltage Scanner required in Outdoor unit - Inbuilt Electrical Safety : Surge Protection, Protection against Reverse Phase Sequence, Undervoltage Protection, Phase Loss Protection, Over voltage protection, inbuilt compressor overload protection. - Wired Remote should be with inbuilt IR Receiver.

- Filter Drier for liquid line required

DUCTING WORK

Material: GI sheet, as per IS: 277 standards.

- Thickness:
- Up to 750 mm: 0.63 mm (24G)
- 751 mm to 1500 mm: 0.80 mm (22G)
- Above 1500 mm: 1.0 mm (20G)
- Fabrication: Slip-on flange type with proper reinforcement.
- Sealing: Joints to be sealed with aluminum foil tape & mastic sealant to prevent leakage.
- Hangers & Supports: As per SMACNA standards.

INSULATION

Duct Insulation (Thermal): Nitrile Rubber / Glass Wool, 13mm thick (Indoor), 19mm thick (Outdoor)

Acoustic Insulation: Fiber glass insulation of 25mm thick inside ducts near AHU for noise reduction.

GRILLES, DIFFUSERS & DAMPERS

Supply & Return Air Grilles/Diffusers: Powder-coated aluminum with volume control dampers.

Fire Dampers: As per NBC & NFPA standards, UL-listed.

VCD (Volume Control Dampers): GI construction, opposed blade type with locking quadrant.

INSTALLATION & TESTING

Proper mounting of indoor and outdoor units with anti-vibration supports.

Copper piping with proper insulation and pressure testing.

Electrical wiring & conduit work as per IS standards.

Commissioning with airflow balancing, refrigerant charging & performance testing.

APPROVED MAKES

		AC Units: Carrier Ducting: Tata / Jindal / Equivalent Insulation: K-Flex / Armacell / Equivalent Grilles & Diffusers: Caryaie / Air Master / Equivalent
B5	LIST OF CAPITAL EQUIPMENT'S FOR CARDIAC CATHLAB UNIT ON TURNKEY BASIS	
1	ADVANCED CATHLAB SYSTEM DESCRIPTION OF THE EXPECTED FUNCTION	Description of the expected function: Dedicated flat panel detector single plane digital angiography system for interventional cardiovascular/Neuro/Peripheral procedures. The firm without any additional cost should supply any updates of quoted model if available in the market at the time of supply
2	OPERATIONAL REQUIREMENTS WITH MINIMUM SPECIFICATION	a. State-of-the-art, single plane floor/ceiling mounted C-arm/G-arm cardiovascular digital imaging system with high resolution flat panel detector technology for diagnostic procedures and interventional cardiovascular procedures e.g. coronary angioplasty, balloon valvuloplasty, vascular angiography, online DSA etc. with following capabilities: b. Should be capable of real time digital angiography (DSA) acquisition. c. Should be capable of road mapping d. Should be capable of storing fluoroscopy/cine sequences on hard disk and GD/CD for review. e. Should be capable of head to toe of standard adult patient coverage without changing position patient. Should be able to cover at least 175cm patient with fluoro and radiography range. Transverse coverage of at least 92 cm f. Should be user-friendly for quick access and full control of all functionality within the examination room. Single Touch Screen Control with all functionality will be preferred. g. Should be capable of 100% UPS backup for the entire system for at least 30 minutes.

		h. The system should include all packages for cardiac applications. System should be complete with pressure injector, Hemodynamic recording system with IVUS/FFR. Co-registration/integration with IVUS/FFR/OCT is a required. i. The Cath Lab system should integrate all the current models of standard companies of IVUS/FFR with 25 catheters of IVUS, FFR, and OCT each (Specs Mentioned Below) j. The system should include all packages for cardiac applications including rotational DSA angiography with rotational speed of 40 degrees/sec or more. k. Entire system should be operational (starting time) within 3 minutes or less in case of emergency.
3	C-ARM/G-ARM MULTI- DIRECTIONAL FLOOR/CEILING MOUNTED:	a. The system should have floor/ceiling suspended gantry allowing the gantry to position in multiple essential positions of the patient with at least 30 standard user defined programmed angulations. All positions should be accessible with single touch button. movement should be available with joystick b. All movements of the gantry should be controllable from table side c. The system should have in-built collision protection d. The Gantry should have motorized movement for at least LAO/RAO +/- 120 degree and 45 degree CRAN/CAUD e. The gantry should have adjustable rotation speed of at least 25 degree/sec. f. ISO centre to floor distance for C arm should be at least 100 cm or more
4	PATIENT TABLE	a. The patient table should have motorized vertical movement with free floating longitudinal & horizontal movements covering at least 120 cm longitudinal and +/- 15 cm transverse travel. b. Table top should be made of radiolucent material (Carbon fiber or equivalent) having minimum table length 270 cm & width 45 cm with capacity to bear at least 200 kg weight + additional 100 kg for CPR c. Standard accessories for the table should be provided

		include mattress, head fixing aids, radiolucent carbon fiber catheterization and supports, drip Stand etc d. Arm board for radial access should be there e. Ceiling mounted lead glass for reduction of X-ray scatter should be there.
5	X-RAY GENERATOR	a. Should have 3-phase high frequency X-ray generation unit with at least 100 KW power with integrated overloading protection and pulsed fluoroscopy capability at variable pulse rates from 1 to 30 fps b. Should have minimum radiographic range 40-120 KVP and fluoroscopy range of 40-120 KVP c. Should have automatic exposure control for all modes of operation. d. Should be able to save pre-programmed techniques.
6	X-RAY TUBE	a. X-ray tube should be with high-speed rotating anode, fine focal spot (small & large) and high cooling rate to ensure uninterrupted operation. b. Latest generation tubes with fluoroscopic power of at least 3000 watts with noiseless operation to support long-term use. Pulsed fluoroscopy should be offered with pulse rate of at least 1-30 frames/sec. c. The x-ray tube should have anode heat storage capacity 32 MHU or more, with heat dissipation capacity of at least 2500W using advanced efficient cooling mechanism to run continuously for at least 6/8 hours without shutting off. d. Small focal spot not more than 0.6 mm and large focal spot not more than 1.0 mm with a load ability of at least 50 KW tube power.
7	RADIATION SAFETY	a. System should meet all national & international safety standards & comply with BARC, AERB and CE/ FDA guidelines. b. System should be capable of measuring and displaying radiation dose during the patient examination. System should display live radiation dose at all times of operation.

		c. The system should have collimator blade positioning facility without radiation d. Necessary latest software & hardware package for improvement of image quality, noise reduction, image stabilizer in case of moving mass and automatic dose reduction and dose optimization with virtual collimation should be provided. e. Should have pixel flex technology like clarityIQ/Autoright/Optique/Score Pro Advance for auto dose management and reduction
8	DIGITAL IMAGE ACQUISITION CHAIN	a. The flat detector should be with size 12" x 12" or more with a pixel size of not more than 200um. The smaller pixel size will be preferred. The flat detector should be 16 bit. At least three zoom steps to be provided. The DQE should be 75% or more. b. Digital system with acquisition and processing in 1024 X 1024 matrix upto 30 fps in both fluoro and digital cine modes. c. Digital fluoro loop store/replay facility & Last image hold during fluoroscopy. d. Complete cardiovascular computation software package including validated coronary, ventricular software packages (QCA, QLVA), Stent View to be provided.. e. The full system as per specification mentioned in the tender should have a table side control operation for complete acquisition and post processing capabilities. f. The system should have on-line DSA capabilities in 1024 X 1024 matrix with wide ranges of acquisition frame rates. Angle and distance measurement facility should be available. All advanced 2D road mapping with independent windowing of roadmap and device should be possible for better image viewing. It should be possible to view guide wire and device only without any additional contrast injection. g. System should have max opacity and min opacity facility for iodine and CO, contrast. h. Subsequent PACS connectivity should be possible without any additional hardware /software requirement. Auto image transfer facility to PACS should be

		possible in background mode. i. The complete digital system should be networked and connected to a DICOM. j. Image processing system with Series exposures with frame rates upto 30 fpss and pulsed fluoroscopy as standard. k. DICOM facility for patient data acquisition, documentation and archiving. Hard disc storage capacity of at least 1,00,000 uncompressed images of 1024 X 1024 matrix at a minimum of 12-bit/pixel. l. Post-processing software facilities with real-time edge enhancement, positive/negative image display windowing, electronic shuttering, roaming, image reversal, magnifying with text and annotation. m. Latest stent enhancement features including Stent view Live/ clear stent/ clear stent live or similar/equivalent should be provided. These features should be easily operable from the table side. n. System should have real-time noise reduction for better image quality.
9	MONITORS / DISPLAY	a. Examination room: 2 LCD/TFT medical grade monitors of 21" display along with two minimum 21" backup monitors or one 55"/58" monitor for live and road map images Physiology display of the patient. All must be mounted together on a ceiling rail suspension to allow free positioning at any location with weight balanced height adjustment technology. b. Control room: 3 or more LCD/TFT monitors of 19" along with patient reporting workstation for data & image viewing. . These monitors should have the facility for all review post processing and quantification of coronary and ventricular function for training and teaching. There should be facility of instant parallel working with separate workstation c. 27 " 4 k TFT/LCD integrated Monitor for images of Cath Lab system and Hemodynamic Recording
10	DIGITAL ARCHIVING	a. System should have facility to record images on CD/DVD in DICOM format. b. CDs to have DICOM software embedded for instant

		review in any PC. c. Ability to record DSA runs in CD. d. Ability to generate single DVD incorporating multiple patient studies capable of review in any PC is desirable.
11	CATHLAB HEMODYNAMIC RECORDING SYSTEM	a. The features needed to be available in the recorder 3/5/ Lead ECG Amplifier displayed in 55 “ monitor in examination room and 27 “ monitor in Control room. b. Cardiac catheterization hemodynamic recorder with 2 invasive pressure recording. At least 2 pressures with floating inputs. d. Hemodynamic Recorder (for Cardiac Catheterization) with 2 pressure and 3/5 ECG for monitoring of respiration, NIBP, SpO2, 3/5 -lead ECG, at least two invasive pressures, pressure gradient and cardiac output. One additional pair of IBP transducers, ECG lead and SpO2 sensor to be supplied as spare. e. The system should be quoted with NIBP/SpO2/12-lead ECG/ Invasive Pressure. f. SpO2 extension cable, Finger probe, NIBP hose, Adult, pediatric and neonatal Cuffs, ECG trunk cable with standard lead wire set, Cardiac output cable, Network Laser jet Printer,
12	STANDARDS, SAFETY AND TRAINING	Main Cath lab should be CE / USFDA, CDSCO Registered and AERB approved product. Electrical safety conforms to standards for electrical safety IEC-60601-General Requirements. Manufacturer should have ISO certification for quality standards. Shall comply with AERB and BARC guidelines. Latest zero-lag (real-time) stent enhancement should be provided. These features should be operable from the table side. There should be grid switch or equivalent in X-ray tube. Low dose with best imaging software“s including different dose reduction packages, automatic with filter algorithm, Machine

		learning, comprehensive dose reduction package Zero dose positioning should be standard and not optional Detector: Up-right imaging technique inside exam room display with auto -adjustment of the detector and tube alignment of the detector and tube alignment should be available as standard and not optional. System should have 24X7 remote monitoring with dedicated IP for preventing breakdowns and advance intimation on any part failure
13	ONLINE UPS REQUIRED FOR ADVANCED CATHLAB SYSTEM	Supply, Installation, Testing & Commissioning of ONLINE UPS-120 KVA with Isolation Transformer with 30 min back up for CATHLAB "Microprocessor Controlled 120 KVA On-Line Double conversion UPS System (Transformer less design) with Maintenance bypass switch (MBS), IGBT based Rectifier & Inversion Circuit having I/P Power Factor > 0.99, Overall Efficiency > 94% in Double Conversion Mode & 98 % in High Efficiency Mode, Total Harmonic Distortion (THDi) < 5%, Advanced Battery Management Feature (ABM), 3 Ø in put & 3 Ø output. With Battery Breaker and enclosure. Voltage → 384-480V, DC. - O/P Wave Form → Pure- Sinusoidal wave - O/P Power Factor → 0.9pf - UPS Warranty → 24 Months Fabricated Racks in black shade to house Batteries, with Battery inter connecting Link & UPS to, Battery cable up to 10 Meter. - "Sealed Maintenance Free Batteries suitable for approx. 30 minutes back-up on Full load of 120 KVA. - Battery Warranty → 24 Months"
14	OPERATION SUPPORT	The successful supplier/bidder will have to enter operations of the supplied project scope by providing manpower for maintenance of the procured equipment & prepared site conditions. The operations should include supply of nonclinical services. Minimum 1 Biomedical engineer & 1 Technician should be provided for initial period within the scope of supply

		to maintain the equipment. The above human resource should be provided for a minimum period of 1 year and extendable thereafter.
B6	TECHNICAL SPECIFICATIONS OF CARDIAC OPERATION THEATRE EQUIPMENT'S	
1	CARDIAC OPERATION TABLE	The table top should be 100% radiolucent material & X-Ray access. 5 sections table plate-head plate, Back Plate, Seat plate & Split leg plate (Left & Right) The head plate & leg plate should be easily detachable to accommodate accessories during the surgery The Weight bearing capacity of the table should be 185 kg Locking/Unlocking of the Operating table should be through Lever attached to the base of the table The Table Top mattress should be of Special Foam core pad The table movements should be controlled by Wired Hand control only It should have a battery inside the table, which can work 50-80 operations for two weeks and the battery should be standard configuration. It should have electric longitudinal shift function (Table top slide) not less than 300mm It should have a build-in elevator. The build in elevator should be operated manually The rails & the column of the table should be made of high level of aluminum alloy. Length of the table ≥ 2060 mm Width of the table with rails ≥ 590 mm The thickness of mattress ≥ 75mm Electric Function The lowest position ≤ 680 mm The highest position ≥ 1020 mm Longitudinal shift ≥ 300 mm Turn left $\geq 21^\circ$ Turn right $\geq 21^\circ$ Trendelenburg position $\geq 26^\circ$ Reverse Trendelenburg position $\geq 26^\circ$ Back plate up position $\geq 80^\circ$ Back plate down position $\geq 40^\circ$

		Mechanical Function Head plate up $\geq 45^\circ$ Head plate down $\geq 90^\circ$ Build-in elevator ≥ 120 mm Leg plate up $\geq 20^\circ$ Leg plate down $\geq 90^\circ$ Leg plates spread $\geq 180^\circ$ SHOULD BE SUPPLIED WITH OT TABLE ACCESSORIES REQUIRED FOR CARDIAC SURGERIES
2	ANESTHESIA WORKSTATION WITH PATIENT MONITOR	1. Should be advanced, reliable, compact and mobile with integrated ventilator. 2. Should be based on microprocessor and suitable for low flow as well as minimal flow anesthesia for adults, pediatrics and neonatal use. 3. Machine should be suitable for premature babies, neonates, pediatric and adults. 4. Should have a facility to connect to the central supply (oxygen, nitrous oxide and air) pin index cylinder one each of oxygen and nitrous oxide with on screen digital display of pressure gauges for central supply and cylinder. 5. Machine should have working surface and illumination with the storage space for keeping accessories. Should have individual brake for front wheel to lock the machine. 6. Should have electronic gas mixing with FiO₂ & total flow setting along with virtual flow meter displays 7. Should have integrated safety feature like electronic hypoxic guard, N₂O cut off incase of O₂ low pressure/failure, alarm and O₂ flush etc. 8. Should have onscreen virtual flow meter display of O₂, N₂O and air. 9. Should have compact autoclavable breathing system and soda lime chamber maximum capacity of 1.5L. The sodalime canister should be compatible with the devices in all the operating rooms. 10. Should have electronically controlled and electrically driven anesthesia ventilator, should not require driving gas. 11. The machine should be suitable for low & minimal flow

	Anesthesia application 12. Should able to log all alarms, self tests, messages and other events. 13. Should have integrated touch screen color display with minimum 15" screen size. 14. The machine should have automatic calculations and presetting of patient specific ventilation settings via ideal body weight, Age and height. 15. The machine should calculate agent consumption and agent uptake by patient on a case by case basis and display of fresh gas consumption in the unit logbook 16. System should be European CE or FDA approved and confirms to EN 60601-2-13 (Requirement for safety and essential performance of anaesthesia system) 17. Anesthesia ventilator should have the following settings: - Automatic breathing circuit Compliance correction - Spont. Breathing - Manual Ventilation - Volume controlled mode - Pressure controlled ventilation - SIMV in VCV & PCV - Pressure Support, PS with CPAP, PS with SIMV in VCV/PCV - Should be upgradeable to Autoflow or PCV-VG or similar mode – delivering set tidal volume at minimum airway pressure. and in combination with SIMV - High peak inspiratory flow upto 120 LPM, - Tidal volume adjustment range 10 ml (in VCV) to 1500 ml and upgradeable to 5 ml in VCV - Adjustable PEEP: Off, 2 to 35 hPa (or cmH₂O);and CPAP: 0, 2 to 35 mbar - Resp frequency from 3 to 100 per min.
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	m. I:E : max 1:50 to 50:1 n. Should be able to ventilate with atmospheric air, in case of total fresh gas failure including Oxygen. 18. Should have tidal volume compensation or fresh gas decoupling valve. 19. Should have external fresh gas outlet for connecting the open circuits. 20. Integrated breathing system warmer for breathing gas conditioning and avoidance of condensation. 21. Should have dual flow sensing technology with flow sensor at inspiratory and expiratory side. 22. Should have simultaneous display of 3 or 4 real time wave forms for concentration of CO₂, O₂, and anaesthetic agents, airway pressure, inspiratory and expiratory flows and loops for P-V and F-V loops. 23. Anesthesia machine should monitor and display the measure value of minute volume, tidal volume, peak airway pressure, mean pressure, plateau, PEEP, dynamic compliance and resistance. 24. Should have pause mode for short term interruptions of ventilation. 25. Should have alarms for high/low volume for expired tidal volume, minute volume frequency and airway pressure. 26. Should be supplied with Isoflurane and sevoflurane vapouriser; All the vapourisers should be manufactured from same company as anaesthesia machine. 27. Should have dual detection of anesthetic agent in case of change of anesthetic agent. 28. Should have RS232 port to interface monitor to transfer the expired parameters on monitor and in- built data output port / USB for data retrieval. 29. Should have anytime facility for manual ventilation possible at least with freshgas O₂ delivery and dosage of volatile agents with airway pressure monitoring in case of system failure
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	/ system “off”. 30. Should have battery back up to at least 60-90minute including that for ventilator. 31. System should have backup oxygen control in case of complete power failure and auxiliary oxygen supply source. 32. Should have auxiliary Oxygen supply system. 33. Should have anytime facility for manual ventilation possible at least with freshgas O2 delivery and dosage of volatile agents with airway pressure monitoring in case of system failure / system “off”. 34. Should have the indicator or decision support to show the efficiency of fresh gas setting while used in Low flow and minimal flow 35. Machine should be with integrated anesthesia gas monitoring with automatic identification of anesthetic agent (MAC and end tidal concentration) as well as O2, N2O, FiO2 and ET CO2; 36. Should have sample gas return into the breathing system for better gas efficiency in low flow and minimal flow usage. 37. Should have heated breathing system for optimized minimal flow anaesthesia usage and ventilation quality. 38. Should be possible to deliver oxygen and anaesthetic agents in Man/spontaneous mode even when the machine is in switched off mode as an emergency back up 39. The machine should have adjustable alarm limits for all the parameters with auto set alarm function. a. The machine should have automatic display of MACx values b. Should have automatic activation of low agent alarm c. Should have alarm logbook for displaying and saving alarm history d. System leak and fresh-gas deficiency alarm e. Should have cardiac bypass mode
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40. Should have fully automated self-test including calibration of all sensors without any user action necessary after start to test.

41. Should have backup manual mode to allow the direct change to manual ventilation while maintaining gas and ventilation monitoring; O₂ and anaesthetic agents from the vaporisers can be continuously delivered

42. Should have facility for data storage on USB storage device like self-test results, alarm history, screen shots, trends and machine configurations

43. Should have integrated active AGS system.

44. Each machine should be supplied with following accessories with each unit of same manufactures make.

45. Should be European CE and USFDA Approved

Specifications for Multipara monitor

1. Should be suitable for adult, paediatric neonatal patients monitoring.

2. Should monitor ECG, Respiration, NIBP, SpO₂, Dual Temperature, Three IBP as standard & Etco₂

3. Should have ST analysis, Arrhythmia detection, pacer spike detection, Drug Dose Calculation and OxyCRG as standard in every monitor

4. Should have integrated 12" TFT-LCD colour touch screen display (resolution min 1024*768) with minimum 8 channels of waveforms.

5. Defib and ESU protection should be present

6. Should have monitoring, surgery and diagnostic mode of monitoring

7. Should have Advance Arrhythmia monitoring for Asystole, Vfib/Vtac, VT>2, Couplet, Bigeminy, Trigeminy, R on T, PVC, Tachy, Brady, Missed Beats, IRR, PNC, Vbrady.

8. Monitor access should be with Touch screen, rotary knob

	and fast access key for quick function. 9. 120 hrs of trend and 60 events with waveform as standard in all monitors 10. Color or position of waveforms or parameters should be able to be adjusted based on users preferences. Big font on screen format should be present. 11. Nurse call, VGA output port should be standard in every monitor. 12. Monitor should have USB port for software upgrade 13. Should have inbuilt three channel recorder. 14. Should have min of 5hours of battery backup as standard in every monitor 15. Upgradeable to export the Vitals as HL7 messages to the HIS 16. Monitor should be ready for interface with select model of equipment like Anaesthesia machine/ventilators for displaying ventilation parameters, waveforms & loops. 17. Anaesthesia gas monitoring (N2O, CO2, O2, MAC) with autogas identification. 18. Connectivity to the central station both via wired and wireless network. 19. Should be European CE complying to European Directive 93/42/EEC for both Monitor and software to control physiologic monitoring systems. 20. Bed to Bed monitoring as standard 21. Upgradable to Cardiac Output Monitoring 22. Anti left lock facility should be possible for better hospital asset management Should have following parameters ECG ☐ Monitor should have capability for display upto 7Lead. ☐ ST Analysis
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	☐ Waveform Freeze option with review of 120 sec ☐ Range: 15 to 350bpm RESPIRATION ☐ Through impedance pneumography method or EtCO2 SpO2 ☐ Should provide value for arterial oxygen saturation as well as plethysmographic pulse waveform NIBP ☐ By oscillometric principle of measurement. ☐ Should display Systolic, diastolic, mean pressure in large easy to read display ☐ Range: 10 to 270mmHg Dual Temperature – core & skin. Range: 0 to 50 Deg C Three IBP – Should include Starter kit and simultaneous monitoring of three temp and three IBP should be possible. Range: -50 to 300mmHg Standard Scope of supply must include: ☐ 3 gas Anaesthesia workstation ☐ Trolley with drawer ☐ Two Vaporisers Sevo & ISO ☐ Writing surface with illumination
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		☐ Pin Index yokes for O2 & N2O ☐ Pipeline connections for all three gases ☐ Integrated Ventilator ☐ Semiclosed breathing system ☐ Adult & Paediatric autoclavable patient tubings (1) ☐ Anaesthetic mask size – Adult & child (Sizes 0,1,2,3,4,5 one each) ☐ USFDA approved calibration free Vaporisers for sevoflurane and Isoflurane ☐ Central gas supply hoses (Color coded) ☐ Sampling lines:10 Nos and water traps: 12Nos. ☐ Reusable flow sensor 20 with each workstation ☐ Monitor basic unit with ECG, Resp, SpO2, Dual Temp, NIBP, Three IBP, inbuilt battery ☐ 5 lead ECG Cable – 1 no each per monitor ☐ ECG disposable electrodes – 30 nos per monitor ☐ SpO2 finger sensor – 1 no per monitor ☐ Skin temperature probe – 1 no per monitor ☐ NIBP Hose - 1no per monitor ☐ Adult & Paediatric cuff – 1no each per monitor ☐ Should be supplied with intermediate IBP cable– 1 no per monitor ☐ Disposable transducers – 6nos ☐ Instruction for use
3	ELECTROSURGICAL GENERATOR	1. Unit should have microprocessor-controlled tissue feedback technology. 2. Unit should have Combo Generator Technology having conventional ESU, and Saline Plasma Bipolar system. 3. It should feature a touchscreen display of 7 inches or larger, clearly indicating the true power on the screen. 4. Self-illuminated accessory socket with auto selection during setting of the generator & blinking of light to indicate activation in selected accessories.

5. It should have separate and isolated sockets for the Monopolar, Bipolar and Saline resection.
6. It should complete self-Diagnosis during power on and should show an error code with its solution if any fault is detected.
7. It should accept dual-area (Disposable) and single-area (Reusable) patient return electrodes. Should give Green Indication if dual area patient plate applied to patient & Red indication with alarm tone if the patient plate is not applied.
8. It should have at least 100 user programs for different surgical procedures.
9. Unit should have a remote power setting facility from the sterile field with a conventional Hand switching Pencil.
10. Unit should have pure sinusoidal output waveform in HF power output in cut and bipolar modes.
11. Operating Frequency of the unit should be between the 300kHz to 500kHz, it should not be more or less than this range
12. Unit should be useful for underwater procedures in monopolar as well as saline resection.
13. It should have RANDOMIZED spray coagulation for larger area coverage.
14. Unit should have Seven different modes for Cutting with a max output of 400 Watt
15. Unit should have Seven different modes for Coagulation with max output 200Watt.
16. Unit should have Five Bipolar modes with a max output of 120 watts.
17. Unit should have Auto Bipolar with delay time adjustment.
18. It should have an Alarm facility after the completion of bipolar coagulation.
19. Bipolar Micro mode, power range from 0.1 to 10 watts is adjustable in 0.1 watt step.
20. Power Should change from 1 to 40 by step of 1W, 40 to 100 by step of 5W & 100 to max power by step of 10 W for fast setting of the generator.
21. Unit should have Three Saline Plasma Bipolar Cut mode with 300Watt and Three Saline plasma Bipolar Coag with max output 200Watt.
22. Unit should suitable to do TURP in Saline with Monopolar TURP Set with Isolated Bipolar Sheath.
23. Unit should give an alarm in case of Saline Plasma Bipolar cable is broken or activated in non-saline medium activation.
24. Unit should have tissue feedback, and pulsed interval-controlled ENDO CUT function.
25. Unit should have Time out function to avoid the prolonged activation of HF output in monopolar.
26. Unit should be supplied with Double Paddle footswitch

		with toggle function to change the usability between the monopolar, bipolar, without going back to the generator. 27. Unit must have European CE with 4 digits notified body certified and ISO 9001:2015 and ISO 13485:2016 these certificates have to submit with a technical sheet. 28. General Safety Standards: IEC 60601-1-1, IEC 60601-2-2 and EMI/EMC Compatibility Standard: IEC 60601-1-2 for Electrosurgical Generator. 29. It should be supplied with the following accessories: - • Dual Area Silicon Patient return electrode Reusable..... 1No. • Cable for return electrode.....1No. • Disposable patient return electrode 1No. • Hand switching pencil Reusable 1No. • Foot switching pencil.....1No. • Bipolar forceps.....1No. • Cable for bipolar forceps.....1No. • Monopolar Foot Switch Toggle paddle) 1No. • Universal adaptor 1No. • Set of electrodes 1No. • Luer Lock Adaptor with RF connection.....1No. • Cord for Endoscopy.....1No. • Bipolar Loop, Cutting, Single Stem.....2Nos.
4	ELECTRIC STERNUM SAW MACHINE	Should be light weight & ergonomic design for Sternotomy Should be reciprocating type straight blade Should be ETO and autoclavable Should be made of Stainless steel & Aluminum Should not be more than 900 Grams Should be Corrosion proof
5	ELECTRIC SUCTION MACHINE	The Surgical Suction Unit should meet the requirements of all surgical fields of application. Suction Unit should run on Oil Free Rocking Piston Vacuum Pump Should have Twin Vacuum

		Pump technology Vacuum Pump should run on thermally protected electric motor Unit should have Fully Stainless-Steel cabinet mounted on antistatic Castor wheels The Suction should be provided with Two Autoclavable/ Unbreakable collection jars made from high Quality Polycarbonate material. Capacity of Collection Jars should be 1.5 Liters Collection Jars should have self sealing Rubber Lids Vacuum should be adjusted with the help of Vacuum Regulator & Panel Mounted Vacuum Gauge. Safety floats to prevent entry of suction fluid in the vacuum pump in case of overfilling Should be provided with Bacteria filter to ensure zero contamination & prevent Infection The Unit should have Foot Switch arrangement to operate On/Off by Foot Switch. Should Have vacuum of 600mm of Hg at sea Level. Vacuum Pump capacity should be :36LPM Should Runs on 220/230 V AC Power Consumption should be 80Watts only. Mains cable should be 5 Amp & minimum 2.5 Meter Long Dimensions should be approx. (mm) 320(L)x280(w)x755(H) The Manufacturing Company must have CE , ISO 9001 & ISO 13485 Certificates.
6	SET OF CVTS INSTRUMENTS MAJOR	MIC.SCISSORS RD HDL 25°S/S 165MM 1 MIC.SCISSORS RD HDL 45°S/S 165MM 3 DUROGRIP MIC.NEEDLE HOLDER RD.HDL.200MM 3 MICRO NDLHLDR DIAM.COATED180MM STR4 DIADUST MICRO RING FORCEPS 1MM STR.210MM 4 DIADUST MICRO RING FORCEPS 1MM STR.185MM 4 GERALD FORCEPS DEL CVD 175MM 2 POTTS-SMITH SUPERCUT SCISSORS 45°185MM 2 DUROGRIP CASTROV.NDL HLDR SERR 0.2/215MM 4

DIADUST MIC NDL HDL RD HDL HEAVY 230MM	4
MINI-BULLDOGCLAMP CVD.14/35MM	4
TC MAYO-HEGAR NDL HOLDERHVYSERR185MM	5
TC MAYO-HEGAR NDL HOLDERHVYSERR205MM	5
TC CRILE-WOOD NDL HLDRSTD SERR 200MM	5
TC CRILE-WOOD NDL HLDRSTD SERR185MM	5
TC METZENBAUM WVCT SCISS CVD B/B200MM	5
TC METZENBAUM SCISSORS DEL CVD 180MM	5
TC THUMB FORCEPS 200MM	3
TC MAYO DISS SCISBD BLDSCVD 230MM	2
TC NELSON-METZ SCISSORS CVD 230MM	2
DBAKY TNGENTAL CLMP 2.48MM-WIDE 265MM	2
DE'BAKEY TANGENTIAL CLMP1.38MM-WD220MM	2
DE'BAKEY ATR.FCPS 3.5MM STR 200MM	8
DE'BAKEY ATR.FCPS 2.8MM STR200MM	4
COOLEY PEDIATRIC CLAMP 60DG 30/160MM	2
COOLEY PEDIATRIC CLAMP 60DG 30/160MM	2
DE'BAKEY ATR.BULLDOGCLAMP CVD.45/105MM	2
DE'BAKEY ATR.BULLDOGCLAMP STR.45/105MM	2
TC THUMB FORCEPS 180MM	1
TC THUMB FORCEPS 145MM	1
DERRA-COOLEY CLAMP 16MM 170MM	2
DERRA-COOLEY CLAMP 27MM175MM	2
DE'BAKEY ATR.FCPS 3.5MM STR 240MM	2
LISTER BANDAGE SCISSORS 180MM	2
DIADUST MIC.NEEDLE HOLDER RD.HDL.210MM	2
DIETHRICH ATR.AORTA CLAMP 210MM	1
OCHSNER-DE'BAKEY ATR.AORTA CLMP 230MM	1

		MORRIS ATR.AORTA CROSS-CLAMP175MM	2
		JOHNS-HOPKINS APPLY/REMOVE FCPS 240MM	1
		FAT RETRACTOR	4
		1/1 SIZE PERF BASKET 540X253X76MM	1
		1/1 SIZE PERF BASKET 540X253X106MM	1
		1/1 SIZE PERF BASKET LID 544X257MM	2
		3/4 SIZE PERF BASKET 406X253X56MM	1
		3/4 SIZE PERF BASKET LID 410X257MM	1
		INSTRUMENT RACK TYPE 4 240X40MM	4
		FIXATION PIN FOR STORAGE DEVICES	2
		HOLDING PIN F/RING-HDL INST 12	
		SILICONE CLAMP WITH FIXATION CLAMP 15MM	6
		MINITRAY WITH LID 145X44X25MM	1
		PIN D:6MM HEIGHT:47MM	10
7	SET OF CVTS INSTRUMENTS MINOR	JOHNS-HOPKINS BULLDOG CLAMP CVD.80MM	1
		JOHNS-HOPKINS BULLDOG CLAMP CVD.91MM	1
		TC CRILE-WOOD NEEDLE HOLDSTR 270MM	3
		GERALD FORCEPS DEL STR 175MM	3
		TC BAUMGARTNER NEEDLE HOLDER 200MM	3
		DIADUST MICRO FORCEPS PLATEAU STR.250MM	1
		ROSS HOOK SIZE 13X22MM FIG.2 245MM	1
		WILLIGER ELEVATOR 5/165MM	1
		TC THUMB FORCEPS 145MM	1
		THUMB DIADUST FORCEPS 1MM STR.180MM	1
		VASCULAR SPATULA 3MM BLUNT185MM	1

		ROSS HOOK SIZE 15X15MM FIG.1 245MM	1
B7	CARDIAC ICU AND PRE POST HOLD ROOM EQUIPMENT & INSTRUMENTS		
1	MOTORISED MODULAR ICU BEDS WITH SIDE BOARD, HEAD BOARD & FOOT BOARD	1. Fully automatic embedded control bed must feature with an back rest up down, knee rest up-down, Trendelenburg and reverse Trendelenburg, hi-low positions controlled through noiseless electro-mechanical actuators operated by soft touch control panel 2. Bed should be with single touch chair position, CPR position and auto-contour position. All the positions should be locked from nurse control panel. 3. Bed must feature fully covered side-rails on each side of the bed without any gaps from the head-end to the foot-end in order to prevent any risk of patient falls. 4. Base frame & support frame should be made up of Epoxy powder coated MS/CRCA tubes and should be extremely durable. 5. The bed should have head & foot panels easily detachable by hand without need of any tool 6. Bed should be having electrically operated emergency head down. 7. Bed should attain cardiac chair position sequentially. 8. Bed should have different set of bed controls for the patient and the caregiver. 9. Bed should be with a foley bag basket 10. Bed should be with a Stainless-steel IV Pole 11. Bed should be with a Oxygen bottle holder 275 mm x 390 mm x145 mm [WxHxD] 12. Bed should be with removable Headboard and Footboard. 13. Bed should be with 4 Nos of bumpers to absorb shock. 14. Bed should have a low bed LED indicator to display when the bed is in its lowest position and the same should be visible without pressing any buttons. 15. Bed should have one touch key provision on control panel for CPR position in less than 10 seconds also manual CPR	

	levers on both sides option in case of automatic system failure. 16. Bed must feature digital/analog angle indicators for backrest. 17. Bed must feature Trendelenburg and Reverse-Trendelenburg (bed angle). 18. Bed should have one touch key provision on control panel for Auto Contour position. 19. Bed must feature removable litter covers for easy cleaning. 20. Bed should have central braking system i.e. brake pedals lock on all four casters. 21. Should have four section with strong Nylon/Polyurethane detachable tops with transverse and raised cup designs to prevent mattress slippage and for easy breathing of mattress, 40D density, flame retardant foam and cover fabric having flame retardant, antibacterial, antiskid properties. 22. Bed should be equipped with battery backup system that charges when the bed is plugged into a wall outlet. Battery backup functionality should activate when the bed is unplugged. All bed functionalities should be available during battery operation. 23. Bed actuators and control box should be LINAK 24. Bed should be equipped with four actuators total. 25. Bed must have Dual Linak siderail controls 26. Bed must have electro-static painted metal frame 27. Bed should be IPX4 liquid splash protection 28. Bed should compliant to the below international bed standards • IEC 60601-1 Ed. 3.1: 2012 • IEC 60101-1- 6 Ed. 3.1: 2013 • IEC 62366 Ed. 1.1:2014 • IEC 60601-2-52:2009 + A1:2015 • IEC 60601-2-54 Ed. 1.1: 2015
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	• IEC 60601-1-2:2014 Ed. 4.0 • ISO 13485:2016 • ISO 14001:2015 29. Bed should have European CE 4 digit or USFDA . The offered model should be USFDA or European CE 4 digit. All certificates must be submitted separately. 30. The bid shall be submitted directly by the Principals or by a Distributor who must be in the business of supply, installation and maintenance of ICU Beds from the same Principals 31. Installation shall be the responsibility of the supplier. All accessories, like cables, ports remote and batteries etc as necessary for complete, smooth and breakdown-free functioning of the entire bed shall be provided by the supplier as a part of the project 32. The Principals shall give an unqualified commitment that the maintenance and guarantee of the equipment shall in no way be affected by any change in its administrative or trade set up like the change in the authorized agent or any merger, transfer (in part or full), amalgamation or separation of the company or any of its constituents etc for that matter 33. Patient Bed must feature the following Technical Specifications: • Overall Length: 2200 mm (+/- 10mm) • Overall Width: 1000 mm (+/- 10mm) • Height Range: 370 mm to 750 mm without mattress (+/- 5mm) • Trendelenburg/Reverse Trendelenburg: 0° - ±12° or more • Backrest angle indicator on 4 side rails: 0° - 90° • Backrest angle: 0° - 65° or more • Knee gatch angle: 0° - 30° or more • Caster size:150 mm or more with central locking facility and unidirectional lock facility. • Under Bed Clearance: 150 mm or less
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	• Safe working load: 250 kg or more • Battery backup of at least 1 hour. 34. Mattress Specifications: • Dimension: 2000 mm x 860 mm x 120 mm • Density: 40 ± 1 kg/m³ • Resilience: 52% - 55% as per ASTM D3574 • Tensile Strength: Min. 5 N/cm³ as per ASTM D3574 • Elongation at Break: 128% min. as per ISO 1798 • Tear Strength: Min 1 N/cm as per ASTM D3574 - Fabric Cover • Breathability, 37°C / 65% R.H: ± 600 GR/M²/24H as per ISO 15496 • Mold and Fungal Resistance: YES • Tear Strength: 60 N • Waterproofness Before & After Washing: 2000 mm as per ISO 811:2018 - Brick Design Foam for enhanced breathability and more mattress durability with angle movements. Also ergonomically adjust with the patient on the top. - 4-Way stretch foam cover to reduce shear movement of patient. - Ignition complaint foam mattress as per standard EN 597-1 & EN 597-2 - Breathable cover fabric to reduce the risk of Pressure Ulcers in patient. - High Resilience and mono-density foam for supporting easy patient entry & exit. - 3-Side Zipper with flap over the top to reduce the risk of fluid seepage within the mattress
2 MATTRESS 100 MM	Overall dimension (L)1950mm*(W)853mm*(H)100 mm. The mattress is provided with 40 density 100 mm thick PU foam mattress with ridges for easy bending. It is covered by heavy

		helium material which is water proof, flame retardant, vapour & X- Ray permeable with Bacteriostatic properties. The zip & stitches for the mattress cover is concealed.
3	BED SIDE INFUSION POLE ASSLY ADJUSTABLE WITH 2 HOOKS	Overall dimension should be 250 mm PCD with height adjustable from 743 mm to 1150 mm. it is fully SS made used on bed with telescopic rod for height adjustment. The bottom adapted is 12 mm dia, fixed tube is 15.9 mm dia, 1.6 mm thick ERW Tube. Telescopic rod is 12 mm dia ERW tube. there are 2 no"s 6 mm dia hooks to hand saline bags. Maximum load bearing capacity is 2kg per hook.
4	BED SIDE LOCKER	with one drawer and cabinet - The bedside locker has single drawer and cabinet with lock and with plastic moulded handle. There is space between plastic top and the cabinet to keep the general items for the frequent use. Cabinet is Provisioned with lock to keep the valuable items for the safety. overall dimensions is 490mmW x 410mm D x 941mm H Corner tube made of ERW round tube with section 25.4 mm dia of 1.2 mm thickness Cabinet made of CRCA sheet of 0.8 mm thick Provided with lock. (470 mm x 410 mm x 382 mm) Top made of ABS of 2.2 mm thick. Top has recessed and contoured shape for better aesthetic and usability. Plastic molded knob is Provisioned with Matt finish and dome shaped for better grip. Plastic molded castors with 50 mm dia placed in diagonal locking arrangement. RAL white, plastic parts in Grey. 5 kg UDL on both the tops and 10 kg in the cabinet. All metal components are pre-treated with zinc phosphating in 7 tank process and then powder coated with anti-microbial epoxy polyester powder coating to fulfil the requirements for bacterial protection against at least 2 commonly found bacteria in Hospital environment [Gram positive and Gram Negative]. goods are supplied in knocked down construction to reduce carbon emission. The manufacturer should compliant with ISO 9001:2015,ISO 14001:2015,ISO 13485:2016, OHSAS 18001:2007 and CE certification.
5	OVER BED TABLE	with Height adjustable on gas lift with membrane top – It should be with height adjustable feature. Overall dimension should be

		(L)896 mm X (W)395 mm X (H) Adjustable from 800 mm to 1083 mm .Table top Height can be adjusted with the help of operating lever which activates the gas spring. Base frame is made of ERW round tube with 50.8 mm dia and 1.6 mm thickness. Housing is made of aluminium extruded inner and outer tubes. Handle for gas spring made of MS sheet metal of section 74 mm x 115 mm with 3 mm thick Handle with CRCA material making strong lever and have provision of wider area for grip. Gas spring of length 835 mm and stroke of 293 mm. Smooth functioning gas spring with adjustable height and consistent motion during operation. Effort level to push downward = 14.5(-2kg) at room temp 29°C. Plain top made of membrane pressed MDF with section 395 mm x 896 mm of 18 mm thickness. Membrane pressed MDF board of frosty white shade on top surface and with edge lipping. Top: MDF top with membrane press , should give anti scratch Property with good surface finish. Castors: High endurance anti-static, Plastic injection molded castors are Provided of Ø50mm. All metal parts should be pre-treated and powder coated with epoxy polyester. Max Safe Working Load: 20 kg UDL. goods are supplied in knocked down construction to reduce carbon emission. The manufacturer should compliant with ISO 9001:2015,ISO 14001:2015,ISO 13485:2016, OHSAS 18001:2007 and CE certification.
6	CRASH CART	overall dimension of L 1048mm W x 475mm H x 1555 mm. SS 304 grade made top sheet with 2mm thickness is used. Middle & bottom sheet is used made of SS 304 grade with thickness 1mm. SS 304 grade frame bar with section of 25.4, 19, 1.2 & 16mm is used. SS Cylinder case is used welded with cylinder holding unit to hook giving the curve bend at the bottom to hold the cylinder. SS 304 grade pipe of section 12mm is used to mount IV rod. High endurance anti-static, plastic injected molded 4 swivel castors of dia 125mm is used & have Provision for diagonal locking. SS 304 handle pipe have section of 25.4mm with length of 365mm & have thickness of 1.2mm giving a glossy finish. SS 304 tubular frame have five different colored removable bins mounted on top shelf and two polystyrene lockable storage units with three drawers each. The top drawers have containers of different sizes. Safe working load is 40kgsThe manufacturer should complaint with ISO 9001:2015,ISO 14001:2015,ISO

		13485:2016, OHSAS 18001:2007 and CE certification.
7	INSTRUMENT TROLLY WITH BOWEL BUCKET	SS 304 sheet is used at top for the placement of the instruments being used & also for easy portability's 304 sheet is at the top as well as bottom shelf for keeping the instrument being used. Horizontal bars is welded with legs to Provide protection at sides with supporting legs for sturdy structure. Castors of 125mm Dia. is used for easy in movement. Spin section should be Provided to the bowl giving a aesthetic look & also bucket is Provided with removable lid & a handle to lift the bucket. Overall Dimension is 1156 mm X 531mm X 915mm H. The Top and bottom shelf is 1 mm thick SS 304 sheet, the shelf size is 755 mm x 467 mm. The supporting legs is 31.08 mm Dia. 1.2 thick SS 304 tube. The horizontal bar is 12.7 mm dia 1.2 mm thick SS 304 tube. to support top & bottom shelf. Maximum safe working load is 40kg. the shelf have 10 kg load and bowl & bucket have capacity of 5 kg load. The manufacturer should compliant with ISO 9001:2015,ISO 14001:2015,ISO 13485:2016, OHSAS 18001:2007 and CE certification
8	EMERGENCY RECOVERY TROLLY WITH MATTRESS	The emergency trolley is height adjustable, back rest is adjustable and have Trendelenburg and reverse Trendelenburg functions. Overall Size is in-between L 2139 X W 936mm X (H) Adjustable from 680 mm to 1055 mm Bed Frame is made of ERW 25X50 tube with thickness of 1.6 mm Base frame is made of ERW 25X50 tube with thickness Of 1.6mm The bed should have smooth Trendelenburg and reverse Trendelenburg function with assist of 2 nos Gas Spring the gas springs is of 530 mm length and 168 mm stoke. The bed frame has height adjustable by assist of Hydraulic Pump stroke of 140mm.It is smooth functioning and consistent motion during operations is required. The trolley is Provided with detachable stretcher which have x-ray permeable top made of high-pressure compact laminate of 6mm thick. The top is exceptional chemical and stain resistance. The fixed portion of the top is 1065 mm (L) x 590 mm (W) and

	tilted back portion is of 728 mm (l) x 590 mm (W). There is ms made x-ray cassette holder which can move along with the top length to perform x-ray on the different position. The x-ray Cassette is top mounted. Backrest is adjustable on ratchet for patient comfort from 0 to 70 Degree The trolley is Provided with high end 125 mm non marking Steinco castors which is lockable diagonally. The trolley is Safe working Load is of 135 Kg on flat top. There should iv pole holder with ht adjustable SS made telescopic iv pole with two hooks to mount saline bags. The trolley is Provisioned with 8 mm dia ms zinc plating urine bag holder on both the side. The trolley is Provisioned with drop down SS made side rails which Provided shelter in more than half of the total bed length. the tube has 19 mm dia and 1.2 mm thick SS 304 made. The trolley has 4 nos Neoprene made bumpers for Excellent Shock absorbing property. The top frame has X ray Tray assembly made of MS CRCA sheet 1.2 thick X ray Tray can slide along the stretcher length. Provision given for changing the X ray cassette at the leg side, knob to be Provided for locking the assembly during TR operation. Fail Safe Mechanism- the trolley has Fail Safe mechanism to avoid collapse of ERT during gas spring failure for TR & ATR Mechanism. The trolley is Provided with 2 nos U shaped head and foot bow at both the end to drag or push the trolley for movement. the bow is covered with neoprene material for better grip and avoid cold shock during patient handling. MS Oxygen Cylinder Holder – Provision is given to mount B type Oxygen Cylinder at the head side of trolley. The trolley has MS file holder at the bottom to carry file and other accessories during patient movement. The trolley is Provided with two pair of patient safety belt. The bed is Provided with 40 density 50 mm thick PU foam mattress (optional) which is covered by heavy helium material which is water proof, flame retardant, vapour & X- ray
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		permeable. The zip & stitches for the mattress cover is concealed All the MS parts is treated with nine tank pre-treatment procedure with zinc phosphate and powder coated with antimicrobial and thermosetting epoxy polyester. The welding is done by co2-argon welding and there is Synergy coat on the welded areas to minimize early rusting
9	LED X-RAY VIEW SCREEN	Operating room wall panel should be installed with One LED Two Plate X-Ray Illuminating Screen which should have electrical safety codes for high & low voltage system. ICU should be equipped with a 2-plate X-ray viewing screen; It should be designed to provide flicker free luminance for the film viewing purpose. It should be installed flushed with theatre wall for hygienic and ease of cleaning purpose. The X-ray viewing screen should be designed for the purpose of front access. The X-ray viewing screen should be illuminated by LED and the dimming is controlled by the usage of dimming control with the PCB that is mounted inside the box. The diffuser should be able to diffuse the light evenly and to provide enough luminance for film viewing. The body should be built by using electrolyzed steel with powder coating. It should work on PCB button control system.
10	MAGNETIC WRITING BOARD (WHITE)	It should be made of ceramic having Magnetic properties and should be flushed to the wall of the ICU wall.
11	CENTRAL MONITORING STATION	It should have central nurse station for the monitoring of patients. Dimension of central nurse station should be approx. (4 ft x 8 ft x 4 ft) Central Nurse station should be provided with latest generation computer with 4 GB RAM, 1 TB hardisk and latest windows operating system and should be provided with laser printer with copier.
12	ECG MACHINE	Description of Function: - ECG Machine is a primary equipment to record ECG Signal in various configurations. 12 channels with interpretation is required for recording and analyzing the waveforms with an inbuilt software. Operational Requirements

	- The ECG Machine should be able to acquire all 12 Leads simultaneously and interpret them. Technical Specifications - Should acquire simultaneous 12 lead ECG for both adult and paediatric patients. - Should display ECG on multicolor 8.4” LCD Touchscreen Display of High resolution. - Should have Real time LCD display of ECG waveforms with signal quality indication for each lead. - Should have Artefact, AC, and low and high pass frequency filters. - Should have a storage memory of at least 300 ECGs. - Should have full screen preview of ECG report for quality assessment checks prior to print. - Should have interpretation facility of the amplitudes, durations and morphologies of ECG waveforms and associated rhythm for adult and paediatric patients - Should have alphanumeric Keyboard for patient data Entry. (Virtual & hardkeys). - Should have High Quality Printer Head on A4 size Paper or Z fold paper - Should have report formats of 3 x4; 6 x2, Rhythm for up to 12 selected leads; 12 Lead Extended measurements, 1 minute of continuous waveform data for 1 selected lead printing on to A4 size paper. - Should have battery capacity of at least 30 ECGs or More than 2 hrs. continuous working on single charge. - USB Support for Storage on external portable memories. - Earth Connection Terminal Should be Available - Should be portable, having weight less than 6kg (with battery) - Should have Input Circuit Current <0.05mA. - Should have Frequency Response of range between 0.05–
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		150Hz. - Should have facility for PC Viewer (as optional). - Should have RS232, USB Socket & Network Interface for Communication Interface. Power Supply: - Power input to be 220 - 240VAC, 50Hz fitted with ECG Trolley. System Configuration Accessories, spares and consumables: - ECG Machine 12 Leads with Interpretation - Patient Cable - Chest Electrodes Adult (set of six) -01 set. - Limb Electrodes (set of 4) Adult - Thermal Paper A4/ Z fold Size for 500 patients Environmental factors: - The unit shall be capable of being stored continuously in ambient temperature of 0 -50deg C and relative humidity of 15 - 90% - The unit shall be capable of operating continuously in ambient temperature of 10 -50deg C and relative humidity of 15 - 90%. Quality Certificates: - Supplier should be ISO9001 and ISO13485 certified - Should be European CE approved by notified body /USFDA.
13	SYRINGE INFUSION PUMP	Should accept all internationally produced/marketed syringes and should be able to detect it automatically and should be able to pre-set different range of Bolus supply. Preferably the unit should be of Bottom/side loaded to avoid accidental spilling of drugs and damage to the machine. Technical characteristics 1. Should have 3.5" TFT color touchscreen display with 9 adjustable brightness levels.

	2. Flow rate programmable range at least from 0.1 to 2000 ml/h. 3. Flow Rate Range: - o 5/6ml syringe: 0.10–150.0ml/h - o 10ml syringe: 0.10–300.0ml/h - o 20ml syringe: 0.10–600.0ml/h - o 30ml syringe: 0.10–800.0ml/h - o 50/60ml syringe: 0.10–2000.0ml/h 4. Bolus rate: Manual (Std.) - o 5/6ml syringe: 0.10 – 150.0ml/h - o 10ml syringe: 0.10 – 300.0ml/h - o 20ml syringe: 0.10 – 600.0ml/h - o 30ml syringe: 0.10 – 800.0ml/h - o 50/60ml syringe: 0.10 – 2000ml/h 5. Selectable occlusion pressure 11 adjustable setting, 10 ~ 135kPa 6. Must work on commonly available Auto size detection of 5/6ml, 10ml, 20ml, 30ml, 50/60ml Syringes. 7. Tamper-resistant case made of impact resistant material Securely mountable on tabletop, IV stand or bed fitting. 8. Automatic detection of syringe size and proper fixing. 9. Anti-bolus system to reduce pressure on sudden release of occlusion. 10. Syringe Modes: Rate Mode, Volume-Time, Dosage Mode, R-T Mode, Loading Dose, Sequence Mode, Intermittent Mode, Ramping Mode. 11. Should have audio & Visual Alarm AC Power Interruption, DC Power Interruption, Low Battery, Depleted Battery, Forget Reminder, Infusion Near End, Infusion Complete, Injector Empty, Flow Rate, Syringe Unlocked, System Exception. 12. Should have facility for 3 alarm grades with 9 adjustable
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	sound volume settings. 13. Should include KVO (Keep vein open) enabling feature, KVO should be 0.1 to 5ml/hr at 0.1ml increment. 14. Volume Limit should be 0-9999.99 ml. 15. Time limit from 1min to 99hrs & 59 minutes. 16. Flow rate deviation should be $\pm 2\%$. 17. It should be compact & Light weighted, weight not exceeding 2 kg. 18. Should have facility of Night Mode with Programmable and auto shift feature. 19. Should have Key Lock feature as standard safety feature. 20. Should have facility for approx. 2000 event log with automatic recording of last infusion setting. 21. Drug Library Up to 100 from specified drug category & should be Programmable with DERS (Drug Error Revise System). 22. Should have facility of Dynamic Pressure Surveillance (DPS). 23. Single loadable with one syringe of minimum 5/6 ml. 24. Should have Dual CPU design assures the safety of system. 25. The syringe pump should have fast start functions, which can eliminate error caused by starting delay. 26. Should have facility to connect with Docking Station suitable for mounting 3 or in multiple of 3, both syringe pumps as well as infusion pumps. Energy Source: Power: AC: 100V–240V, 50Hz/60Hz, 35VA Battery - Rechargeable lithium-ion battery 10-15V/2.5A, Battery Life: ≥ 8 hours at 5ml/h Charging Time: ≤ 4 hours Waterproof IPX4 Classification Class I, CF Environmental & Operating condition:
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		Capable of being stored continuously in ambient temperature of 0 to 50° C and relative humidity of 15 to 90% in ideal circumstances. Certification: • Should have European CE approved from notified body / USFDA . Certificate to be submitted. • Should have ISO 13485 certification for quality standards. Electrical Safety conforms to standards for electrical safety IEC-60529 General Requirement
14	DEFIBRILLATOR	General features • Should be compact light weight less than 7kgs. and portable. • Should have functions & controls which are user friendly. • Should be able to function in temperatures between 0-45°C and relative humidity 10-95%. Display functions & Operational requirements • Should have a screen of at least 7" TFT display with the facility of displaying upto 4 waveforms & Resolution of 800x480 pixels. • Display should be clear from a distance for ECG trace, heart rate & energy selected/charge available for defibrillation/cardioversion. • Should have Operating Modes: Manual Mode, AED Mode, Synchronous Defibrillation. • Should be able to deliver shocks from 1-360 J in 25 steps. • Should measure Respiration by Thoracic Impedance Method having range for Adult: 0–120rpm; & Paediatric: 0–150bpm. Accuracy should be ± 2rpm or $\pm 2\%$ (whichever is greater). • Should have charging time less than 6 seconds.

- Should have adjustable heart rate alarm limits.
 - Should have Bi-phasic, Truncated exponential waveform with impedance compensation.
 - Should work on both AC 100-240V 50 Hz supply.
 - Should be able to deliver at least 210 Shocks of 360J in defib mode (full charge) and have built-in battery backup for upto 6hrs. (Monitoring Mode) & approx. 4.5 hours (Pacing Mode).
 - Both adult and paediatric hard paddles (reusable paddles) should be provided.
 - ECG trace displayed should have following minimum – paddle mode/leads I/II/III (as selected by the user)
 - Should have facility to automatically / manually print – critical events /code summary /previous ECG records with an integrated recorder and at printing speed of 6.25mm/s, 12.5mm/s, 25mm/s, 50mm/s.
 - Should have Patient Impedance Range: 20Ω–300Ω (External defibrillation).
 - Should be provided with Non-invasive Pacing with demand or fixed modes.
 - Should have facility for upto 160 Hrs graphical and tabular trend of ECG, Optional- SpO2, NIBP, EtCO2.
 - Should have data storage facility for upto 200 groups Alarm Events & 1000 Patient Events.
 - Should be upgradable to EtCO2, SpO2, and NIBP in future.
 - Should have USB & RJ45 interface for data communication.
- Accessories:
- Should be supplied with the following accessories:
 - (a) External defibrillator paddle – adult and paediatric
 - (b) 3 or 5 lead ECG cable
 - (c) AED pads – 1 set. (> 5 SETS /MACHINE)
 - (d) Pacer pads-1 set (10 Pacing pads) (> 2 SETS/MACHINE)

		Quality Standards Should have USFDA / ISO / CE certification for quality standards
15	MULTIPARA PATIENT MONITOR WITH IBP & ETCO2	Two multi para monitors should be with IBP and ETCO2 and eight multi para monitors should be basic with facility to upgrade to IBP and ETCO2 • Monitor should have high resolution 12.1" colour, LED display. Should be able to display at least 6 waveforms. • Should be able to monitor following vital sign monitoring for Adult, Paediatric and neonatal patients such as ECG, NIBP, Spo2, Respiration, Temperature & Dual IBP and Etco2. • Should be able to monitor ECG: 3/5 lead, Cascade ECG waveform with HR measurement, arrhythmia detection, ST segment analysis. • Non-Invasive Blood Pressure (NIBP): Measurement and display of systolic, Diastolic, and mean pressure values on NIBP measurement through Oscillometric method for adult, child, and neonate. Modes: Manual, STAT (Continuous 5 min. operation) and automatic selectable interval 2- 480 minutes. • Respiration: Display of respiration waveform with respiration rate using impedance principle. • Temperature: Should be able to monitor two temperatures simultaneously. The unit selection should be possible. • SpO2 sensors should be suitable for Adult, Paediatric & Neonate. • Should be able to monitoring Etco2. • The Graphical and tabular trends of up to 168 hours should be available. • The monitor should have battery backup of up to 5 hours. • Should have automatic pacemaker detection facility. • Should be Compatible with central monitoring system both wired and wireless. • Should be Compatible with HL7 and Nurse Call.

		• The Weight of monitor should not be more than 3 kgs. • Should have three priorities of alarm of all the parameters. • Should have option of recording up to 2 waveforms on paper roll. Should be accompanied with following accessories. a. 3/5 ECG lead - 1 no. b. Reusable Spo2 probe for adult - 1 no. c. Nasopharyngeal / rectal /skin temperature probe- 1 no. d. Reusable NIBP Cuffs- Adult– 1 no. e. Etco2 sampling lines-1 no. f. IBP cable-2 nos. g. Disposable IBP transducer- 2 nos. Quality Standards • Monitor should be European CE with four digit notified body number certificate and certificate to be submitted. • Supplier should be ISO9001 and ISO13485 certified. • Electrical Safety conforms to standards for electrical safety EN 60601-1- 2:2015, EN80601-2-30:2019 General Requirement												
16	PULSE OXIMETER	Pulse Oximeter • Should be Portable, light weight and sturdy design and user friendly . • Should be able to monitor SpO2 for Adult, Paediatric Should be CE /USFDA Approved.												
17	VIDEO LARYNGOSCOPE	<table><tr><th>Parts</th><th>Description</th><th>Technical Index</th></tr><tr><td rowspan="4">Machine</td><td>Display</td><td>3" LCD Full View</td></tr><tr><td>Resolution Ratio</td><td>1280*720</td></tr><tr><td>Viewing Angle</td><td>≥60⁰</td></tr><tr><td>Power</td><td><2w</td></tr></table>	Parts	Description	Technical Index	Machine	Display	3" LCD Full View	Resolution Ratio	1280*720	Viewing Angle	≥60 ⁰	Power	<2w
Parts	Description	Technical Index												
Machine	Display	3" LCD Full View												
	Resolution Ratio	1280*720												
	Viewing Angle	≥60 ⁰												
	Power	<2w												

			Display rotation angle (Vertical, horizontal)	0° - 150°, 0° - 270°
			Weight	125g
		Camera	Illuminance	≥400 LUX
			Resolution Ratio	1280*720 px
		Image / Video Function	Image / Video function	Yes
			Output:	USB output, Easy to Storage and establish image / video
			Memory type	Micro SD card 16 GB
		Battery	Battery type	Rechargeable lithium battery
			Capacity	1500 mAh
			Cycle life of battery	>500 times
			Battery working time	>240min
			Charging Time	>2(hrs)
			Charging Port	Micro USB
		Power Adapter	Input	100-250V, 50 Hz.
			Output	5V1A
18	TEMPORARY EXTERNAL DUAL CHAMBER PACEMAKER	Features : Compact, Easy to operate, Automatic lead and battery check, Continuous monitoring of the battery voltage, Shock and water-resistant housing, Free of Cost Warranty, Backup pacing during battery change		

		Packaging Type : Transparent Cover for parameter protection Application: To be used to regulate the contractility of myocytes to maintain adequate heart rate. Type: Dual Chamber Pacemaker (Temporary) Stimulation Type: Permanent Stimulation, Burst Stimulation Modes: AOO, AAI, VOO, VII, DDD, DDI, DVI Medical Usage : For bradycardia treatment before, during or after surgery and during cardiac catheterization lab procedures Usage: Hospital Performance Parameters. Battery Backup (min): 150 hour Fast Pacing Burst Rate (ppm): 200 Pacing Rate (ppm): 200 AV Delay (ms) 140 Sensitivity (V) : 20 milliVolt Sensitivity (A): 10 milliVolt Pulse Amplitude (A/V) (nos): 5 Marking: USFDA / European CE (4 digit) approved Warranty: 2 year
19	INTRA-AORTIC BALLOON PUMP (IABP) MACHINE	1. It should be Autopilot, Touch screen IABP System, with Wave form touch access control. 2. Should be Transportable, Compact IABP System with minimum 90 Min of battery Backup. 3. Fast Pneumatics to provide accurate & reliable ventricular support enhancing augmentation& improved After-load reduction. Preferably a stepper motor Driven Bellows system for faster drive –gas shuttle speed. 4. System should provide start-up checklist, when the pump is ready to start. 5. System should be capable of using fibre optic Balloon and conventional balloons. 6. Should have 1).Automatic. 2.)

	Operator Modes of operation. 7. System should be able to Trigger on Pulse Pressure as low as 3mm Hg. 8. System should be free from scheduled Maintenance and replacing the Spares on basis of usage. 9. System should stop shuttling of gas in case of balloon rupture and avoid chances of blood leak to machine (with Alarm). 10. Should be capable of removing Condensation automatically without interrupting the therapy. 11. System should be capable of automatically selecting appropriate trigger that is A).ECG, or B).Pressure and also accurately select the inflation and deflation point in automatic mode. C). Trigger on pacer (V pace, Apace), D). Automatic internal trigger rate. F). A fib Mode. 12. In automatic and operator mode single ecg trigger should be able to track various ventricular and atrial arrhythmia including VE,,s bigeminy ,Trigeminy, Couplets etc and atrial fibrillation, without any user intervention and still give optimal performance. 13. Machine should provide print of Therapy report &100 Alarm History report. 14.3600 Visible priority colour intensified Alarm status required. 15. In automatic mode, advanced software should automatically adapt the Timings for various rhythms and rate variations, without any user intervention. 16. In automatic mode it should automatically identify atrial fibrillation and adopt r- wave deflation mode for better patient support without any user intervention. 17. Single key start up to make it fast, user friendly and easy to use. 18. Should be able to display at least 3 wave form as ECG, Invasive Pressure and balloon pressure Wave form. 19. Large detachable display for brighter and very good visibility from a distance in any lighting conditions. 20. on screen indication for helium level in the cylinder and
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		battery level for timely intervention and correction. 21. ECG Inflation marker to indicate inflation period on ECG which can be usefully when atrial pressure wave form is not available. 22. on screen indication of stand by time and should give alarm after 20 mts to draw user's attention on the system being on standby. 23. Should give extensive help message to correct the alarm conditions that are specific to the alarm conditions, this should help the user to overcome the alarm problem immediately and with ease. 24. In built comprehensive service diagnostics to help the technician to locate the faults immediately.- 25. System should be supplied with the followings. • ECG cable with lead wires 01 Nos. • compatible Pressure transducer cable -01 Nos. • Refillable helium cylinder compatible with the iabp system helium (or other) gas cylinders 1 Nos. certificate from explosives dept. 27. Entire unit should be mounted on wider wheel Should be approved by CE Notified Body / USFDA
20	SINGLE CHAMBER TEMPORARY EXTERNAL PACEMAKER	Temporary external pacemaker is intended to be used in conjunction with a cardiac Pacing lead system for temporary atrial or ventricular pacing in a clinical environment by trained, Personnel. Specifications Modes:- AAT, A00, VVT, VOO Basic pacing Rates. 30-200 ppm. Rapid Atrial pacing Rates - 80-800 ppm. Output Amplitude 0.1-25 mA. pulse width 1.5 ms. sensitivity 0-4-20mV Electrode Type:- Unipolar or Bipolar. Blanking :- 200 ms + 5-30 ms - Aster pause 120ms + 2 /- 30ms – Aster Sense

		Battery Type:- Two IEC type LRG - size. CAA size- 1.5 V alkaline batteries. Battery life:- 15 days		
21	ECHO MACHINE PREFERABLY PORTABLE ECHO WITH 2 PORTS WITH ADULT AND PAEDIATRIC PROBE	Sr. No.	Main Specifications	Detailed Specifications
			Technology & Certification	•Fully Digital Beam-former with extensive RAWDATA post processing capability, •Should be compact light weight with easy mobility •System should have CE Notified body / US FDA approved
			Probes Technology & Capabilities	Broad Band Electronic Convex Array, Linear Array, Intra-operative probes and All Cardiac array with advance applications
			Ergonomics	15" or more LED / high resolution Flat Panel Display with rotation facility.
			Applications	• Basic & Advance Cardiac with General Abdominal & Vascular • Contrast Tuned Imaging , LVO • Additionally Ready for foetal ECHO 2D and Doppler Myocardial strain imaging & TEE
			Probe Connectors	4 universal probes connector with ECG & pencil probe standard and TEE
			Key Board & Touch screen	• Illuminated & soft Keys for ease of use, minimum 10" or more Gesture sensitive flexible touch screen

			for key less operations Touch screen also can use as additional imaging display
		Boot Up	Boot-up from complete shut-down in less than 90 sec, boot up from stand by 30s or less
		Imaging display format	Single(B), Dual (B+B), Quad(4B), B/M Mode, B/C/D triplex-mode Dual live: B/B, B/C, B/TDI, horizontal) on screen on line
		Tissue Harmonic Imaging facility on all probes	Must be available Convex Probe, Linear Probe, Adult , Ped , Neonatal Cardiac probe
		High resolution flow	High resolution flow with extraordinary spatial resolution for accurate vessel profile and less overflow; support both Color and Power mode.
		Single button optimization	One button optimization for 2D , colour , power angio & Doppler parameter interface
		Frame rate & Dynamic Range	- Min. 1000 fps more - Min 30 – 180 db or more
		Annotations	Sets of annotations for every application
		Memory Storage/ Data Management	System should be capable of storing images & clips recording in the form of avi

			format for minimum length of 6- 8 mins continuous to
			• be stored in the in built hard disk.
		Direct printing solution through Ink Jet or Laser printer	• Images must be printed on Ink jet printer/ laser printer in format of 4 or 6 spots per paper (without any computer interface)
		CD/DVD writing with Imaging	Machine must have capabilities to write CD • /DVD separately during the scanning to save time
		USB port	• Min. 4 USB port in the Machine and must be provided with USB memory stick to transfer Images.
		HDD capacity	• Minimum inbuilt 500 GB or SSD storage
		Zoom Facility	• Read & write Zoom facility with full screen display.
		Addition Signal processing for Echo enhancement for difficult /poor Echo Window	• Must have standard noted application for difficult /poor Echo Window visualization
		General Measurements & Advance Calculation packages	• Should have Extensive Advanced Calculation packages & General Measurements for B- Mode, M-mode

			& Doppler separately for Cardiology and all Radiology applications
			with a possibility for making a preset for each application having interested calculations only.
		Functions for Doppler Studies	Should have user selectable parameters for PRF, Wall Filters, Sample Size, Velocity, Frequency, Angle Corrections, Dynamic Range & post processing.
		Auto RI & PI online calculation on vascular with IMT	Machine must have online/ off line Doppler tracing for continuous measurements of RI & PI and algorithm based Auto IMT measurements
		Functions for Color Flow Mapping studies	User selectable parameters for PRF, Color Filters, sensitivity, Velocity (Mean, Velocity/variance, Variance & Intensity etc. Maps) Variable CFM Box, Color Processing. Bi-direction Power color Doppler & Power Doppler
		Auto Report Generation and printing Facility	- Measured parameters must be printed directly in the form of report through ink jet printer. - Machine must have various report formats facility
		TDI & 2D Quantification and programmable Stress Echo	Should have 8 points ROI quantification, Paused facility Stress Echo with maximum

			a. protocol
		Build in WIFI (optional)	WIFI hotspot with image transfer or remote access are desirable
	1	Adult Cardiac probe	1-5.0 Mhz
	2	Pediatric cardiac probe	2.3-7.2 Mhz
22	ABG MACHINE		Universal portable wireless blood analyzer for ABG Electrolyte / Chemistry/ Cardiac /Coagulation / Pregnancy using disposable cartridges. Analyzer must be handheld light weight battery powered and portable suitable for use at patient's bedside and remote healthcare settings. System must be capable of measuring PH PCO2, PO2, TCO2 Na k+ CL ionized calcium Lactate Hematocrit glucose urea creatinine troponin-1 CK MB BNP PT INR ACT and Beta HCG on a single device Analyzer must display calculated parameters including HC03 Base Excess SO2 Anion Gap and Hemoglobin. System must be capable of electro chemical measurement using different modes such as amperometric potentiometric and Conductometric Test results must be quantitative. The Calibration procedure must be built in and automatic with every patients sample. Test combinations must be available from different cartridge types based on clinical requirement. Sample type must be whole blood from arterial venous capillary and cord blood samples. System must be capable of using small whole blood samples typically less than 100 ul depending on cartridge type Analysis time must be less than 3 minutes for blood gas electrolytes chemistries and less than 12 minutes for immunoassays like cardiac enzymes and pregnancy test. The system must be capable of automatic measurement of Barometric pressure System must be battery operated using 9V NIMH rechargeable batteries. System must be capable of using electronic quality assurance testing and programmable interval. System must be inbuilt with barcode reader for easy identification of patient ID operator ID cartridge and control lot numbers System must be capable of Liquid QC scheduling and lockout. System must be capable of monitoring operator competency and lockout. System must be capable of capturing patients respiratory

		parameters electronically. System must have option to adjust hematocrit results for patients on cardiopulmonary bypass pump. System must be provided with portable printer with IR Link for wireless printing. System must have capability to transmit the patients results to hospital LIS or HIS using wireless wifi mode The analyzer must be USFDA and CE certified.
23	VENTILATOR	Intensive Care Ventilator State of the art ventilator for use in intensive care, critical care, intermediate care and emergency care for all types of patients Adult to Neonatal Should have direct key to select patient type Device must be driven by a high pressure external air compressor. Compressor should be same make & supply with machine as standard part The ventilator should also have facility to connect with central air & oxygen supply also Should be supplied with reusable expiratory flow sensor and should have warranty for five years The expiratory system should be autoclavable to prevent cross infection. Two expiratory system should be supplied with machine as standard Ventilator Modes Non-invasive (NIV) ventilation with leakage compensation. Should be able to compensate for high leakages during NIV. Non invasive modes like NIV spontaneous and NIV spontaneous-timed Should Have HF O2 Therapy with flow setting 1-60 litters Volume controlled / assisted / SIMV ventilation Pressure controlled / assisted / SIMV ventilation Pressure supported ventilation (PSV /CPAP / PEEP) with apnea back up Bi-level/BiVENT/BIPAP/Duovent or equivalent APRV (Airway Pressure Release Ventilation) Should have PRVC & PRVC-SIMV or similar mode Should Have advance mode like ASV/AutoVent/smartcare/MMV/AVM/NAVA or similar mode for intelligent ventilation and weaning O2 flush for 2 min. Should have non invasive modes like nCPAP, nBPAP and High Flow O2 therapy for neonatal patients Should have Volume Guaranty setting for neonatal patients Rechargeable Battery backup at least 3 hours for main unit Should have inbuilt/external nebulizer with volume compensation Control Settings Quick set up for automatic initial settings according to selected patient type &lung pathology

	FiO2 21 100 % O2 Tidal Volume 2ml... ... 2000 mL Inspiratory pressure 0 ... 100 mbar (cmH2O) PEEP 0 ... 50 mbar (cmH2O) Respiratory rate 1 ... 200 bpm Flow trigger sensitivity 0.5 ... 20 L/min Pressure trigger sensitivity 1 ... 20 mbar Patient Monitoring Simultaneous display of all curves & loops Color touch screen 12.1 inch or more Should have rotary knob operation in case touch screen fails. Curves : Pressure,Flow,Volume,Etco2 Loops : PV,FV & PF Should have facility to upgrade to ETco2 monitoring with waveform and Spo2 Exhalation monitoring: Tidal Volume, Minute Volume control & Spontaneous , Peak Flow for Mandatory & Spontaneous breaths,Fio2,Etco2 Timing monitoring: Rate, Insp. Time, Exp. Time, I:E,Ti/Ttotal Pressure monitoring: Peak, Plateau, Mean, PEEP, Lung mechanics: Compliance (static and dynamic), Resistance RSBI Trending of all monitored parameters for a minimum of 72 hrs or more Breath to Breath Waveform review for 8 Hours Should Have Inspiratory & Expiratory Hold function Should Have Maneuvers like, MIP,P0.1,& PV for patient assessment Alarms User setting should be possible Alarm history ≥ 1000 alarms Audiovisual alarms with advisory on-screen message: MV high/Low, Apnea, tube obstruction, FiO2 high/low high PIP, low PEEP/CPAP, fail to cycle, gas supply low, power failure, alarm log book. Machine should meets safety standards according to CE/USFDA or equivalent like BIS/STQC/ISO 13485 should attached with machine Relevant IEC-60601-Part 1 & 2, certificates by a notified agency or reputed testing laboratory. Manufacturer/Supplier should have ISO 13485 certificate for quality standard. Warranty 1 Year Training of users in operation and basic maintenance shall be provided and ventilator calibration training and troubleshooting training. by company trained person Accessories Trolley with support arm Breathing Circuit = 1 nos each for adult ,Pead & neonatal
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		Adult NIV masks =1 nos each (small, medium,) Nasal prones kit for neonatal patients t = 01 Humidifier with chamber HME & Bacteria filters = 5 Nos each Air & O2 supply hose with filter and water trap Test lung (Adult& Neonatal), User manual
24	MULTIPARA PATIENT MONITOR	• The monitor have 12.1” inch display. Should measure these parameters for all type of patients (Adult, Pediatric & Neonatal) a) 3/5 Lead ECG b) Respiration rate c) SPO2 d) NIBP The monitor should have following features: • Highly visible, Night mode, bright , high resolution 12.1” TFT LCD Screen or above colour Medical grade screen resolution have 800 *600 with Big Fonts. • Monitors have ST analysis. • Audio and Visual ,Alarm should glow in different color indicating from a distance the seriousness/ priority of the alarms. • Able to operate through Single knob. • Monitor should be ESU and defibrillator protected. • Display at least 8 waveforms on a single screen along with related numerical parameters on a single screen. • Easy to recognize alarm priority system with color coded visual indication, variable pitch and It is capable for Central Monitoring System. • Central Monitoring System with lan cable and computer setup. • Real time Online remote services for Tele ICU Monitoring. • Real Time View on Android and IOS App facility. • Function has calculation packages for drugs. • It have the capability to provide event review based on the events defined by the user of the monitor as per the specific condition of the patient. • Display setting have various configurable user defined setups • Color Coding visual Alarm • Indicators for Mains, Battery and charging. • 3 hours battery back. • Facility to display all Leads in ECG on the screen at a time. • Dual Temperature facility. • Facility to Configure ECG 5Lead and 3 Lead . • Wall Mounting Stand • Monitor have 4 digit Eurorpean CE Certificate with ERTL test reports standard 60601-2-49.

	Standard Accessories have Standard Scope of supply should include: • NiBP Cuff 1 No. • SPO2 reusable sensor probe 1 No • 3 or 5 Lead ECG Patient Cable 1 No • Disposable electrodes 20 No • Operating Manual/CD 1 No • Power Code 1 No. Power supply: Power input to be 220 – 240V AC, 50Hz fitted with Indian plug of appropriate rating
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1)Suction Machine (Portable)

2)Portable CARM as per requirement

3)Dustbin as per requirement

4) Portable X-Ray Machine as per requirement

5)ACT Machine as per requirement

6) 5 Marker diagnostic cardiac marker kit machine with kits

**TECHNICAL SPECIFICATION OF ADVANCE NEUROSURGICAL OPERATION THEATRE
WITH NEURO MICROSCOPE AND EQUIPMENTS ON TURNKEY BASIS**

SR. NO.	PARTICULARS	QUANTITY
1	SMART PAC AIR HANDLING UNIT WITH EMBEDDED PHOTO-IONIZATION PLASMA SYSTEM.	1 LOT
2	LAMINAR AIRFLOW	1 NOS
3	RETURN AIR RISER	4 NOS
4	FIRE RATED DUCTING & DAMPERS	1 LOT
5	DOUBLE ARM SURGEON PENDENT	1 NOS
6	SINGLE ARM ANESTHESIA PENDENT	1 NOS
7	OPERATION TABLE WITH ATTACHMENTS , ACCESSORIES	1 NOS
8	DOUBLE DOME OT LIGHT WITH DETACHABLE CAMERA	1 NOS
9	OPERATION THEATRE INTEGRATION	1 NOS
10	4K NEUROENDOSCOPE AND HIGH END ICG CAMERA SYSTEM WITH NEUROENDOSCOPY & SPINE ENDOSCOPY INSTRUMENTS AND ACCESSORIES	1 SET
11	TOUCH SCREEN SURGEONS CONTROL PANEL.	1 NOS
12	SET UP OF OT WALLS BY ANTIMICROBIAL 3 SECTION WALL PANELS WITH INTEGRATED SERVICE PANEL WITH ANTIMICROBIAL CEILING PANEL	1 LOT
13	STORAGE CABINET	1 NOS
14	WRITING LIST BOARD	1 NOS
15	LED TWIN X RAY VIEWER	1 NOS

16	HATCH BOX	1 NOS
17	PERIPHERAL LIGHTS	6 NOS
18	PRESSURE RELIEF DAMPER	1 NOS
19	MGPS WORK INSIDE THE OT	1 LOT
20	OT-ELECTRICAL WORK WITH MEDICAL ISOLATION PANEL	1 LOT
21	ANTI-STATIC FLOORING	1 LOT
22	AUTOMATIC HERMATIC SEALED SLIDING DOOR	1 NOS
23	2-BAY SRCUB SINK	1 NOS
24	EMERGENCY RECOVERY TROLLEY	1 NOS
25	DRESSING TROLLEY WITH BOWL & BUCKET	1 NOS
26	MAYO'S TROLLEY	3 NOS
27	EMERGENCY DRUG TROLLEY	1 NOS
28	REUSABLE CAPACITIVE COUPLING CURRENT QUALITY MONITORING ELECTRODE	1 NOS
29	SMOKE EVACUATOR	1 NOS
30	NEUROSURGICAL MICROSCOPE WITH ACCESSORIES	1 NOS
31	BIPOLAR AND MONOPOLAR NEUROSURGICAL ELECTRO SURGICAL UNIT WITH ACCESSORIESS	1 NOS
32	HIGH SPEED CRAINIAL DRILLING SYSTEM	1 NOS
33	BIPOLAR NEUROSURGICAL COAGULATION SYSTEM FOR CRANIAL AND SPIN BAYONATED BIPOLAR FORCEP SET 10	1 NOS
34	NEUROSURGICAL TUMAR RESECTION SYSTEM WITH BONE TIP	1 NOS
35	ADVANCED ANESTHESIA WORKSTATION	2 NOS
36	CHAIR UNIT	1 NOS
37	OTHER WORK	AS PER REQUIRMENT

38	C-ARM HIGH END	1
39	BRAIN & SPINE SURGERY & MICRONEUROSURGERY INSTRUMENT SET	1
40	NEURONAVIGATION SYSTEM	1
41	HIGH POWER NEUROSURGICAL SUCTION(90LTR) MACHINE (1HP)	10
42	ENDOSCOPIC BRAIN & SKULL BASE SURGERY INSTRUMENTS	1
43	MINIMAL INVASIVE/ENDOSCOPIC SPINE SURGERY INSTRUMENT SET	1

Sr. No	GMDN Name	Technical Specification
1	3000 CFM- Smart Pac Air Handling Unit with embedded Photo-ionization Plasma system.	The scope of this system comprises the supply, erection, testing and commissioning of double skin construction of 45 to 60 ACPH (as per OT size) Smart Pac AHU-PIP embedded PIP system, conforming to these Specifications and in accordance with requirements of drawings and of the Schedule of Quantities. GMP/CE Certified Virus Deactivation Twin PI. Plasma BI shall Certified UL2998 Validated for zero ozone emissions TPI smart Pac embedded plasma Tested & Certified to UL 867 for electrical safety & UL 1995 for AHU-PIP application Safety 1. Effectively killing microorganisms (Virus, Bacteria, Mold & Etc.) 2. Removing odor, VOCs & pathogens. 3. Reduce fresh air requirement. 4. Reducing space contaminated particle count. 5. Controlling gas phase contaminants & odor generated from human occupants, building structure, furnishings and outside air contaminants. 6. PIP shall install at the positive pressure air side/ Post Dehumidification cooling coil side. 7. PIP for ensuring equal generation of positive &

		negative ions.
1.1	Type of system	The Smart Pac AHU-PIP embedded Plasma-BI shall be floor mounted type with horizontal/vertical airflow arrangement with cabinet casing of double skin construction consisting of aluminum profile structure and insulated sandwich panels. Braw/Blow through type comprising of sections like – PIP unit with embedded Plasma BI section, Pre stage filter section with EU-4 CE Certified filter, Twin circuit Intertwined 8RW cooling coil and hydraulics section, starter panel and controller section, Direct drive EEF-II fan section etc. as shown in the schematic layout arrangement drawings and included in schedule of quantities.
1.2	System Capacity	The Smart Pac AHU-PIP Embedded Plasma-BI capacities, maximum motor horse power and static pressure shall be as shown on Drawings and in Schedule of Quantities. The AHU-PIP design shall be based on airflow velocities, pressure drops and static requirements as specified.
1.3	Type of Construction & Fire safety	AHU-PIP embedded Plasma-BI casing shall be made of double skin design comprising of the chassis structure made of extruded aluminum framework with thermal break profile of 45mm. The panels shall be double skin sandwich type with minimum 0.6 mm thick powder coated/pre coated steel sheet on the outer side and minimum 0.6 mm thick galvanized sheet on inner side with 45mm $\pm$ 2 thick Rockwool or PI insulation material of density 50-60 kg/cum between both inner and outer skin. Considering fire safety norms injected PU foam insulation is not acceptable. The base frame of the AHU-PIP shall be made of 100mm high steel profile structure for rigidity. All sections/panels shall be bolted to each other with rubber gasket in between and fixed with steel screws for perfectly aligned and airtight joints. The gaskets shall be held in place by inserting them in the integrated channels in the framework. All panels shall be detachable or hinged. Hinges shall be made of die cast aluminum with stainless steel pivots. Door handles and locks shall be made of self-extinguishing thermoplastic nylon filled with glass wool and minerals. Marine lights can be provided in fan & coil sections, if required, to see the inside and shall be interlocked with door

		opening. Condensate drain pan shall be provided with multiple slopes towards drain outlet. Condensate drain pan shall be fabricated from SS 304/GI powder coated, insulated with 13 mm thick closed cell elastomeric insulation.
1.4	Fan Section type & specification	Unit must be provided with direct drive backward curved Plug fan; the fans should be aligned and balance statically and dynamically. The fan speed must be controlled based on the room return air temperatures and also must have automatic step-less speed control without manual intervention. The fans can be in multiple numbers as per the manufacturer's standard. Units shall be factory balanced. Fan curves must be provided to confirm selection as and when required Noise Level: Less than 85db from 2 Mtr of unit in free filed conditions. Only direct drive fans to be provided in offered units and centrifugal fans with belt drive is strictly not acceptable.
1.5	Cooling Coil section & Specification	8 Row deep coil shall be made from intertwined twin circuit seamless copper tubes with aluminium anti-corrosive corrugated fins/Hydrophilic coated blue fins. The tubes shall be solid drawn copper of not less than 9.0mm Dia and minimum 0.22 mm wall thickness. Dehumidification airflow 500FPM. Aluminum fins shall be continuous and equally spaced by collars forming integral part of the fins. The number of fins shall not be more than 12 FPI and the thickness of fins shall be minimum 0.11mm. The fins shall be uniformly bonded to copper tubes by mechanical/hydraulic expansion for minimum thermal contact resistance with fins. The fins shall be assembled in a GI or specified in BOQ. Coils shall be sliding track mounted inside the Unit for easy replacement. Each section of the coil shall be fitted with supply & return header of Copper to feed all passes of coil equally. U bends shall be of forged copper and shall be joined to tubes by brazing and silver soldering. The coil shall be designed for a maximum working pressure of 7

		Kg/Sq.cm. Each coil shall be factory-tested at 21 kg/Sq.cm air pressure under water.
1.6	Pre-Post Stages of Filtration & Specification	Smart Pac AHU-PIP unit shall be provided with a factory assembled filter section containing 10-micron synthetic media washable pre stage air filters with efficiency of 90% down to 10-micron particle size. Filters shall have aluminum frame & Filter face velocity shall not exceed 500 FPM. MERV-9 synthetic media washable post stage air filters with efficiency of 90% down to 3-micron particle size. Filters shall have aluminum frame & Filter face velocity shall not exceed 500 FPM. Holding frames shall be provided for installing number of filter cells in banks. These cells shall be held within the frames by sliding the cells between guiding channels. Optionally high efficiency filters wherever required can be provided as separate sections.
1.7	10 Ton Smart Pac Compressor Unit	The scope of this section comprises factory tested built-in condenser with controls, equipment and instruments conforming to these Specifications and in accordance with the requirements of Drawings/ Schedule of Quantities. GENERA : Inbuilt Smart Pac Condensing unit shall be factory assembled, weather proof casing, constructed from heavy gauge mild steel panels and coated with baked enamel finish. The unit should be completely factory wired tested with all necessary controls. Air-cooled condensing unit of suitable capacity with Scroll/Rotary compressor of reputed make complete with copper piping, refrigerant gas, HP and LP cut-outs, microprocessor-based control panel, temperature controller, Thermostatic expansion valves, suitable insulation of the suction line, suitable size of fan etc. PLC controller should be loaded with features like auto switch on or off compressors, auto restart after power failure, runtime equalization of the compressor & time delay between compressor starts in case of multi compressor units, anti-recycle time delay to protect compressors from instant start/restart. The condensing units shall be mounted on suitable supporting MS structure. Compressor: Compressor shall be of the hermetically sealed scroll/rotary type with Gas cooled motor, balance and mounted on vibration absorber to provide quiet, free-floating operation. Compressor shall be protected against

		overload protection and single phasing protection. Refrigerant should be R410 / R22 / R-407. Control: Unit shall be completely factory wired internally. Electrical characteristics of unit shall be 415+/-10% volts, 50 Hz, three phase AC. Compressor and fan motor shall be served by separated thermal and electrical over load protection. High-Low pressure-stat shall be provided to protect compressor against excessively high and too low pressure. The control thermostat shall be located in unit return air stream / room. Control circuit shall be such that compressor cannot restart without manual resetting when it trips due to any reason other than thermostat tripping. Compressor shall be interlocked with blower fan so that it cannot start unless fan is on. All necessary safety devices shall be connected with control circuit.
1.8	Refrigerant Piping	Copper tubes of approved brand shall be used for refrigerant piping. Hard pipes must be used above (5/8") dia. All pipes shall be insulated with minimum 9mm thick insulation for the entire length; and flexible braided pipe (for external runs of pipe). External insulation shall be nitrile rubber covered with glass-cloth having density of 200GSM. All exposed piping insulation shall be with UV Protection/UV Coating with glass cloth fabric. Pipes should be installed in an accessible position wherever possible. Exposed to sun & visible piping shall be covered by braided PVC pipes/sleeves for mechanical protection and aesthetics. Necessary filters, driers, gauges, sight glass, safety cut-outs, etc. shall be provided in each refrigerant circuit as per the manufacturer's standards. Number of joints shall be kept to a minimum, and all joints must be located in the accessible runs of the pipes. Continuous, joint-less pipes must be used for all concealed/buried/inaccessible piping. Adequate extra length of pipes shall be left during piping work to avoid unnecessary joints during installation of indoor & outdoor units. All joints in copper piping shall be sweat joints using low temperature brazing and / or silver solder. Before joining any copper pipe or fittings, its interiors shall be thoroughly cleaned by passing a clean cloth via wire or cable through its entire length. The piping shall be continuously kept clean of dirt etc. while constructing the joints. Subsequently, it shall be thoroughly blown out using carbon

	dioxide / nitrogen. Refrigerant line shall be insulated with as mentioned in SOQ. Horizontal suction line shall be pitched towards suction of the compressor for proper oil return. The refrigerant line sizing should be designed to achieve minimum pressure drop and avoid oil return problem. After the refrigerant piping installation has been completed, the refrigerant piping system shall be pressure tested using nitrogen at a pressure of 20 kg per sq.cm (high side) and 10 kg/cm² (low side). Pressure shall be maintained in the system for a minimum of 24 hours. The system shall then be evacuated to a minimum vacuum. Vacuum shall be checked with a vacuum gauge. Pipes or ducts entering into the building through external wall cutouts should slope away from the building cutout, to stop rain water entering the building along through any gap between duct/pipe and the closed cutouts. Pipe and duct ends shall be kept closed at all times before and during installation to prevent ingress of moisture, dust and construction debris. All pipe supports shall be strong enough to withstand bending stresses in the pipes and shall be spaced not more than 1800mm apart. Each support shall be isolated from the supported pipe or fitting by anti-vibration springs or durable, non-deteriorating liner of rubber or neoprene. Wherever pipes are laid in two layers, an additional strip/support to be provided between the two layers so the pipes do not rest on each other. Before gas charging, the entire piping system should be vacuumized and pressure tested with nitrogen at 10 Kg/sqm (or as required for the system pressure rating) for 24 hours. Air tight factory supplied rigid insulation should be provided on all Ref-Net Joints / Y-Joints after pressure testing. Each Ref. Joint / Y-Joint should be properly supported to keep it in perfectly horizontal position. All copper pipes except 6mm diameter shall be insulated with minimum 19mm thick Nitrile Rubber insulation for the entire length. Pipes up to and including 6mm may be insulated with 13mm thick Nitrile Rubber insulation. PVC sleeves or high-density insulation sleeves to be provided wherever pipes pass through cutouts in walls or wooden partitions to avoid compression of insulation. Avoid installing pipes directly above the A/C machines. All exposed insulation on terrace or in open shafts should be protected with UV paint / UV coating & glass cloth having
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		density of 200GSM and finally covered with removable GI sheet cover for mechanical protection.
1.9	Drain Piping	The drain piping shall be made out of rigid C-PVC/ U-PVC pipes of sizes as specified in Schedule of Quantities. The piping shall be supported by clamping on MS angle running continuously below the pipe. Some places it required to make slot in floor/wall for laying drain pipes. U trap shall be provided in the drain connection of each unit. All MS pipes support/clamps shall be painted with red oxide primer followed by two coats of synthetic enamel finish paint. Drain piping shall be provided from each cooling unit to a designated drain point; using insulated 10/20 Kg/SqCM grade rigid PVC pipes or CPVC pipes as specified in Schedule of Quantities. Drain pipe connection from each unit should be connected with the drain header from top of the header to prevent back-flow from header to individual tapping. Each section of drain piping, including header and individual connections should have adequate slope, minimum 1:100. Drain outlet must have U-trap before terminating to NT/GT. End point of Drain pipe is to be temporarily closed with end cap during installation.
1.10	Standards	The following IS specifications and standards will be applicable for the work. IS: 659 - 1964 Safety code for Air conditioning IS: 8148 Specification for packaged air conditioning units. IS: 660 - 1963 Safety code for Mechanical Refrigeration IS: 732 III - 1982 Inspection and testing of installation IS: 4894 Test code for Centrifugal fan IS: 1239 I & II - 1982 MS tube, GI pipes, tubular and other wrought steel fittings IS: 823 - 1964 Code of procedure for manual metal arc welding of MS IS: 3589 Electrically welded steel pipe for water, gas and sewage. IS: 5111 - 1969 Code of practice and measurement procedure for testing Refrigerant Compressors IS: 732 Code of practice for electrical wiring and fitting for building IS: 694 - 1977 PVC insulated (HD) electric cable for working up to of including 1100 volts IS: 1248 Direct acting electrical indicating instruments IS: 1822 Motor starters and voltage not exceeding 1000

		Volts IS: 8544 - I to IV 1979 Starters IS: 2208 - 1979 HRC fuse and links, up to 650 Volts IS: 655 - 1963 Ducting work
1.11	Embedded Control Panel	The AHU-PIP embedded Plasma-BI shall have inbuilt integrated electrical control panel with AUTO/Manual override switch for operation. Control cabinet to be provided with Type 2 enclosure, with grounding lug, combination magnetic starters with overload relays, circuit breakers and cover interlock, and fusible control circuit transformer. The electric panel provided for the unit must be equipped with main incoming power isolation switch, additionally the unit must be provided with under voltage / over voltage / phase reversal / single phasing protection in standard for DX systems, all three phase motors must be operated only via 24V / 48V coil voltage contactors and MPCB's, additionally step-down transformer must be provided for power supply to the unit controller. The electrical panel must also be providing with relay block for common alarm. Power cables and wire shall be of copper of 1100 V grade, control wires of copper 660 V grade and shall confirm to IS: 1554 / IS: 694 as specified. Shall be provided with a three element, positive acting, ambient temperature compensated, time lagged, hand-reset type thermal overload relay with adjustable setting. Hand reset bottom shall be flush with the front door closed. Relays shall be directly connected for motors below 10 HP capacity. CT operated relays shall be provided for motors above 10 HP capacity. Heater circuits contractors may not be provided with overload relays Each motor shall be provided with a starter of suitable rating. Starters shall be in accordance with IS 2959-1965 1.2mm thick PCGI housing construction, Digital Temperature controller, humidity indicator, Room differential pressure indication. ON/OFF switch for HVAC system. UL approved indicators, Switchgear, Variable Frequency drive & relays. Single phase preventers shall be provided for all 3-phase motors and shall be in conformity with relevant BIS Standards. Single phase preventers shall act when the supply voltage drops down to 90% of the rated

	voltage, or on failure of one or more phases. All meters and indicating lamps shall be in accordance with IEC regulations. The indicating lamps shall be neon/LED type and of low burden. Each incoming shall be provided with one set of indicating panel, consisting of voltmeter (0-500 volts with three way and off selector switch), CT operated ammeter (of suitable range with three nos. Class 1 CTs of suitable ratio with three way and off selector switch), energy-meter (except for minor panel boards), phase indicating lamps and other indicating lamps as called for. Each phase indicating lamp shall be backed up with 5 amps fuse and toggle switch. Other indicating lamps shall be backed up with fuses. The work shall be carried out in accordance with specification of Indian Electricity Rules as amended up to date and local Municipal Bye-Laws. The power wiring system shall be suitable for 415V, 3 phases, 50 cycles, 4-wire supply. Wiring for motors shall be carried out in PVC sheathed and steel wire or tape armored cable. The control wiring shall be in PVC insulated and PVC sheathed, multi core, stranded copper cable (minimum 1.5 mm² Cu) with the required number of cores. Power cables and wire shall be of copper or aluminum of 1100 V grade, control wires of copper 660 V grade and shall conform to IS: 1554 / IS: 694 as specified. Cables shall be carried on walls or in racks or in cable trays suspended from hangers or laid in trenches as required. Where more than one cable is running, proper spacing shall be provided to minimize the loss in current carrying capacity. Special care shall be taken to ensure that cables are not damaged at bends. The radius of bends shall not be less than minimum specified by the manufacturer to ensure that no undue stress is caused to cable. Where cables pass through pipes, PVC/Neoprene rubber bushes shall be provided at the ends. Where cables pass through floors or walls, pipe inserts shall be provided and opening shall be sealed. Cables shall terminate using weather proof double compression brass nickel plated cable glands and tinned copper crimped lugs shall be provided.
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		Before commissioning of the equipment, the entire electrical installation shall be tested in accordance with code of practice IS 732-1963 (Revised) and test report signed & furnished by a qualified and authorized personnel. The entire electrical installation should be approved by Electrical Inspector and certificate from Electrical Inspector shall be submitted. All tests shall be carried out in presence of Engineer-in-Charge. The safety, functioning and all necessary certificates / approvals shall solely be the responsibility of the contractor. Testing shall also be done to check proper interlocking between various equipment/safety/control cutouts, as required for the particular duty.
1.12	Testing methods as specified.	Factory performance testing to establish the cooling capacity of the unit, air flow rate, dry bulb and wet bulb temperatures of air entering and leaving the coil of the air handling unit using PLC controlled graphical display. All the results must be fully computerized and can be seen on real time basis. The testing setup shall be in accordance with DIN EN 14511. Minimum 4 hours continuous real time readings should be recorded for computation of operational parameters. Additionally, electrical safety Hi-pod testing, dry run testing for control logic, thermal bridging test and leakage testing of cabinet at works must be complied with as part of performance test of the AHU-PIP embedded Plasma-BI unit
1.13	Test Documents to be submitted as described.	Plasma-BI shall reduction of approximately 2 log units of the bacteriophage with the corresponds to 99% reduction in 10 min exposure to Plasma-BI. Shall test in the order of 0.70-0.85 log pfu/cm² was obtained on the table, mask and measurement device surfaces (H1-H3 samples), corresponding to almost 80% of reduction. From the test result, shall be concluded that the installation of the Plasma Air bipolar cold plasma ionization system shall test to reduce by approximately 99% the concentration of the bacteriophage

		MS2 in the air 70-80%.
2	LAMINAR AIRFLOW 8x8	The ceiling laminar airflow filtration system shall design to ensure unidirectional distribution of sterile air with differential flow velocities decreasing from center to perimeter of the surgical theatre to ensure the cleanliness of all the area covered by the air flow. The complete filtration ceiling system should be factory assembled. Its holding structure, Filter frames and top plenum should be made of AISI 304 Stainless steel.
2.1	Specification	MPPS average efficiency: > 99.95% 3 Micron D OP efficiency > 99.99% Final Pressure drop: 600 pa(max) Maximum Operating Temp: 60 degrees Celsius The air management system should be designed to achieved the following parameters: F.S. 209 classification = 100 (100 particles/ft3) Bacteriological class =B (5 CFU/m3)* Filters shall meet following specification. Protective grids: white epoxy painted Micro drawn grid Separators: continuous Thermo-plastic chord Sealant: Polyurethane.
2.2	Features	The ceiling system shall be equipped with HEPA filters & different performances according to their position in the ceiling to achieve different flow velocities. The filtration ceiling system should have flow equalizer to achieve uniform & constant air distribution over the whole surface.
2.3	Standard & classification	The filters installed in the terminal shall be suitable for application for clean room ISO 14644/1. H-14 Standard HEPA filters. AISI 304 stainless steel/Aluminum/PCGI. Particle decontamination kinetics CP =5 min biological

		decontamination kinetics CB = 5min ECG-GMP Annex 1 classification = Class A ISO 14644/1 classification. The supplier shall provide test certificate for HEPA filter and Sterile Air Terminal from the original manufactures. Size of Sterile Air terminal Box size shall minimum of 2400mmX2400mm. The diffuser with aluminum extrusion frame & sealed gasket conforming to DIN 4799 standards for the air distribution system with hepa filter having efficiency 99.97% down to 0.3 micron. Diffuser should be in two layer monofilament precision woven polyester of uniform porosity with an open area of sufficient resistance to create laminar from diffusers face and integral lighting should be as per IP 54 which has to be used inside the laminar flow.
3	FIRE RATED DUCTING & MOTORISED DAMPERS	Ducts shall be straight and smooth and shall have neatly finished joints. All joints shall be made air tight using 5mm neoprene rubber gaskets, and/or RTV-sealed, or soldered as specified. The gasket will be fixed with a suitable adhesive to the flange. Changes in dimensions and shape of ducts shall be gradual. Curved elbows, unless otherwise approved, shall have a center line radius equal to one and a half times the width of the duct. Air turns shall be installed in all abrupt elbows and shall consist of curved metal blades or vanes, arranged to permit the air to make the turn without appreciable turbulence. Turning vanes shall be invariably provided at all turns and grille-collars. Splitters and dampers shall be provided at all branches/tapings whether shown on the drawings or not. All ducts shall be rigid and shall be adequately supported and braced. Where required, standing seams, tees or angles of ample size to keep the ducts true to shape and to prevent buckling, vibration, etc. shall be provided. At all connections between ducts & fans; fire-retardant, lint-free double canvass/rexin connections of heavy gauge shall be provided. One set of canvas connection include required quantity of canvas for one evaporator indoor unit. All duct work shall be independently supported from the building construction. All horizontal ducts shall be rigidly and securely supported in an approved manner on MS

		hangers provided at sufficiently close intervals to avoid sag in the duct. All supports shall be painted with primer & synthetic paint on installation. Ducts shall be supported by means of GI/ painted rod (minimum 8 mm dia.) taken from the slab using anchor expansion fasteners (minimum 10 mm dia.) and MS cleats. Chipping of the slabs shall not be permissible. Flexible connections shall be constructed of fire-resistant double canvass sleeve securely bonded and bolted at both the ends. All hardware shall be hot-dip galvanized or coated with 2 coats of rust preventive primer. At all connections between ducts & fans; fire-retardant, lint-free double canvass/rexin connections of heavy gauge shall be provided. One set of canvas connection include required quantity of canvas for one evaporator indoor unit.
3.1	Construction methods	Double canvass-connection and GI collar of suitable length shall be provided at the outlet of each AHU type and ducted cooling unit. A zipper shall be provided in the canvass connection to facilitate measurement of supply air temperature of ducted units. GI collars should be lined from inside with black expanded polyethylene for noise reduction. SA duct shall be acoustically lined and/or thermally insulated as specified. Part of the duct, acoustic lining & thermal insulation shall be painted black to prevent reflection of light through SA/RA grilles. All duct support shall be black painted. All hardware shall be galvanized. During fabrication and installation, ends of all ducts shall be kept closed to prevent dirt & dust. All ducts shall be thoroughly cleaned before installation. All work should be carried out in supervision and indication of Engineer In-charge. Ducting installed over the false ceiling shall be supported from the slab above or from the beams, etc. But in no case should it rest on the false ceiling or be supported from the false ceiling hangers. If MS hooks are provided at bottom of slab, hanger supports shall be provided by the contractor from these hooks. Bottom level of all ducts should be maintained as shown in the drawing. Leveling of ducts should be checked with a PVC tube water level from a reference point. All ducts shall be totally free from vibration under all conditions of operations. Duct work connected to AHU-PIP that may cause vibration in the duct shall be provided with flexible connections close to the unit.
3.2	Specification	24Gauge PPGI Ducting with all accessories & 13mm

		Aluminium foiled Fire Rated Class 'O' Nitrile rubber insulation with duct tape on all insulation joints.
3.3	Ducting Standard & Classification	Complied with: BS476-24:1987 ISO 6944-1985 BS 999 Ducts are fabricated DW144/SMACNA Standards and fully equipped with the updated specifications.
3.4	Motorized Fire Dampers & Smoke Exhaust system	Smoke exhaust system & Fire damper shall be installed in an air distribution system or an air transfer opening designed to close automatically upon detection of heat interrupting airflow and thereby restricting the passage of fire in the process. Fire dampers shall be installed in fire-rated walls/barriers/partitions (sleeve required) where the HVAC ductwork penetrates ensuring that their integrity is maintained. The location and installation procedure of fire dampers should be in accordance with the widely accepted and recommended standard. Construction: Frame: High quality galvanized Iron Sheet of >1mm thickness. Blades: Interlocking type blades roll formed from 0.8.mm thick galvanized steel. Blade Ramp: Formed from >1mm thick galvanized steel with a spring holder. Springs: 2nos. constant force steel springs. Fusible Links: UL listed fusible links which has fire rating of 165° F / 212° F. Description: Fire damper frame shall be made from 1mm thick. High quality galvanized steel sheet. All welded joints are rust proofed by zinc paint coating. The fire damper blades are roll formed from 1mm thick. Galvanized steel. The interlocking type blades are designed with hat shaped reinforcement ridges ensuring strength and stability. The blade ramp is formed from 1mm thick. Galvanized steel with a spring holder. The ramp is firmly

		secured to the frame by rivets. Constant force stainless steel springs are firmly secured to the blades and held in place on the ramp. The blades are secured by UL listed fusible links which has a fire rating of 165°F / 212°F and thus kept out of the air-stream when not in operation. The heat responsive links on detection of heat beyond 165°F / 212°F release the blades from their position. Upon release, the blades which are connected to the springs are pulled down by the springs and get automatically locked on a latch and remains so until reset. These fire dampers are 1 rated up to 1/2 hours rating with low leakage. Upon the termination of fire condition, the damper can be re-opened (usually an access door has to be provided for inspection) by simply pulling up the curtain blades and replacing the fusible link. Fusible Link: Vertical UL Listed 165°F / 212°F fusible link as standard.
3.5	Fire damper standards.	All dampers are manufactured in compliance to the UL 555 standards and the company's quality control procedures.
3.6	Automatic smoke exhaust system & Motorized fire damper Specification	Fire damper is a device installed in an air distribution system or an air transfer opening designed to close automatically upon detection of heat interrupting airflow and thereby restricting the passage of fire in the process. Fire dampers are installed in fire rated walls/barriers/partitions (sleeve required) where the HVAC ductwork penetrates ensuring that their integrity is maintained. The location and installation procedure of fire dampers should be in accordance with the widely accepted and recommended standard. Construction: Frame: High quality galvanized Iron Sheet of >1mm thickness. Blades: Single skin roll formed from high quality steel sheet of thickness 16 gauge. Actuator: Fast acting, two position Honeywell actuator TRD: UL Rated TRD, 165° F temperature rating. Jamb Seal: Steel

		Description: • All corners of the frame are fully welded (and painted to prevent rust) to ensure sturdy construction for a rattle free operation. • Designed for parallel blade operation. • AMFD model fire dampers are UL 555 classified & manufactured under Airmaster's strict quality control procedures. • All actuators are externally mounted with 230VAC as standard and are supplied without auxiliary switch as standard. • Actuator position shall be based on Clockwise (CW) closure direction as standard. • TRD's shall have inbuilt RESET switch to reopen the damper. • All AMFD models shall be factory fitted with 400mm wide & 1.2mm thick steel sleeve as standard. • All dampers and TRD's shall be factory tested to ensure smooth operation before dispatch. Shall be used in walls/partitions of less than 3 hours fire resistance rating as per NFPA 90-A in accordance with ANSI/UL555 standards.
4	Return Air Riser	1.2mm SS Perforated grill with 1.2mm PCGI Frame construction. External damper adjustment provision.
4.1	Specification	1250CFM riser with 20micron washable filter.
4.2	Features	Volume control damper to keep uniform flow in all 4 risers.
4.3	Standard & classification	ISO & CE certified.
5	Double arm Laparoscopic pendant	Laparoscopic double arm pendant.
5.1	Specifications	1. Pendant should have safety factor of 3 2. The length of the drop tube from the extension arm should be suitable to the OT height Double Arm Pendant should have total length of 1500mm arm 3. Weight carrying capacity of the arm should not be less than 140 Kg 4. The pendant should have a friction braking used should be of high strength aluminium alloy

		5. Arm should be capable of 330 degrees of rotation, which can be easily adjusted to suit the desired mode of operation 6. The distribution column should be at least 1200 mm in height & it should be capable of accepting a range of shelves, infusion poles, electrical sockets, gas outlets other accessories as asked in tender 7. Electrical & Gas are separated in different chambers in the distribution column 8. The Pendant should support the range of Physiological Monitor/ Patient Monitor Mounting Solutions 9. Pendant should be supplied of gas outlets with DIN Standard as mentioned below ☐ Oxygen Outlets – 1 nos. ☐ Vacuum Outlets – 2 nos. ☐ Air(4 bar) Outlets - 1 nos. ☐ Co2 outlet - 1 no ☐ Electrical sockets - 10 nos. ☐ All Gas Outlets should come fitted from the factory ☐ Shelf 50 cms x 50cms with two rails one on each side – 3 no. , Each shelf should have weight capacity of 80 Kg ☐ Shelf 50 cms x 50cms with drawer – 1 no. ☐ Data socket RJ-45 -2 nos
5.2	Certificates	ISO 13485
6	SINGLE ARM ANESTHESIA PENDENT	
6.1	Specifications	1. Pendant should have safety factor of 3 2. The length of the drop tube from the extension arm should be suitable to the OT height 3. Single Arm Pendant should have length of 900mm arm 4. Weight carrying capacity of the arm should not be less than 200 Kg 5. The pendant should have a friction braking used should be of high strength aluminum alloy 6. Arm should be capable of 330 degrees of rotation, which can be easily adjusted to suit the desired mode of operation 7. The distribution column should be at least 800 mm in height & it should be capable of accepting a range of shelves, infusion poles, electrical sockets, gas outlets other accessories as asked in tender 8. Electrical & Gas are separated in different chambers in the distribution column 9. Pendant should be supplied of gas outlets with DIN Standard as mentioned below

		☐ Oxygen Outlets – 1 nos. ☐ Vacuum Outlets – 2 nos. ☐ Nitrous oxide – 1 nos. ☐ Air(4 bar) Outlets - 1 nos. ☐ Electrical sockets - 8 nos. ☐ All Gas Outlets should come fitted from the factory ☐ Shelf 50 cms x 50cms with two rails one on each side – 3 no. , Each shelf should have weight capacity of 80 Kg ☐ Shelf 50 cms x 50cms with drawer – 1 no. ☐ IV Fluid Pole with 4 hooks – 1No. ☐ Data socket RJ-45 -2 nos
6.2	Certificates	ISO 13485
7	OPERATION TABLE WITH ATTACHMENTS	1. It should be an electro hydraulic table, capable of operation by a wired remote control; unit with zero position. 2. It should be able to do all high-end neurosurgical procedures. 3. It should have Hand control and auxiliary control on the column. 4. Operating table should be with easy rolling castors and the table should have longitudinal shift $\geq 360\text{mm}$ (Cranial and Caudal traverse) 5. Should have inbuilt battery (rechargeable) with a capacity $\geq$ at least 50 movements 6. Table top should be 4 part table or better 7. Electro hydraulically operated movements of height, tilting, Back plate and Trendelenburg. 8. Base cover made of 304 grade stainless steel 9. Table top padding should be min 60 mm thick. 10. Reverse positioning of patients on a special plate that can be connected at the foot end of the table top. 11. Should have wired remote control unit. 12. Height (Without padding) Min of $\leq 530\text{mm}$ to Max of $\geq 1000\text{mm}$

	13. Trendelenburg/reverse trendelenburg : 30 degree or more 14. Lateral tilt, both directions : 24 degree or more 15. Back plate up +80/-30 degrees or better 16. Max patient weight ≥ 270 kg 17. Total length of the table should be ≥ 2000mm and width without side rail ≥ 520mm. 18. Leg plate should be of split type with padding 19. It should be excellent ground clearance. 20. Should have Head and leg plates removable and interchangeable 21. Should have radiolucent table – top. 22. Stainless steel side rails on both sides of the table top 23. Should have safety certificate from a competent authority European CE and FDA (US) 24. Shall meet internationally recognised standard for Electro Magnetic Compatibility (EMC) for electro medical equipment: IEC-60601-1-2 (latest edition) or should comply with 89/366/EEC; EMC-directive as amended. Certified to be compliant with IEC 60601-2-46 : Particular requirements for the safety of Operating Tables: latest edition or equivalent ACCESSORIES a) Neuro adaptor – 1 No. b) Skull clamp with adult and pediatric pins – Mayfield or Doro (Non Radiolucent skull clamp with adult and paediatric pins) 3 pin skull clamp, Base unit, Reusable stainless steel paediatric pin- 3 pins and horse shoe headrest. c) General purpose ‘U’ type headrest – 1 No
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		d) Assembling dorsal operating pad set – 1 No. e) Lateral support – 1 Pair f) Leg crutches – 1 Pair-sitting position attachment g) Anesthesia screen frame – 1 No. h) Restraint strap – 1 No.-Traction pulley with weight attachment i) Head base gel ring – 1 No.
8	DOUBLE DOME OT LIGHT WITH DETACHABLE CAMERA	Should be Double Dome OT Light with each light-head mounted on a separate arm with swivel arm, spring arm and yoke One dome on each arm should be camera ready, and a detachable camera from same manufacturer should be mounted at the centre of the light-head as per requirement Light-head should have base made of Aluminium, each individual LED should be mounted on the single base of the light to ensure maximum heat-dissipation Light-head should have complete uni-body design, not petal or joint structure Light-head should have round shape to ensure symmetrical illumination Light-head should have 600 mm diameter +/- 50 mm (without external handle, only actual light body) Light-head should have at least 2 openings in its shape to allow clean air flow to pass through operating cavity Each dome should have at least 20 independent point sources to ensures maximum shadow dilution compliance Each dome should have a shadow dilution performance of over 90% with tube (50 mm diameter and 75 mm length - as per IEC 60601-2-41) Should have white leds (warm/cool) to achieve high CRI (CRI boosting using red, green leds etc. wont be accepted) Should have special illumination mode for deep cavity applications Should have endoscopic illumination mode Should have one click maximum intensity mode to boost

		illumination Camera ready light-head should have integrated light and camera control on a single controller.		
8.1 Specification		OT Light should have the following optical specifications:		
		Specification	Principal Dome	Satellite Dome
		Central Illuminance	160,000 lux	160,000 lux
		Light Field Diameter	150-300 mm	150-300 mm
		Light Head Diameter	600 mm	600 mm
		Depth of Illuminance (at 60%)	More than 350 mm	More than 350 mm
		Colour Rendering Index (3500-4000K) (Ra)	95	95
		Adjustable CCT	3500K – 5500K	3500K – 5500K
		Dimming Range	0-100%	0-100%
		Service Life of LEDs	50,000 hours	50,000 hours
		Shadow Dilution with Tube	More than 90%	More than 90%
		Shadow Dilution with One Mask	More than 70%	More than 70%
		Shadow Dilution with Two masks	More than 50%	More than 50%
		Shadow Dilution with Tube and Two Masks	More than 40%	More than 40%
		Weight of Light head with yoke	Less than 10 kg	Less than 10 kg
8.2 Certification		Manufacturer should have ISO 13485 and ISO 9001 certificates Manufacturer and products should be registered with Indian CDSCO, European CE and USFDA. Relevant documents and website links to showcase registered devices on the		

		website of these regulatory authorities must be provided	
		The device should have IEC 60601-1-1, IEC 60601-1-2, IEC 60601-2-41 test reports available	
8.3	DETACHABLE CAMERA FOR DOUBLE DOME OT LIGHT	Should be FULL HD camera Camera should have autofocus and focus lock option Camera should have auto/manual control over white balance with one push white balance mode available Camera should have flip mode to rotate the image 180 degrees	
8.4	Specification	Detachable Camera should have the following specifications:	
		Specification	Camera Details
		Image Sensor	1/3-type CMOS
		Effective Pixels	4 MP
		Signal System	Full HD (1080p)
		Video Output	HD SDI / HDMI
		Zoom	10X Optical , 16X Digital
		White Balance	Auto / Manual - One Push
		Focus / Iris Control	Auto / Manual - Lock
		Weight of Camera	Less than 2 kg
9	OPERATION THEATRE INTEGRATION	The Multi-channel OT Integration Console should have the following specifications. 1. The Integration system should receive the signal from different sources like Room camera, Endoscopy camera, Overhead camera, Archiving System, Auxiliary devices like C-Arm, Video Microscope, Mobile ultrasound, microphones, AUX-IN & video conferencing, etc. and able to integrate all signal and give flexibility to route the signals/videos at desire destination/monitors. 2. The system should possess the capability to seamlessly integrate all available video signals within the OT and support for simultaneous inputs from up to four video sources, including Full HD (1920 x 1080p) /4K (3840 x	

	2160p) with HDR capabilities and progressive scan for 25/30 frames. 3. The system should enable a plug-and-play connection for various video sources, with vendor-independent compatibility, encompassing cameras, endoscopes, microscopes, and PC computers. 4. It should offer support for Full HD/4K video display on the local OT monitor, allowing surgeons to view the surgical procedure in high resolution. 5. The system should incorporate a centralized control module equipped with a touchscreen interface for managing all audio and video signals within the OT. Surgeons should have the flexibility to view multiple images simultaneously in Picture-in-Picture (PIP), Picture and Picture (PAP), and Quad view modes, with the ability to customize the positioning of these images. 6. It should facilitate integrated audio capture from a separate surgeon's microphone, synchronized with the selected video feed. 7. Real-time display switching should be achievable through the centralized control module. The Audio/Video Router/Switch system should have a minimum of 16 I/Os with open architecture. It should support the input types such as DVI, HD-SDI, S-Video, VGA and HDMI. 8. The system should offer integrated control for the room camera via the centralized control module, with the potential to control the OT light camera if it adheres to a generic control protocol. 9. The Full High-Definition Digital Documentation System should be a high-end Windows 11-based computer system with built-in access security, purpose-built for recording, managing, and archiving surgical images and videos in native full HD resolution. 10. Integration of equipment/Signals/Sources with the Central Control System in such a way that the central control system is capable to route any running high-definition surgical videos, which is being recorded in it, onto any display device in an operating room. 11. It should include a 21.5" or more Full HD (1920 x 1080p) PCAP touchscreen medical-grade monitor bundled with recording software to ensure crystal-clear image viewing. 12. The system should come with integrated storage, capable of archiving video and images up to 1 TB, utilizing the efficient H.264/Mp4 format with compact
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	file sizes. 13. It should feature intelligent and adaptive storage management, with automatic background storage to minimize downtime between surgical procedures. 14. Recording functionalities should include video zoom and vary recording speed for enhanced viewing angles and analysis. 15. The system should support the capture of still images in real-time during procedures. 16. Patient and image data should be able to call up and distributed to required monitors in the operating room. It should feature a unique Patient and Exam entry management system, with robust search and sorting capabilities. 17. Post-exam playback and review should be supported, with the option to integrate doctor's notes. 18. Captured high-definition images and videos should be easily accessible from the hard drive for printing or saving to various external media, including USB storage media via 2.0 and 3.0 optical media, the network drive and the PACs server. 19. Video Conferencing system should be offered, and the system should be able to transfer high-quality real-time images and audio signals from multipoint at a minimum speed of 2Mbps. The system should be compatible with 1080p full HD resolution for transmission. 20. The conferencing system should be controlled via the touch screen of the integration system from the OT. 21. The system should seamlessly integrate with popular video conferencing platforms like Zoom, Teams, Skype, enabling easy video conferencing from within the OT. 22. It should support live streaming of video feeds to multiple displays within the hospital network, including integrated audio feed over the local IP network. 23. The system should include integrated security software to protect against malware, operating independently of OS security patches, and exclusively running certified software. 24. The centralized control module should offer customization options to display the hospital name and/or OT name on the control screen. 25. The system should have the flexibility to be mounted on a trolley for enhanced mobility within the OT. 26. The system architecture should be designed with scalability in mind, allowing for future expansion as needed.
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		27. The project should include comprehensive project management and workspace design services aimed at enhancing OR workflow during both the design and installation phases. Ongoing on-site and remote support, including necessary software updates and on-site training, should be included as part of the package.
10	4K NEUROENDOSCOPE AND HIGH END ICG CAMERA SYSTEM WITH ACCESSORIES	The 4K Endoscopic Imaging system will consist of the following items: 1) Full 4K video image processor 4K 3 chip camera head & coupler 2) Powerful LED light source with Light Guide Cable 3) 31.5" 4K medical grade monitor 4) 4K compatible Telescopes 5) 4K Medical Grade Recorder 6) Endoscopic Trolley with Arm 7) should supply ICG dye x 10 vials
10.1	Full 4K 3 Chip CMOS Fluorescence Ultra High-Definition Video Image Processor: 2 Unit Camera head (ICG system): 1 unit	1) A full 4K processor should have native resolution of 3840x2160 pixels. 2) It should have Touch LCD panel operation for easy control. 3) Control of Special Modes from the camera head: Image overlay feature (white-light image integrated with fluorescence in real time, no toggling necessary. Processes two white light images and inserts infrared in between to achieve an overlay on the white light image. Contrast control 4) Should have near Infrared Fluorescent Visualization mode: should displays the image in a grayscale with green overlay. This fluorescence modality provides an enhanced visual assessment of blood flow, tissue perfusion when activated. Also it should be able to enable ureter lightening 5) Should provide individual User preset. 6) The System settings, Color Tone, contrast visualization of fluorescence, enhancement etc 7) Should have compatibility for selecting 4K or Standard HD output signal 8) 3 Chip CMOS camera technology, with minimum 4 buttons on Camera head with ICG imaging 9) Auto-light maintains consistent light using an algorithm, determining optimal lighting levels, auto adjusts light output accordingly. 10) Shutter: 1/60-1/22,478 seconds 11) Outputs: 2 no's HDMI/ DVI [Signal Format: 3840x2160, 1080p]
10.2	Advance LED Light	1) Powerful LED Light source using three primary color

	source:1 Unit and Fiberoptic cable: 1 Unit	LED lamps (Red, Green & Blue) 2) Inbuilt 830nm Laser for trans illumination of laser fiber 3) Color temperature should be approximate 5500K or more. 4) Light Source has Technology to ensure the light cable is securely plugged in. There is an illuminated ring around the cable insertion point to indicate cable connection, and power status 5) Designed to reduce the risk of OR fires, automatically shuts off the light source if the fiberoptic cable becomes disengaged from the scope. 6) Class 1M Laser Product Laser product classified per IEC 60825-1:2014 certification & IEC 60825-1:2014 Provide Patent certificate. 7) Transparent Fiberoptic Light Cable 3.5mm or more x 300Cms or more 8) Adaptable to provided Telescope 9) Should be ICG compatible for fluorescence 10) System should be capable of Near Infrared Fluorescence Imaging with below features: a. White Light Image with super imposed display of fluorescence. b. Fluorescence signal in white light image with dark color background. c. Automatic adjustment of light intensity to prevent the issues of glare. Should have Lamp life approximate 20000 hours or more.
10.3	4K Medical Grade Monitor: 1 Unit	1) Resolution: 3840 x2160, 4K Medical grade 31.5 inch UHD LCD backlit monitor with ultra-high definition 2)Medical imaging systems for Minimally Invasive Surgical (MIS) and interventional procedures. 3) Fully compatible with OR video control applications. 4) Surgeon specific user selectable settings. 5) Color Depth 8 bit 6) Aspect ratio: 16:9 7) Should have multi-image display format – PBP, PIP 8) Inputs: 1x DP, 1 X DVI- D, HDMI 9) Should have Class-I Medical Device Certification 10) IEC 601.1 & ISO, CE Approved 11) Display color: 1,07 BILLION colors
10.4	4K Telescopes – 1 Each	4mm:30-degree ICG compatible with working length of 15-18 cm or more -Zero degree scope 4mm:45-degree ICG compatible with working length of 15-18 cm or more 4mm:70-degree ICG compatible with working length of 15-18 cm or more Aspherical Lens technology for minimized optical distortion

		Improved light transmission & edge brightness compared to standard HD scopes
10.5	Medical 4K recorder: 1 Unit	Has the capability to control all connected surgical devices from the sterile field using the camera head, remote control, touch panel, and voice control headset. Control of integrated operating room components such as the video router, room lights, OR lights, and room cameras are also enabled by the system. It allows surgeons to capture, record directly from the 4K Platform. Surgeons can also use the Hub to customize their respective surgeon profiles and desired tower settings to drive efficiency. Capture Resolution: UHD 4K 2160p 30fps with 4K recording software Should have a complete touch screen interface [GUI Touchscreen] Screen size: 8" or more Archiving options: Internal 1TB capacity; External (USB, etc.); Cloud based storage accessible Image formats: BMP; JPEG; TIFF; TGA; PNG Should have On Screen Display Should be DICOM ready Voice activation feature: Can navigate- Menu, Device Control, Annotation of images, etc.
10.6	Endoscopy Trolley with Arm – 1	Compatible Endoscopy Trolley for accommodating above items
11	TOUCH SCREEN SURGEONS CONTROL PANEL.	1. High contrasts, high luminance and with strong outer box. Applies DICOM Standard with screen size of 27 inch 2. Stable back light system, supporting the integration of the long- lasting usage. 3. LED back light, ultra-thin and full-flat screen design. 4. Use anti-scratch hence preventing damage while cleaning and disinfecting. 5. High touch accuracy, more than 10,000 point per square inch. 6. Automatic adjustment, high response speed, reliability and stability without drift, more than 5 million times touch control in each point 7. Work with fingers, soft pen and can be used even with gloves/ when hands are wet. 8. Option to change the colour of the UI to suit the customers requirement.

	9. Use stable Android operating system with inbuilt software The multi-function control system in the operating room can control the ceiling lighting, operating lights and air conditioning. It is composed of clock timing module, air conditioning monitoring module, medical gas monitoring module, and telephone module. The following features must incorporated in a single touch screen control panel: 1. Operation timing – Elapsed time 2. Anaesthesia Countdown – Countdown timer 3. Time – Real time clock. 4. Date 5. Temperature and Humidity Display and control 6. Hands Free Telephone with option to save over 10 Quick dial numbers 7. Music player with local and Bluetooth options 8. Medical Gas Alarm System- upto 7 gases 9. Lighting Control for Peripheral , Shadow less dome, Plenum light and View box along with brightness control option in peripheral light from 0-10V as well as DALI 10. Room pressure indication. 11. HEPA Filter status 12. AGSS, IPS and UPS Alarm options 13. Blinds control 2 TOUCH PANEL FEATURES OS: Android CPU: Quanzi H8, 8 cores 2.0GHz RAM: 1GB DDR3 Storage: 8GB EMMC Monitor:2 Ch LVDS, 1920*1080 Dual display: HDMI/LVDS Network:4G/3G, WIFI, Zigbee Bluetooth: Bluetooth 4.0 LAN:10M/100M Serial Port: 2X 485com, 4XTTL, 2X RS232 Audio: 2ch stereo RTC Clocking Update port: OTA, USB OTG
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		Screen Size: 22, 27 or 32 inches available in white or black background Definition:1920*1080 Brightness: 300cd/m2 Contrast: 50000:1 Response time:2ms Touch panel Type: Multipoint capacitive touch screen Life time:>2000000 touch Hardness: 3H Input / Output Switch outputs:9 Relays Analog outputs:2ch 0~10V Analog inputs:3ch 0~10V Switch inputs: 5 switches COMMUNICATION INTERFACE: Telephone slot, Background music input, USB and Bluetooth
12	SET UP OF OT WALLS BY ANTIMICROBIAL WALL PANELS WITH INTEGRATED SERVICE PANEL WITH ANTIMICROBIAL CEILING PANEL	Walls of operation theatre should be installed with panels which shall be made of SS304 that shall be easy to clean and extremely hygienic. Operation theatre shall not have any sharp edges, corners and shall not support bacteriological or fungicidal growth and shall be resistant to most chemicals, commonly used in Hospital Departments. Joints in the panels in the operation theatre shall be sealed by means of Gasket application. The function of sealing shall assure an airtight environment in the room and eliminate services to prevent dust accumulation. Wall Paneling System shall be 100% modular in nature and shall comprise of free- standing sub frames. All four edges of tile shall be flanged at right angles. The tile shall have backing of 18mm thick soaked Polyurethane Foam (PUF) insulation. This insulation shall give rigidity & strength to metal tile. Modular wall panels tiles shall be made of at-least 1.00 mm thick sheet. Wall Panel shall be made in grids of three sections with three different colour as per the choice of user :- - Lower wall element (approx. 900mm high). - Upper wall element (approx. 1800mm high). - Customizable installation module of 200 mm service panel between the lower and upper wall element to provide access to medical gas lines and other facilities.

	Panels shall have design feature of quick & easy demounting and reinstallation of individual panels without removing the adjacent tiles. Modular wall panels tiles shall be made of SS304 , finished with 60-80-micron Anti- bacterial powder coating with addition of silver ions. Wall panel shall have flanged edges to make a tile of at least 18 mm thick. Panels shall be mounted on a structure made of galvanized steel and shall enable the distribution of medical gases, electricity, sewerage inside the wall. The corner profile shall be made of curvilinear and precisely extruded aluminum profile with colour surface treatment to match the colour shade of the wall panels. The wall panels shall be inserted into this profile in the vertical direction and shall be sealed with expansion sealing inserted into the corner profile. Vertical gap / joint between the wall panels shall be 10 mm maximum and shall be filled with removable extruded gasket sealant matching the colour of the wall panels. The anti-bacterial powder coating with added silver ions shall have zero solvents or VOCs to ensure that the system shall not affect/damage to the environment of Modular Operation Theatre. The finishing panel shall permit subsequent installation of flooring with suitable upward curvature up to a nominal level of 100 mm to ensure zero dirt accumulation. System shall be 100% modular to ensure quick and easy installation, maintenance, retrofitting and up gradation. Proposed system shall be installed at site without any welding. The partitions shall not have corners; adjacent surfaces shall be molded flush. Upper wall element shall have sufficient height to reach the lower edge of the prefabricated ceiling. Vertical level shall be adjusted with the aid of laser measuring systems. There shall be a possibility of wide variety of colors to be used on the wall elements to give the aesthetic and state of the art look to the Operating room. Cardiac Operation Theater Ceiling with antimicrobial ceiling panel: Ceiling of operation theatre should be 50 mm thick Ceiling panels having composite construction of two skins one side
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		SS with 0.8 mm thick SS304 sheets and back side should be made of 0.5 mm PPGI and core consisting of rigid polyurethane foam, which has been injected under high pressure, with a minimum density of 40 Kg/m³ shall be provided for the Operation theatre. Ceiling panels shall be made of SS304, finished with 60-80-micron Anti-bacterial powder coating with addition of silver ions. The individual ceiling panels shall use the tongue and groove technology for joining two panels, no welding shall be allowed. There should be a separate aluminium Ceiling jointer (H Type) provided for joining adjacent panels. Room lighting, air supply inlet, ceiling service units, return air outlets etc. as should be integrated with ceiling system. The cavity between the inner and outer Panels should be left with minimum obstructions for the possible addition of equipment at a later date and to enable services, pipes, conduits etc. to be run within the cavity. All the sharp edges and corners should be chamfered to avoid bacterial contamination. Panels shall be free from scratches & dents, resistant against humidity and cleaning detergent. Paneling should be easy to maintain, durable, antistatic/conductive and fire retardant.
13	STORAGE CABINETS	Providing, Fixing, Supply and Installation of storage unit will be made with the Stainless steel material i.e SS-304
13.1	Features	The unit will be divided into 2 equal parts and each part will have individual glass doors with locking system. Each part will have glass racks to keep surgical medicines etc.
13.2	Standard & classification	ISO & CE certified.
14	WRITING LIST BOARD	The writing unit shall be made up of toughened glass and size should not be less than 40 inch.
14.1	Features	The unit shall be opened to create a wall mounted writing surface within the operating room.
14.2	Standard & Certification	ISO & CE.
15	LED TWIN X-RAY VIEWER	The viewer should be in double plates construction as standard product for operating theatre. The system should preferably have electrical safety codes for high & low voltage system. The theatre should be equipped with a 2 plate X-ray viewing screen.

15.1	Features	It should be designed to provide flicker free luminance for the film viewing purpose. It should be installed flushed with theatre wall for hygienic and ease of cleaning purpose.
15.2	Certification	CE certified/ ISO
16	HATCH BOX	A hatch box should be provided in each operation theatre to remove waste materials from the operation theatre to dirty linen area/corridor just adjacent to Operation Theatre. Each hatch box should be equipped with two doors and the door should be operated electrically/motorized. The hatch should be designed in such a way that only one door should be opened at one time. Construction shall be SS304.
16.1	Features	The UV light should be so installed that it is kept on while both the doors are closed. This UV light has to be automatically turned off in case of opening of either of the doors. Indicators should be provided on both sides of the OT so that door open / close status can be monitored from both sides.
16.2	Standard & Specification	ISO & CE
17	CONTINUOUS PERIPHERAL LIGHTS	Housing & Finish shall GI powder coated white after phosphocreatine treatment. Electronic driver shall Powered by an independent Isolated, SELF Output electronic LED driver (SMPS based constant current supply) with Output Short-circuit protection.
17.1	Specification	Class Declaration: Class-II IK Rating: IK03 IP rating: IP54 Color Temperature: 5700K System Lumens: 3300lm Watt: 30W CRI: ≥ 80 Power Factor: ≥ 0.95 Operating temperature: -10 °C to +45 °C
17.2	Features	Optics shall High transmittance polystyrene opal diffuser for glare free symmetric light distribution. Light source shall High efficiency long life LED package in integral module with lumen efficacy of >140 lm/W and viewing angle of 120° to ensure better uniformity.
17.3	Certifications	Surge protection & other safety test as per IS:15885 Part 2/Sec 14.

18	PRESSURE RELIEF DAMPER	A modular OT should always have a positive pressure as compared to the outside environment. As more and more Sterile air is being inducted into the room, a suitably sized Air Pressure Releaser should be installed in the room. It should be S.S. fabricated.
18.1	Features	It should be fitted outside the air ceiling system area and flush 'with the ceiling in the operation theatre suitable to required illumination of OT. Peripheral lights and clean room luminaries fitted in the frame should be 1 Nos or more depending on the size of OT.
18.2	Certifications	ISO/CE
19	MGPS WORK	The Medical Gas Pipeline inside the OT shall provide Valve box. Shall bring the Medical Gas Pipeline inside the OT till ceiling pendants and provide NIST connections for each gas pipeline
19.1	Features	Medical Gas Piping by means of NIST connections.
19.2	Specifications	5 gases (O ₂ , CO ₂ , N ₂ O, Vacuum, Surgical Air).
19.3	Standard & Certification	As per EN 737 / HTM standards or equivalent. "The Gas piping used for transportation should be as EN 13348 / EN 1057 standards with copper fittings as per EN 1254 standards.
20	OT-ELECTRICAL WORK WITH MEDICAL ISOLATION PANEL	All high voltage equipment is installed in a separate enclosure. The remote cabinet houses the operating lamp transformers main failure relays, electrical for all circuits within the operating theatre. All internal wiring is terminated in connectors with screw and clamp & spring connections of the clip-on type mounted, on a DIN rail labeled with indelible proprietary labels. Individual house or miniature circuit breakers protect all internal circuits with 5/16-amp switch Sockets for Operation theatre. Medical Isolation Panel: shall have single-phase isolating transformer according to IEC 60364-7-710 with a maximum rated power of 10 kVA and shall be designed according to IEC 61558-2-15 and have secondary voltage of AC 250 V and a maximum transformer secondary leakage current of 0.5 mA to earth as per IEC 60364-7-710. The secondary circuit shall be ungrounded (IT) system.
20.1	Isolation Panel Technical Specification	➤ The isolation transformer shall be provided with overload and over-temperature monitoring alarm

		through PTC thermistors. A visual alarm shall be issued when the permissible load current and/or temperature are exceeded. ➤ An insulation monitoring device (IMD) shall be provided at the secondary ungrounded side of the isolation transformer to indicate the occurrence of a first fault from live part to exposed-conductive-parts or to earth. ➤ Measuring technology shall be highly accurate with no spurious alarm even in case of modern electronic equipment work for all ungrounded system with AC, DC loads and shall be able to work and locate faults in the varying load conditions. It shall use the latest adaptive measuring pulse-based technology instead of normal DC/AC injection measurements. ➤ IMD specifications shall be in accordance with IEC 60364-7-710 & BIS SP30-2011. ➤ The insulation monitoring devices shall comply with IEC 61557-8. ➤ The no. of load feeders maximum 12 shall be available for smaller size distribution system. 230 VAC DP MCB protection with 20A max with breaking capacity 10kA shall be provided with short circuit protection without overload protection. ➤ The earth fault location system shall consist of on-line IMD integrated with test pulse device, earth fault evaluator, 12 nos. of special CBCTs (Sensors). ➤ The on-line insulation monitor shall continuously measure the insulation resistance of the entire galvanically connected ungrounded system including all connected loads. Whenever the insulation current transformers with evaluators. The design of the system shall be such that it rejects the noises in the power supply and distribution systems
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		and shall be robust and reliable without generating nuisance alarms. For medical safety reasons the test current shall be limited to 1 mA. ➤ The sensitivity of sensors shall be 0.1 mA minimum and measuring range between 0.1 mA – 1 mA. The earth fault location system shall comply with IEC 61557-9 for Medical Locations. ➤ The distribution cabinet/panel shall house the input CB, output CB, insulation monitor, load distribution MCBs and insulation fault location system. The cabinet shall be fabricated out of 16-gauge MS CRCA sheet steel floor mounted, dust and vermin proof with reinforcement of suitable size angle iron, channels T sections and / or flats wherever necessary. Degree of protection IP30 minimum. Knockouts shall be provided at the top of the panel for cable entry purposes. Panels shall be treated with all anti-corrosive process before painting. Paint shade shall be light grey or as approved. Cabinet/Box shall be with all components mounted and pre-wired. Incoming & outgoing cables shall be directly wired to Switches & Breakers or through terminals. ➤ Ambient Temperature: - 10 deg. C to 55 deg. C ➤ Relative Humidity: 95% non-condensing ➤ EMC Qualification for Insulation Monitor & Fault Location System as per IEC 61326-1. of the system drops below the preset value of 50Kohms an alarm shall be generated and the faulty feeder be detected on-line selectively by means of special residual
21	ANTI-STATIC CONDUCTIVE FLOORING	Imported Flooring shall be >2mm antistatic seamless PU flooring. Floor should be smooth, non-slip, impervious material conductive enough to dissipate static electricity but not conductive enough to endanger personnel from electric shock.
21.1	Technical characteries	Electrostatic charge dissipation combat PU seamless flooring of very high quality should be provided. Thickness

		not less than 2 mm. Should not be affected by temperature variation within the LR. Corners should be uniformly curved. Final surface should be noncorrosive to biological fluids and detergents. Color should be uniform pleasant and matching with ambience.
21.2	Electrical Resistant	The floor should efficiently discharge electric charges up to 2 kV. The electrical resistance (point to ground) should be within 2.5×10^4 to 5×10^6 ohms. The floor should not allow buildup of electrical charge beyond 100 volts due to antistatic effect.
21.3	Flooring Resistant	Flooring shall be mechanically shock proof, scratch proof, flame retardant and anti-microbial. PU tiles should be used and joints should be welded by special PU thermal welding units using PU welding bars of same color. The sheets should be highly durable with resistance to shock and indentation. It should be scratchproof & 100% recyclable. The conductive material should be uniformly impregnated as grains, permanently conductive with carbon backing. It should be inert to body fluids, chemicals and disinfectants
21.4	Installation Methods	Flooring should be done by skilled workers of accredited agencies authorized by the supplier of PU sheets. The corners should not be terminated sharply and concealed cove- former (aluminum) should be used to overlap the wall panel to a height of approx.25mm and sealed perfectly and uniformly. Self-leveling compounds should be used. The conductive copper grid laid underneath the PU sheet should be supported by liquid epoxy compounds allowed to set as a uniform and level surface. The copper strips to be made visible by grinding and no copper strip should project more than 0.5mm above level surface to avoid damage to the PU sheet. One earthing lead should be brought out from every 150sq.ft area and attaching it to the main earthing strip/ground. Copper grounding strips (0.05 mm thick, 50 mm width) should be laid flat on the floor in the conductive adhesive and connected to copper strip of grounding. The connection from copper grid should be brought out uniformly at places to form equipotential grid.
21.5	Flooring Standards	ISO 1058 (EN 649), ISO 10581, CE, EN 14041, DIN EN 846 Part C, DIN 51130 EN 13893, EN 684.
22	AUTOMATIC HERMATIC SEALED	

	SLIDING DOOR:	
22.1	Specifications	Supply & Installation of Fully Automatic hermetically sealed Sliding Doors with facility to operate manual operating (1500mm wide 2100mm height), equipped with Microprocessor based Electronic Control Unit for Door, with sensors for automatic door open-closing, controlling the movement with motor, having a track system wherein the door blade is guided with approximately 6mm deep indentations at the closed position. It equipped with Having a special inside & outside Stainless Steel lever handle that lifts out the door blade from its hermetic closing position, thus allowing even very heavy doors to be opened effortlessly, manually, Encased within an extruded anodized aluminum profile frame all around the door blade with solid high pressure laminate on both sides with door blade to have a special 3-tier specially designed 3 side heavy duty replaceable EPDM gasket, for the hermetic sealing on the wall frame. The bottom sealing should be with a 2-tier heavy duty EPDM gasket to flush with the finished floor. The door automation / door can be controlled/operated using either push-button switch, Kick switch Or Sensor (touch less – infra-red) switches OR all in combination, The Hermetically sealed sliding door will be equipped with all necessary accessories etc. complete with glass vision window of 300mm x300mm with all necessary accessories etc.
23	2-BAY SCRUB SINK	The unit should be made of 304 grades high-quality stainless-steel square tubes and the entire body should be out of high-quality stainless steel of 16 & 18 Gauge with satin polish finish. The unit should have a floor mount design with pedestal base. Tailor made to suit the site available. The unit should be compatible with all the regular and standard plumbing. The unit should have irrigation facility which allows washing of instruments, tubes, endoscopes etc.
23.1	Features	The body should be designed to eliminate backsplash, overflow and stagnation. The unit should have an option of manual actuated water supply by or foot operated taps. Soap operation should have hand pump as well as hand free controls. The unit should have jet irrigation facility which allows washing of instruments, tubes, endoscopes etc.

23.2	Specifications	2 bay tap with sensor operated & timer.
23.3	Standard & Certification	ISO & CE.
24	EMERGENCY DRUG TROLLEY	SS304 construction
24.1	Features	CRCA tubular framework. • 12 no's-colored bins. • SS I.V. Rod and Cardiac massage board. • Five no's CRCA sheet drawers. • Two I.V. bottle storage trays. • SS Handle. Oxygen cage attachment
24.2	Specification	Overall approx. size: 990mm L X 490mm D X 1600mm H. Trolley mounted on four non-rusting 125 mm dia. Polyurethane Wheels 2 with brakes and 2 without brakes. • 8 tank powder coating processed pollution control certified.
24.3	Certification	• ISO 13485:2003, CE certified
25	DRESSING TROLLEY WITH BOWL & BUCKET	SS 304 construction with easy moving provision
25.1	Features	Approx. 25mm- dia SS tubular framework • Two SS shelves with railing on top • Trolley mounted on 100mm – dia, non-rusting twin roller castor, SS bowl 360mm-dia • SS bucket 300mm-dia
25.2	Specification	Overall approx. size 1080mm L X 490mm W x 840mm H
25.3	Certification	ISO 13485:2003, CE certified
26	MAYO'S TROLLEY	Double bar SS with SS 304 construction. SS 304G rectangular & square tube frame. Trolley mounted on 50 mm-dia wheels.
26.1	Specification	Overall approx. size: 760 mm L x 570 mm D x 850 to 1300 mm

26.2	Certification	ISO13485:2003, CE Certified.
27	EMERGENCY RECOVERY TROLLEY- HYDRAULIC	• X-Ray permeable two section top with pushing handle covered with PVC grip • Sliding X-Ray cassette holder tray • Backrest adjustment on ratchet
27.1	Feature	Height adjustment by imported hydraulically operated type linear actuator pump foot operated actuation • Trendelenburg and reverse Trendelenburg by gas spring mechanism • Four 125mm-dia, non-rusting body twin roller castor wheel, two with brake • Two IV rod location • S.S. Swing away side safety railings • Oxygen cylinder cage • Corner Buffers • Suitable Rexene covered mattress
27.2	Specification	Overall approximate dimension 2065mm Lx 730mm W • Height adjustment – Min 670mm to Max 980mm • Removable stretcher size 1975mm Lx 595mm W
27.3	Certification	ISO 13485:2003 ,CE certified
28	REUSABLE CAPACITIVE COUPLING CURRENT QUALITY MONITORING ELECTRODE	1- Reusable Capacitive coupling current quality monitoring electrode made of viscoelastic polymer. 2- Should have Current limiting nature & hence eliminate Patient pad site burns 3- Should be based on Capacitive coupling principle 4- Should made of akton polymer 5- Can be used for all patient's weight >350 grams 6- Should be Radiolucent & latex free, no adhesive related irritation to patient skin.

		7- Should be US FDA approved 8- Should be compatible to any Electrosurgical generator 9- Size: 36" L x 20"W x 1/8"thickness
29	SMOKE EVACUATOR	The Smoke Evacuator should evacuate, and filter surgical smoke plume and aerosols created in any surgical procedure by an active surgical energy device. • The Smoke Evacuator should simultaneously activate with all Surgical Energy Devices Ultrasonic, Advance Bipolar, Bipolar & Monopolar. • Smoke Evacuator filter should be four stage ULPA grade to captures particulates and micro-organisms from .1 to .2 microns at an efficiency of 99.999%, should able to absorb odors and toxic gases produced in surgery. • Smoke Evacuator should have five different run time setting for suction of residual smoke in different surgical procedures. • System should offer 5 different suction speed for Lap & Open Surgeries. • Filter Life Should be > 34 Hours with filter life indicator. • Suction Speed should be 5 Lt / Minuit - 41 Lt / Minuit for Lap procedures to maintain Pneumoperitoneum, Open Procedures suction speed should be > 70 Lt / Minuit. • The smoke evacuation system should comply with IEC60601.1 electrical specifications & should have Class I protection against electrical shock (UL60601-1, Clause 5.1) • System should comply with electromagnetic emission CISPR11. • Should be US FDA approved. • Technical Specifications:

		WEIGHT: Less than 30 lbs OPERATING ENV. Temp.: 5o – 55o C Range of operating environment. POWER REQUIREMENTS: 220/240 VAC Frequency, auto sensed: 50/60 Hz Duty Cycle- Continuous Dimensions LWH- 16 X 15 X 7.4 in Vacuum Pressure - 4.95 psi The unit should comprise of following instrument. 1. Smoke evacuator system with foot-switch – 1 pc 2. RF sensor for Simultaneous activation with Monopolar – 1 pc 3. Four Stage ULPA filter – 3 pc 4. Fluid trap – 10 pcs 5. Open surgery smoke evacuator pencil with PTFE coated tip (reduce smoke generation) & telescopic length of device allows surgeon to adjust the pencil by a full of 6 inches – 40 pcs 6. Laparoscopic tubing – 50 pcs 7. Connecting Cable for simultaneous activation with Ultrasonic, Advance Bipolar, Bipolar & Monopolar Devices - 02+B70
30	NEUROSURGICAL MICROSCOPE WITH ACCESSORIES	Working distance: 200mm-625 mm continuously variable through motorized multifocal lens, activated through Handgrips, Wireless Foot Control Panel and through touch screen control panel. Should have manually adjustable override. Magnification range: Minimum range up to 25x or better without using additional

	magnification multiplier / changer activated through Handgrips, Wireless Foot Control Panel and through touch screen control panel. Should be possible to adjust the speed of the motorized magnification / zoom through touch screen. Should have manually adjustable override. Focusing: Motorized via multifocal lens activated through Handgrips, Wireless Foot Control Panel and through touch screen control panel. Should be possible to adjust the speed of the motorized fine focus / working distance through touch screen. Should have manually adjustable override. Automatic Focusing: Microscope should have automatic focusing which is automatically activated each time the brakes are applied and after XY fine adjustment are performed on the joystick. Autofocus should also be triggered via a configurable button on the handgrip or the foot control panel. Autofocus Region: It should be possible to select Large / Medium / Small region of interest for focusing through inbuilt optimized focusing algorithm. Eyepieces: Pair of high eye point wide field push-in eyepieces 12.5x magnification with eye guards and magnetic locks, diopter setting from -8D to +5D, also suitable for spectacles wearers. Light Source: Should have integrated 300W Xenon illumination with integrated 300W Xenon back-up with fast action automatic lamp Change over. Microscope should be able to display
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		lamp's remaining lifetime on the touch screen control panel. Light Threshold Mechanism: Should have threshold mechanism to protect tissue from inadvertent light exposure the system must offer respective safety mechanisms system information when exceeding individual light threshold. Automated Illumination Field Diameter: Should have built in automatic zoom-synchronized illumination field diameter, with manual override and reset feature. Automatic Iris Control or AutoIris (critical) Focus and Zoom Link Mechanism: Should have ability to automatically adapt the focusing speed to the magnification and also have provision to automatically reduce preselected focusing speed when a higher magnification is used. XY Movement and Zoom Link Mechanism: Should have ability to automatically adapt the motorized XY travel speed to magnification. The preselected travel speed should automatically reduce when a higher magnification is used. Automated illumination control: Should have Automated Illumination which limits the maximum light intensity for the selected working distance. Brightness control should be linked to working distance. Illumination also can be controlled by hand switch or foot switch.
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	Handgrips: The system should have adjustable, ergonomic handgrips, symmetrical and attached clearly above the bottom edge of microscope, multifunctional key assignment with minimum 4 freely programmable keys each side and a joystick for motorized XY fine adjustment / operation of navigation functions, auxiliary triggering and should be independent programmable (left / right) Depth Of Field: Activates the depth of field for either High depth of field with less light and lower image resolution Or Low depth of field with more light and high image resolution. Binocular tube: Tiltable, rotatable, length adjustable binocular tube for main Surgeon with 360-degree rotation facility Incremental stops lock the tube in its desired position. Main Binocular tube should allow surgeon for Comfortable working position independent of surgeons' height or characteristics while standing and/or sitting. The tube should be able to quickly increase detailed magnification by 50% when needed for delicate operations by simply turning the knob. Axis Dampening: Should provide motors on all system axis to avoid the vibrational dampening effect and ensuring rock-solid stability. Enabling surgeon to have complete and steady focus. Automatic Balancing: The system must provide a one touch automatic balancing of all system axes without any manual Interaction or axis adjustments. The automatic balancing of the system must be possible in any position within the system head tilt and
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		swivel movement range. Drape Balancing: The system must provide fine balancing after Draping. Automatic Draping: Microscope should be able to allow activating drape suction facilitated by an automatic air vacuum for sterile, obstruction free microscope handling and for easier usage of drape to maintain sterility during surgery. Qty.-50 drapes to be provided XY Coupling: Angular movement of microscope using joystick on handgrip or wireless foot control panel. Also, should be possible to adjust the speed of the motorized XY Coupling through touch screen. 4K HD Camera: Fully Integrated 4K HD Video Camera inbuild inside the head of the microscope (Camera not Visible from outside) So that maximum resolution will display & record. Full HD Medical Display: Full HD Medical grade touch screen display system attached with the microscope system. (No External Monitor / detachable monitor will be acceptable). The HD display should also provide option for image rotation where the camera image is rotated 180° per click. The display should show the number of videos and images taken and start / stop of the video recording.
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		HD Recording: Full HD Integrated Video Recording system with integrated HDD of minimum 1TB inbuilt inside the microscope and external HDD of minimum 1TB. HD Video-In: Microscope should have Video-In facility to display and simultaneously record (1920x1080 resolution) endoscopic and other external live videos in Picture-in-Picture mode on microscope display monitor. Beam Splitter: Should have undetachable and Integrated Beam Splitter (not Visible from outside) Stereo co observer: Should have stereo co observation attachment with 180-degree tiltable binocular tube for side assistant and the attachment should not move incase the head is tilted in forward or backward direction. The microscope must offer integrated tube rotation for better ergonomic observation. Face to Face observer: Observation face to face with stereo bridge and Tilttable, rotatable, length adjustable binocular tube for main Surgeon with 360-degree rotation facility Incremental stops lock the tube in its desired position. The tube should be able to quickly increase magnification by 50% when needed for delicate operations by simply turning the knob. Manual Override: Should have manual adjustment with separate knob to adjust Zoom, Focus and light aperture manually during emergency or malfunction of microscope.
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		Vascular Fluorescence Filter: Microscope shall be used for Cranial and spine surgery and should have integrated Vascular Fluorescence Filter offering an option for fluorescence-based video angiography for detecting patency of vessels with Full-HD resolution. Tumor Fluorescence Filter: Microscope shall be used for Cranial and spine surgery and should have integrated Tumor Fluorescence Filter to visualize fluorescence-stained structures with excitation in the wavelength range from 460 to 500 nm and observation in the wavelength range from 540 to 690 nm. Navigation System: Microscope should be compatible with navigation system. Wireless Foot Panel: Should have wireless 14 Function Wireless foot control panel, with 6m back-up cable to enable movement of the system with the foot to reduce workflow interruption. DICOM: Should be able to connect the microscope to hospital network in order to export patient data to the network or to a DICOM server or in order to import patient data from a DICOM worklist. Shared Network: Microscope should be able to be connected to the clinic network via a LAN connection and optionally via WLAN. A correspondingly configured server directory enables fast and easy data transfer of images and videos to this network drive for central data storage and fast accessing of this data from every PC/laptop connected to the network for editing and processing. This option prevents e.g., time-consuming data transfer using USB media.
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		User Programing: Programming for starting illumination, Magnification, working distance, zoom speed & focus speed for at least 8-9 different users. In emergency manual operation of Zoom & Focus is a must as manual override with independent knobs on optics carrier. Wireless Network Package: Microscope should enable WLAN and WiFi Hot Spot functionality for wireless shared network data exchange and Wifi connection to mobile devices. Also, should allow for network access to data via web browser. Remote Access: The system must provide an interface and a function for fast internet remote diagnosis to be operated via the central touchscreen user interface.
31	BIPOLAR AND MONOPOLAR NEUROSURGICAL ELECTRO SURGICAL UNIT WITH ACCESSORIES	• Microprocessor / microcontroller technology for monopolar and Bipolar surgeries • Should Automatically monitor tissue impedance & adjust power output to reduce damage & drag. featuring Constant Control Technology & contact quality monitoring for return electrode. • Should have a fully automated Preset advanced cutting (Low & High) cut mode to provide a scalpel like cut effect with minimal thermal necrosis • Should facilitate skin incision with minimal to no scarring, facilitates plasma cut. • Displays should be Large & readable from a distance • Different audible tones to differentiate from Cut, Coag and Bipolar modes when activated • Active mode setting should illuminate when in use for visual confirmation • Should give ERROR codes in case of any Errors & fault in the unit • Should have an easy-to-use 'reset' function • Should have 2 receptacles each of Hand & Foot control for Monopolar output • Should be activated either by Foot pedal or Hand control at surgeon's discretion without any switches or change over in the equipment to do so from any of the receptacles. • Should have Soft Coagulation for slower thermal penetration. • Should have Auto Bipolar to provides automatic activation

		when the electrode touches tissue, combined with automatic stop based on the impedance of the tissue • Should have an in-built current meter that shows the flow of current in Bipolar mode & indicate tissue dehydration. • Should be defibrillator proof generator & should be denominated on equipment. • Should be US FDA approved under section 510, ISO, IEC certification. • Should meet all applicable IEC standards • Should be compatible with Argon Plasma & Smoke Evacuators • High Frequency RF Leakage should be less than 150m A (<150 m A) • Should Have RS232 & USB communication Ports. • Should have PER >97% for effective output in surgeries. • CREST Factor should be > 8 in Spray Mode for effective tissue effect. O Technical specification: • E.S. Generators operating frequency: 400KHz • Equipment classification: IEC 60601-1 Class 1 • Equipment type: IEC 60601-1 Type CF • Monopolar should have a minimum 3 cut modes O An advanced low cut & high cut Mode to give scalpel like effect- with constant voltage, which enables surgeon to cut through the skin with minimal damage to tissue. O Pure Cut Mode - Power up to 300 watts O Blend Mode- Power up to 200 watts • Monopolar should have a minimum 4 Coagulation modes including Soft Coagulation up to 120W each Coag mode • Should have 3 Bipolar modes Micro, Macro & Auto Bipolar up to 80 watts each mode -Monopolar cautery pencils to be provided consumables- Qty.1
32	HIGH SPEED CRANIAL DRILLING SYSTEM	Motor Specs- Qty-1 Nos 1.The drill should have an electric motor driven through a console 2.Maximum motor speed should be 75,000 Rpm 3.It should reduce thermal necrosis by providing Integrated irrigation. 4.It should have individual Standalone motor inside. Console specs- Qty 1 Nos 1. It should be a multispecialty console with provision to attach Neuro Drill, ENT Shaver(micro debrider), Small bone saws, Bone Morsilser(Used in cutting of bones in

	granular level) 2.It should have touchscreen capability 3.should have the provision to attach 3 hand pieces and should be able to select any one handpiece by a click of the footswitch 4.The console should have the provision to use 2 handpieces simultaneously with 2-foot switches. 5.Power Supply should be 220- 240V only 50-60Hz. 6.It should identify different hand pieces with display on console 7.It should be programmable as per surgeon preference. 8.It should be compatible to more than 7 handpieces. 9.It should have function of controlling brightness, contrast and alarms on the console 10.It should have the option of controlling the speeds and features of the different types of hand pieces from the same unit. FOOTSWITCH: 2 Nos Fully programmable footswitch as user need Able to control following function via footswitch Footswitch motion – Forward, Reverse. Oscillation. Switch over to high/low speed. Increase or decrease speed. Can operate 2-3 hand pieces sequentially attached to the same motor control unit. Cranial Attachments 1.The chuck must reduce the speed of motor in a ratio of 1:60- Qty 1 Nos 2.There should be Small Straight Attachment-7cm, Medium angled attachment- 14cm, long angled attachment for drilling-17cm- 1 Nos each 3.Duragaurd- 16 mm medium size- 1 Nos Consumables 1.Cutting Bur- Size between 1mm to 6mm- Total 2 Nos 2.Diamond Bur- Size between 1mm to 5mm- Total 2 Nos 3.Perforator Bit- 2 Nos 4.Duragaurd Cutter- 2 Nos 5.Drill Bit- 2 Nos Micro debrider Hand Piece- Qty-1 Nos 1)Dc Brushless Motor for Low Maintenance 2)Rotational Speed Ranging From 5000rpm (Min) With Variable, Non-Variable And 1 Touch Run Mode. 3)Straight Suction Channel Control On The Hand Piece ☐ Selection Of Rotation (Clock Wise Anti, Clock Wise And Oscillation) ☐ Adjustable Oscillating Rate Upto 5 Level
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		4)Automatic Scope Cleaning Feature 5)Flush Feature To Clean Clogged Cutter □ Sterilizable Through Steam, Eto And Flash Autoclavable Cutting Accessories: 1.Aggressive Straight Blade of length 11cm & diameter 4.0mm - Quantity- 5 Nos 2.Irrigation Cassette- Quantity 10 Nos Micro Reciprocating Saw: 1 Nos Should run from the same Motor Control Unit meant for the Electric Drill. Should cut in a Perpendicular Line. Should have Maximum speed of 14000 cpm Should have individual standalone motor inside Micro Sagittal Saw: 1 Nos Should run from the same Motor Control Unit meant for the Electric Drill. Should cut in same horizontal plane. Should have Maximum speed of 25000 cpm. Snap-lock assembly and disassembly of all attachments. Sterilizable through steam, ETO and Flash. Should have individual standalone motor inside Micro Oscillating Saw: 1 Nos Should have Maximum speed of 20000 cpm. Snap-lock assembly and disassembly of all attachments. Sterilizable through steam, ETO and Flash autoclave. Should have individual standalone motor inside Cutting Accessories: Sagittal Saw, reciprocating saw, Oscillating Saw- Quantity- 2 Nos each Connecting cord – 3 Nos Should be at least 12ft long. Dot-to-Dot type push- pull connectors at both ends. Neuro Sterilization Tray Micro Saw Sterilization Tray All products quoted should be from the same manufacturer to offer compatibility of system & should be USFDA & CE approved
33	BIPOLAR NEUROSURGICAL COAGULATION SYSTEM FOR CRANIAL	Generator specs- Qty 1 Nos • The generator should be an electrosurgical unit • It should have COAG capabilities • The Generator should have a specialized waveform capable of reducing charring.

	AND SPINE • Should have activation via foot pedal for Bipolar forceps • Generator should be light weight for easy mobility, not more than 6.2 kgs • It should have an irrigator to provide variable-rate irrigation during electrosurgical procedures • The generator should have touch screen capability to display the actual power being delivered. • It should be programmable as per surgeon preference. • It should have a function for controlling brightness, alarms and Tone volume. • Easy output power adjustment should be available. • Main voltage 220-240 V AC, 50-60 Hz • CE European marked & US FDA approved. • Should meet the following safety standards: IEC 61000-4-2, IEC 61000-4-4, IEC 61000-4-5, IEC 61000-4-11 Bipolar Coagulation • Output Waveform during coagulation should be between 1-1000khz • Output power should be less than 76 watts • Should have auto bipolar mode with auto start/stop capability. • The unit should be supplied with a Local Cart- Qty 1No • Irrigator- Qty 1 No Bipolar forceps Size Numbers Non-Stick Bipolar forceps 15-20 cm with a tip diameter of 0.4mm- 2 Nos Non-Stick Bipolar forceps 15-20 cm with a tip diameter of 0.7mm- 2 Nos Non-Stick Irrigating Bipolar forceps between 19-22 cm with a tip diameter of 0.7mm- 2 Nos Reusable Cable- 9 Nos Irrigating Tubing set- 1 Nos Bipolar Cord Set- 1 Nos	
34	NEUROSURGICAL TUMOUR RESECTION SYSTEM Should be one versatile system for exceptional control of soft tissue and fine bone dissection in close proximity to delicate anatomic structures. Should be able to delivers precise fragmentation, irrigation and aspiration simultaneously in one hand piece.	

	Console: - Should be compact and minimum space requirement, easy to setup and operate - The aspiration, suction & irrigation should be controlled by single switch operation. - Touch screen interface with wide screen - Operator control: Full Touch panel for aspiration, suction & irrigation. - Irrigation flow : 3 to 15 ml/min - Irrigation Pump : Peristaltic pump technology - Should have once click irrigation cassette for irrigation set up - Must have FLUSH mode to clear the surgical site from the tip with flow of irrigation. - Automatically recognizes hand pieces for easy set-up. - Automatically recognizes cutting accessories for bone and tissue - Should have Pulse control technology to manage the resection of complex tissue - Suction, irrigation and ultrasonic functions can be used alone or simultaneously. - Console should be provided with various safety alarms like excessive heat on hand piece, incorrect installation, excessive pressure on tip of hand piece, abnormal oscillation function. - System should be capable of priming by itself at the beginning to avoid tip damage. - Weight of console should be less than 20 Kg - Single Pedal Foot Switch Cord . Must have option of wireless foot pedal if required - Must have option to connect hand controller for controlling the function from non-sterile area - Should have option to save surgeon profile as per the
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	preferred setting for different surgeries - Should have Video out receptacle for the connection of a computer monitor , video projector or digital television - Should automatically defaults to recommended tip settings because of RFID Technology Handpiece: - Universal handpiece for soft tissue & bone dissection having various compatible tips from soft tissue to bone to transsphenoidal length. - Lightweight, ergonomic design provides superb tactile feedback and requires no external cooling - 25kHz Universal Handpiece - 17 types of specialty tips should be attachable - Frangible tip covers for improved visualization and access - Integrated RFID technology Tips: - Soft tissue tips with standard, micro diameter, large diameter options - Titanium - Tip is packaged with a corresponding irrigation sleeve - Should be used with irrigation sleeve that should be - Frangible - Provides proper irrigation flow - Protects surrounding tissue (patient and surgeon) - Super long tip for transsphenoidal access and resection - V shape Tip end/Barracuda tip - To provides mechanical cutting along with ultrasonic cavitation
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		- Ideal for difficult fibrotic lesions. Ie. Meningioma - Two sizes, tip diameter should be available - Ring Curette Tip - Designed to carve out rubbery/slippy meningiomas - Ultrasonic cutting tips for spine procedures - Longitudinal Torsional tip Effectively address soft tissue and fine bone dissection by coupling longitudinal oscillation and torsional vibration makes it possible to emulsify bone with no grabbing or kicking due to the non rotational reciprocating motion - Laparoscopic tip – 37 cm long tip for liver resection/GI surgery - Broad knife tip with cutting width of 1.4 mm for ostetomies The System should have CART with the below accessories -Step Torque Wrench -Cleaning Wire -Sterilization Tray -Disposable Tubing Set -Disposable Suction Canister Others: -US FDA Approved, the system with all the application should have safety quality certification
35	ADVACED ANESTHESIA WORKSTATION	1. Should be advanced, reliable, compact and mobile with integrated ventilator. 2. Should be based on microprocessor and suitable for low flow as well as minimal flow anesthesia for adults, pediatrics and neonatal use. 3. Machine should be suitable for premature babies,

	neonates, pediatric and adults. 4. Should have a facility to connect to the central supply (oxygen, nitrous oxide and air) pin index cylinder one each of oxygen and nitrous oxide with on screen digital display of pressure gauges for central supply and cylinder. 5. Machine should have working surface and illumination with the storage space for keeping accessories. Should have individual brake for front wheel to lock the machine. 6. Should have electronic gas mixing with FiO₂ & total flow setting along with virtual flow meter displays 7. Should have integrated safety feature like electronic hypoxic guard, N₂O cut off incase of O₂ low pressure/failure, alarm and O₂ flush etc. 8. Should have onscreen virtual flow meter display of O₂, N₂O and air. 9. Should have compact autoclavable breathing system and soda lime chamber maximum capacity of 1.5L. The sodalime canister should be compatible with the devices in all the operating rooms. 10. Should have electronically controlled and electrically driven anesthesia ventilator, should not require driving gas. 11. The machine should be suitable for low & minimal flow Anesthesia application 12. Should able to log all alarms, self tests, messages and other events. 13. Should have integrated touch screen color display with minimum 15" screen size. 14. The machine should have automatic calculations and presetting of patient specific ventilation settings via ideal body weight, Age and height. 15. The machine should calculate agent consumption and agent uptake by patient on a case by case basis and display of fresh gas consumption in the unit logbook
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	16. System should be European CE or FDA approved and confirms to EN 60601-2-13 (Requirement for safety and essential performance of anaesthesia system) 17. Anesthesia ventilator should have the following settings: - Automatic breathing circuit Compliance correction - Spont. Breathing - Manual Ventilation - Volume controlled mode - Pressure controlled ventilation - SIMV in VCV & PCV - Pressure Support, PS with CPAP, PS with SIMV in VCV/PCV - Should be upgradeable to Autoflow or PCV-VG or similar mode – delivering set tidal volume at minimum airway pressure. and in combination with SIMV - High peak inspiratory flow upto 120 LPM, - Tidal volume adjustment range 10 ml (in VCV) to 1500 ml and upgradeable to 5 ml in VCV - Adjustable PEEP: Off, 2 to 35 hPa (or cmH₂O);and CPAP: 0, 2 to 35 mbar - Resp frequency from 3 to 100 per min. - I:E : max 1:50 to 50:1 - Should be able to ventilate with atmospheric air, in case of total fresh gas failure including Oxygen. 18. Should have tidal volume compensation or fresh gas decoupling valve. 19. Should have external fresh gas outlet for connecting the open circuits. 20. Integrated breathing system warmer for breathing gas conditioning and avoidance of condensation. 21. Should have dual flow sensing technology with flow
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	sensor at inspiratory and expiratory side. 22. Should have simultaneous display of 3 or 4 real time wave forms for concentration of CO₂, O₂, and anaesthetic agents, airway pressure, inspiratory and expiratory flows and loops for P-V and F-V loops. 23. Anesthesia machine should monitor and display the measure value of minute volume, tidal volume, peak airway pressure, mean pressure, plateau, PEEP, dynamic compliance and resistance. 24. Should have pause mode for short term interruptions of ventilation. 25. Should have alarms for high/low volume for expired tidal volume, minute volume frequency and airway pressure. 26. Should be supplied with Isoflurane and sevoflurane vapouriser; All the vapourisers should be manufactured from same company as anaesthesia machine. 27. Should have dual detection of anesthetic agent in case of change of anesthetic agent. 28. Should have RS232 port to interface monitor to transfer the expired parameters on monitor and in- built data output port / USB for data retrieval. 29. Should have anytime facility for manual ventilation possible at least with freshgas O₂ delivery and dosage of volatile agents with airway pressure monitoring in case of system failure / system “off”. 30. Should have battery back up to at least 60-90minute including that for ventilator. 31. System should have backup oxygen control in case of complete power failure and auxiliary oxygen supply source. 32. Should have auxiliary Oxygen supply system. 33. Should have anytime facility for manual ventilation possible at least with freshgas O₂ delivery and dosage of volatile agents with airway pressure monitoring in case of
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	system failure / system “off”. 34. Should have the indicator or decision support to show the efficiency of fresh gas setting while used in Low flow and minimal flow 35. Machine should be with integrated anesthesia gas monitoring with automatic identification of anesthetic agent (MAC and end tidal concentration) as well as O₂, N₂O, FiO₂ and ET CO₂; 36. Should have sample gas return into the breathing system for better gas efficiency in low flow and minimal flow usage. 37. Should have heated breathing system for optimized minimal flow anaesthesia usage and ventilation quality. 38. Should be possible to deliver oxygen and anaesthetic agents in Man/spontaneous mode even when the machine is in switched off mode as an emergency back up 39. The machine should have adjustable alarm limits for all the parameters with auto set alarm function. - The machine should have automatic display of MACx values - Should have automatic activation of low agent alarm - Should have alarm logbook for displaying and saving alarm history - System leak and fresh-gas deficiency alarm - Should have cardiac bypass mode 40. Should have fully automated self-test including calibration of all sensors without any user action necessary after start to test. 41. Should have backup manual mode to allow the direct change to manual ventilation while maintaining gas and ventilation monitoring; O₂ and anaesthetic agents from the vaporisers can be continuously delivered 42. Should have facility for data storage on USB storage device like self-test results, alarm history, screen shots,
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	trends and machine configurations 43. Should have integrated active AGS system. 44. Each machine should be supplied with following accessories with each unit of same manufactures make. 45. Should be European CE and USFDA Approved Specifications for Multipara monitor 1. Should be suitable for adult, paediatric neonatal patients monitoring. 2. Should monitor ECG, Respiration, NIBP, SpO2, Dual Temperature, Three IBP as standard & Etco2 3. Should have ST analysis, Arrhythmia detection, pacer spike detection, Drug Dose Calculation and OxyCRG as standard in every monitor 4. Should have integrated 12" TFT-LCD colour touch screen display (resolution min 1024*768) with minimum 8 channels of waveforms. 5. Defib and ESU protection should be present 6. Should have monitoring, surgery and diagnostic mode of monitoring 7. Should have Advance Arrhythmia monitoring for Asystole, Vfib/Vtac, VT>2, Couplet, Bigeminy, Trigeminy, R on T, PVC, Tachy, Brady, Missed Beats, IRR, PNC, Vbrady. 8. Monitor access should be with Touch screen, rotary knob and fast access key for quick function. 9. 120 hrs of trend and 60 events with waveform as standard in all monitors 10. Color or position of waveforms or parameters should be able to be adjusted based on users preferences. Big font on screen format should be present. 11. Nurse call, VGA output port should be standard in every monitor. 12. Monitor should have USB port for software upgrade
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	13. Should have inbuilt three channel recorder. 14. Should have min of 5hours of battery backup as standard in every monitor 15. Upgradeable to export the Vitals as HL7 messages to the HIS 16. Monitor should be ready for interface with select model of equipment like Anaesthesia machine/ventilators for displaying ventilation parameters, waveforms & loops. 17. Anaesthesia gas monitoring (N2O, CO2, O2, MAC) with autogas identification. 18. Connectivity to the central station both via wired and wireless network. 19. Should be European CE complying to European Directive 93/42/EEC for both Monitor and software to control physiologic monitoring systems. 20. Bed to Bed monitoring as standard 21. Upgradable to Cardiac Output Monitoring 22. Anti left lock facility should be possible for better hospital asset management Should have following parameters ECG ☐ Monitor should have capability for display upto 7Lead. ☐ ST Analysis ☐ Waveform Freeze option with review of 120 sec ☐ Range: 15 to 350bpm RESPIRATION ☐ Through impedance pneumography method or EtCO2 SpO2 ☐ Should provide value for arterial oxygen saturation as well as plethysmographic pulse waveform
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		NIBP ☐ By oscillometric principle of measurement. ☐ Should display Systolic, diastolic, mean pressure in large easy to read display ☐ Range: 10 to 270mmHg Dual Temperature – core & skin. Range: 0 to 50 Deg C Three IBP – Should include Starter kit and simultaneous monitoring of three temp and three IBP should be possible. Range: -50 to 300mmHg Standard Scope of supply must include: ☐ 3 gas Anaesthesia workstation ☐ Trolley with drawer ☐ Two Vaporisers Sevo & ISO ☐ Writing surface with illumination ☐ Pin Index yokes for O2 & N2O ☐ Pipeline connections for all three gases ☐ Integrated Ventilator ☐ Semiclosed breathing system ☐ Adult & Paediatric autoclavable patient tubings (1) ☐ Anaesthetic mask size – Adult & child (Sizes 0,1,2,3,4,5 one each) ☐ USFDA approved calibration free Vaporisers for sevoflurane and Isoflurane ☐ Central gas supply hoses (Color coded) ☐ Sampling lines:10 Nos and water traps: 12Nos. ☐ Reusable flow sensor 20 with each workstation ☐ Monitor basic unit with ECG, Resp, SpO2, Dual Temp, NIBP, Three IBP, inbuilt battery ☐ 5 lead ECG Cable – 1 no each per monitor ☐ ECG disposable electrodes – 30 nos per monitor
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		☐ SpO2 finger sensor – 1 no per monitor ☐ Skin temperature probe – 1 no per monitor ☐ NIBP Hose - 1no per monitor ☐ Adult & Paediatric cuff – 1no each per monitor ☐ Should be supplied with intermediate IBP cable– 1 no per monitor ☐ Disposable transducers – 6nos ☐ Instruction for use
36	CHAIR UNIT	1. Ergonomics: - Designed to support prolonged surgical procedures, ensuring comfort, and reducing fatigue. - Adjustable contoured backrest to support the lumbar region and promote proper posture. Dual-density foam seat cushions & Teardrop or wedge seat. - Back rest height (mm): $\geq 184\text{mm}$ - Thickness of cushion (mm): $\geq 63\text{mm}$ - Back rest thickness (mm): $\geq 14.3\text{ mm}$ - Finish and Painting should be Polyester Epoxy Powdercoat - Height Range: High $\geq 28.5"$ (72 Cm) · Low $\geq 21"$ (53cm) - Height Range with Riser Kit: High $\geq 30.5"$ (77 cm) · Low $\geq 23"$ (58 cm) 2. Adjustability: - Height adjustable to cater to various surgeon heights and surgical table levels. - Backrest tilt and height adjustability. - Seat tilt adjustability to allow forward-leaning posture, often required in detailed ear surgeries.

	3. Stability: • Wide base with Foot-controlled, hydraulic, three-spindle base & Front-end locking system with Thermoformed plastic hood to ensure stability during surgical procedures. 4. Material: • Seat and backrest should be made of a material that is easy to clean, disinfect, and is resistant to surgical fluids. • Breathable material is preferable to reduce heat and moisture buildup during long procedures. 5. Mobility: • Smooth-rolling, non-marking casters suitable for operating room floors. • Swivel capability for easy maneuverability. 6. Footrest: • Integrated footrest, adjustable in height and angle, providing support and allowing the surgeon to change foot positioning as needed. 7. Armrests: • Padded multi-position armrests to allow versatile positioning and stability. It should be adjustable in height and angle. • They should be removable or able to be swung out of the way, given the proximity required in ear surgeries. • Height adjustment arm: 15cm to 30 cm. 8. Weight Capacity: • Should be able to support a wide range of user weights, preferably up to at least 136kg or more. 9. Safety Features: • All adjustment mechanisms should have secure locking features to prevent unintended changes during surgery. • Base design should prevent tipping, even when the
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		user leans significantly in any direction. • It should be of reputed brand in medical field with USFDA/European CE (4 digit Notified Body). 10. Maintenance: • Easy to clean and maintain, with resistance to common disinfectants used in surgical settings. • Durable construction to withstand regular use in a surgical environment.
37	OTHER WORK	AHU Protection shed Fencing compound, internal civil work as per Approved drawing.

**TECHNICAL SPECIFICATION OF TWO MODULAR OPERATION THEATRE (GYNAEC) ON
TURNKEY BASIS**

SR. NO.	PARTICULARS	QUANTITY
1	SMART PAC AIR HANDLING UNIT WITH EMBEDDED PHOTO-IONIZATION PLASMA SYSTEM.	2 LOT
2	LAMINAR AIRFLOW	2 NOS
3	RETURN AIR RISER	8 NOS
4	FIRE RATED DUCTING & DAMPERS	2 LOT
5	DOUBLE ARM LAPROSCOPIC PENDENT	2 NOS
6	SINGLE ARM ANESTHESIA PENDENT	2 NOS
7	OPERATION TABLE WITH ATTACHMENTS	2 NOS
8	DOUBLE DOME OT LIGHT WITH DETACHABLE CAMERA	2 NOS
9	OPERATION THEATRE INTEGRATION	2 NOS
10	4K HYSTEROSCOPE WITH ACCESSORIES	2 SET
11	TOUCH SCREEN SURGEONS CONTROL PANEL.	2 NOS
12	SET UP OF OT WALLS BY ANTIMICROBIAL 3 SECTION WALL PANELS WITH INTEGRATED SERVICE PANEL AND ANTIMICROBIAL CEILING PANEL	2 LOT
13	STORAGE CABINET	2 NOS
14	WRITING LIST BOARD	2 NOS
15	LED TWIN X RAY VIEWER	2 NOS
16	HATCH BOX	2 NOS
17	PERIPHERAL LIGHTS	12 NOS
18	PRESSURE RELIEF DAMPER	2 NOS

19	MGPS WORK INSIDE THE OT	2 LOT
20	OT-ELECTRICAL WORK WITH MEDICAL ISOLATION PANEL	2 LOT
21	ANTI-STATIC FLOORING	2 LOT
22	AUTOMATIC HERMATIC SEALED SLIDING DOOR	2 NOS
23	2-BAY SRCUB SINK	1 NOS
24	EMERGENCY RECOVERY TROLLEY	2 NOS
25	DRESSING TROLLEY WITH BOWL & BUCKET	2 NOS
26	MAYO'S TROLLEY	2 NOS
27	EMERGENCY DRUG TROLLEY	2 NOS
28	REUSABLE CAPACITIVE COUPLING CURRENT QUALITY MONITORING ELECTRODE	2 NOS
29	ELECTROSURGICAL CAUTERY MACHINE	2 NOS
30	SMOKE EVACUATOR	1 NOS
31	SINGLE GENERATOR FOR ULTRASONIC CUTTING AND COAGULATION ALONG WITH RF ENERGY	1 NOS
32	ANESTHESIA WORK STATION	1 NOS
33	OTHER WORK	AS PER REQUIREMENT

S. No	GMDN Name	Technical Specification
1	3000 CFM- Smart Pac Air Handling Unit with embedded Photo-ionization Plasma system.	The scope of this system comprises the supply, erection, testing and commissioning of double skin construction of 45 to 60 ACPH (as per OT size) Smart Pac AHU-PIP embedded PIP system, conforming to these Specifications and in accordance with requirements of drawings and of the Schedule of Quantities. GMP/CE Certified Virus Deactivation Twin PI. Plasma BI shall Certified UL2998 Validated for zero ozone emissions TPI smart Pac embedded plasma Tested & Certified to UL 867 for electrical safety & UL 1995 for AHU-PIP application Safety 1. Effectively killing microorganisms (Virus, Bacteria, Mold & Etc.) 2. Removing odor, VOCs & pathogens. 3. Reduce fresh air requirement. 4. Reducing space contaminated particle count. 5. Controlling gas phase contaminants & odor generated from human occupants, building structure, furnishings and outside air contaminants. 6. PIP shall install at the positive pressure air side/ Post Dehumidification cooling coil side. 7. PIP for ensuring equal generation of positive & negative ions.
1.1	Type of system	The Smart Pac AHU-PIP embedded Plasma-BI shall be floor mounted type with horizontal/vertical airflow arrangement with cabinet casing of double skin construction consisting of aluminum profile structure and insulated sandwich panels. Braw/Blow through type comprising of sections like – PIP unit with embedded Plasma BI section, Pre stage filter section with EU-4 CE Certified filter, Twin circuit Intertwined 8RW cooling coil and hydraulics section, starter panel and controller section, Direct drive EEF-II fan section etc. as shown in the schematic layout arrangement drawings and included in schedule of quantities.
1.2	System Capacity	The Smart Pac AHU-PIP Embedded Plasma-BI capacities, maximum motor horse power and static pressure shall be as shown on Drawings and in Schedule of Quantities. The AHU-PIP design shall be based on airflow velocities, pressure drops and

		static requirements as specified.
1.3	Type of Construction & Fire safety	AHU-PIP embedded Plasma-BI casing shall be made of double skin design comprising of the chassis structure made of extruded aluminum framework with thermal break profile of 45mm. The panels shall be double skin sandwich type with minimum 0.6 mm thick powder coated/pre coated steel sheet on the outer side and minimum 0.6 mm thick galvanized sheet on inner side with 45mm $\pm$ 2 thick Rockwool or PI insulation material of density 50-60 kg/cum between both inner and outer skin. Considering fire safety norms injected PU foam insulation is not acceptable. The base frame of the AHU-PIP shall be made of 100mm high steel profile structure for rigidity. All sections/panels shall be bolted to each other with rubber gasket in between and fixed with steel screws for perfectly aligned and airtight joints. The gaskets shall be held in place by inserting them in the integrated channels in the framework. All panels shall be detachable or hinged. Hinges shall be made of die cast aluminum with stainless steel pivots. Door handles and locks shall be made of self-extinguishing thermoplastic nylon filled with glass wool and minerals. Marine lights can be provided in fan & coil sections, if required, to see the inside and shall be interlocked with door opening. Condensate drain pan shall be provided with multiple slopes towards drain outlet. Condensate drain pan shall be fabricated from SS 304/GI powder coated, insulated with 13 mm thick closed cell elastomeric insulation.
1.4	Fan Section type & specification	Unit must be provided with direct drive backward curved Plug fan; the fans should be aligned and balance statically and dynamically. The fan speed must be controlled based on the room return air temperatures and also must have automatic step-less speed control without manual intervention. The fans can be in multiple numbers as per the manufacturer's standard. Units shall be factory balanced. Fan curves must be provided to confirm selection as and when required Noise Level: Less than 85db from 2 Mtr of unit in free filed conditions. Only direct drive fans to be provided in offered units and

		centrifugal fans with belt drive is strictly not acceptable.
1.5	Cooling Coil section & Specification	8 Row deep coil shall be made from intertwined twin circuit seamless copper tubes with aluminium anti-corrosive corrugated fins/Hydrophilic coated blue fins. The tubes shall be solid drawn copper of not less than 9.0mm Dia and minimum 0.22 mm wall thickness. Dehumidification airflow 500FPM. Aluminum fins shall be continuous and equally spaced by collars forming integral part of the fins. The number of fins shall not be more than 12 FPI and the thickness of fins shall be minimum 0.11mm. The fins shall be uniformly bonded to copper tubes by mechanical/hydraulic expansion for minimum thermal contact resistance with fins. The fins shall be assembled in a GI or specified in BOQ. Coils shall be sliding track mounted inside the Unit for easy replacement. Each section of the coil shall be fitted with supply & return header of Copper to feed all passes of coil equally. U bends shall be of forged copper and shall be joined to tubes by brazing and silver soldering. The coil shall be designed for a maximum working pressure of 7 Kg/Sq.cm. Each coil shall be factory-tested at 21 kg/Sq.cm air pressure under water.
1.6	Pre-Post Stages of Filtration Specification	Smart Pac AHU-PIP unit shall be provided with a factory assembled filter section containing 10-micron synthetic media washable pre stage air filters with efficiency of 90% down to 10-micron particle size. Filters shall have aluminum frame & Filter face velocity shall not exceed 500 FPM. MERV-9 synthetic media washable post stage air filters with efficiency of 90% down to 3-micron particle size. Filters shall have aluminum frame & Filter face velocity shall not exceed 500 FPM. Holding frames shall be provided for installing number of filter cells in banks. These cells shall be held within the frames by sliding the cells between guiding channels. Optionally high efficiency filters wherever required can be provided as separate sections.
1.7	10 Ton Smart Pac Compressor Unit	The scope of this section comprises factory tested built-in condenser with controls, equipment and instruments conforming to these Specifications and in accordance with the requirements of Drawings/ Schedule of Quantities. GENERA : Inbuilt Smart Pac Condensing unit shall be factory assembled, weather proof casing, constructed from heavy gauge mild steel panels and coated with baked enamel finish. The unit

		should be completely factory wired tested with all necessary controls. Air-cooled condensing unit of suitable capacity with Scroll/Rotary compressor of reputed make complete with copper piping, refrigerant gas, HP and LP cut-outs, microprocessor-based control panel, temperature controller, Thermostatic expansion valves, suitable insulation of the suction line, suitable size of fan etc. PLC controller should be loaded with features like auto switch on or off compressors, auto restart after power failure, runtime equalization of the compressor & time delay between compressor starts in case of multi compressor units, anti-recycle time delay to protect compressors from instant start/restart. The condensing units shall be mounted on suitable supporting MS structure. Compressor: Compressor shall be of the hermetically sealed scroll/rotary type with Gas cooled motor, balance and mounted on vibration absorber to provide quiet, free-floating operation. Compressor shall be protected against overload protection and single phasing protection. Refrigerant should be R410 / R22 / R-407. Control: Unit shall be completely factory wired internally. Electrical characteristics of unit shall be 415+/-10% volts, 50 Hz, three phase AC. Compressor and fan motor shall be served by separated thermal and electrical over load protection. High-Low pressure-stat shall be provided to protect compressor against excessively high and too low pressure. The control thermostat shall be located in unit return air stream / room. Control circuit shall be such that compressor cannot restart without manual resetting when it trips due to any reason other than thermostat tripping. Compressor shall be interlocked with blower fan so that it cannot start unless fan is on. All necessary safety devices shall be connected with control circuit.
1.8	Refrigerant Piping	Copper tubes of approved brand shall be used for refrigerant piping. Hard pipes must be used above (5/8") dia. All pipes shall be insulated with minimum 9mm thick insulation for the entire length; and flexible braided pipe (for external runs of pipe). External insulation shall be nitrile rubber covered with glass-cloth having density of 200GSM. All exposed piping insulation shall be with UV Protection/UV Coating with glass cloth fabric. Pipes should be installed in an accessible position wherever possible. Exposed to sun & visible piping shall be covered by braided PVC pipes/sleeves for mechanical protection and aesthetics. Necessary filters, driers, gauges, sight glass, safety

	cut-outs, etc. shall be provided in each refrigerant circuit as per the manufacturer's standards. Number of joints shall be kept to a minimum, and all joints must be located in the accessible runs of the pipes. Continuous, joint-less pipes must be used for all concealed/buried/inaccessible piping. Adequate extra length of pipes shall be left during piping work to avoid unnecessary joints during installation of indoor & outdoor units. All joints in copper piping shall be sweat joints using low temperature brazing and / or silver solder. Before joining any copper pipe or fittings, its interiors shall be thoroughly cleaned by passing a clean cloth via wire or cable through its entire length. The piping shall be continuously kept clean of dirt etc. while constructing the joints. Subsequently, it shall be thoroughly blown out using carbon dioxide / nitrogen. Refrigerant line shall be insulated with as mentioned in SOQ. Horizontal suction line shall be pitched towards suction of the compressor for proper oil return. The refrigerant line sizing should be designed to achieve minimum pressure drop and avoid oil return problem. After the refrigerant piping installation has been completed, the refrigerant piping system shall be pressure tested using nitrogen at a pressure of 20 kg per sq.cm (high side) and 10 kg/cm² (low side). Pressure shall be maintained in the system for a minimum of 24 hours. The system shall then be evacuated to a minimum vacuum. Vacuum shall be checked with a vacuum gauge. Pipes or ducts entering into the building through external wall cutouts should slope away from the building cutout, to stop rain water entering the building along through any gap between duct/pipe and the closed cutouts. Pipe and duct ends shall be kept closed at all times before and during installation to prevent ingress of moisture, dust and construction debris. All pipe supports shall be strong enough to withstand bending stresses in the pipes and shall be spaced not more than 1800mm apart. Each support shall be isolated from the supported pipe or fitting by anti-vibration springs or durable, non-deteriorating liner of rubber or neoprene. Wherever pipes are laid in two layers, an additional strip/support to be provided between the two layers so the pipes do not rest on each other. Before gas charging, the entire piping system should be vacuumized and pressure tested with nitrogen at 10 Kg/sqm (or as required for the system pressure rating) for 24 hours. Air tight factory supplied rigid insulation should be provided on all Ref-Net Joints / Y-Joints after pressure testing. Each Ref. Joint / Y-Joint should be properly supported to keep it in perfectly horizontal position. All
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		copper pipes except 6mm diameter shall be insulated with minimum 19mm thick Nitrile Rubber insulation for the entire length. Pipes up to and including 6mm may be insulated with 13mm thick Nitrile Rubber insulation. PVC sleeves or high-density insulation sleeves to be provided wherever pipes pass through cutouts in walls or wooden partitions to avoid compression of insulation. Avoid installing pipes directly above the A/C machines. All exposed insulation on terrace or in open shafts should be protected with UV paint / UV coating & glass cloth having density of 200GSM and finally covered with removable GI sheet cover for mechanical protection.
1.9	Drain Piping	The drain piping shall be made out of rigid C-PVC/ U-PVC pipes of sizes as specified in Schedule of Quantities. The piping shall be supported by clamping on MS angle running continuously below the pipe. Some places it required to make slot in floor/wall for laying drain pipes. U trap shall be provided in the drain connection of each unit. All MS pipes support/clamps shall be painted with red oxide primer followed by two coats of synthetic enamel finish paint. Drain piping shall be provided from each cooling unit to a designated drain point; using insulated 10/20 Kg/SqCM grade rigid PVC pipes or CPVC pipes as specified in Schedule of Quantities. Drain pipe connection from each unit should be connected with the drain header from top of the header to prevent back-flow from header to individual tapping. Each section of drain piping, including header and individual connections should have adequate slope, minimum 1:100. Drain outlet must have U-trap before terminating to NT/GT. End point of Drain pipe is to be temporarily closed with end cap during installation.
1.10	Standards	The following IS specifications and standards will be applicable for the work. IS: 659 - 1964 Safety code for Air conditioning IS: 8148 Specification for packaged air conditioning units. IS: 660 - 1963 Safety code for Mechanical Refrigeration IS: 732 III - 1982 Inspection and testing of installation IS: 4894 Test code for Centrifugal fan IS: 1239 I & II - 1982 MS tube, GI pipes, tubular and other wrought steel fittings IS: 823 - 1964 Code of procedure for manual metal arc welding

		of MS IS: 3589 Electrically welded steel pipe for water, gas and sewage. IS: 5111 - 1969 Code of practice and measurement procedure for testing Refrigerant Compressors IS: 732 Code of practice for electrical wiring and fitting for building IS: 694 - 1977 PVC insulated (HD) electric cable for working up to of including 1100 volts IS: 1248 Direct acting electrical indicating instruments IS: 1822 Motor starters and voltage not exceeding 1000 Volts IS: 8544 - I to IV 1979 Starters IS: 2208 - 1979 HRC fuse and links, up to 650 Volts IS: 655 - 1963 Ducting work
1.11	Embedded Control Panel	The AHU-PIP embedded Plasma-BI shall have inbuilt integrated electrical control panel with AUTO/Manual over ride switch for operation. Control cabinet to be provided with Type 2 enclosure, with grounding lug, combination magnetic starters with overload relays, circuit breakers and cover interlock, and fusible control circuit transformer. The electric panel provided for the unit must be equipped with main incoming power isolation switch, additionally the unit must be provided with under voltage / over voltage / phase reversal / single phasing protection in standard for DX systems, all three phase motors must be operated only via 24V / 48V coil voltage contactors and MPCB's, additionally step-down transformer must be provided for power supply to the unit controller. The electrical panel must also be providing with relay block for common alarm. Power cables and wire shall be of copper of 1100 V grade, control wires of copper 660 V grade and shall confirm to IS: 1554 / IS: 694 as specified. Shall be provided with a three element, positive acting, ambient temperature compensated, time lagged, hand-reset type thermal overload relay with adjustable setting. Hand reset bottom shall be flush with the front door closed. Relays shall be directly connected for motors below 10 HP capacity. CT operated relays shall be provided for motors above 10 HP capacity. Heater circuits contractors may not be provided with overload relays Each motor shall be provided with a starter of suitable rating. Starters shall be in accordance with IS 2959-1965 1.2mm thick PCGI housing construction, Digital Temperature

	controller, humidity indicator, Room differential pressure indication. ON/OFF switch for HVAC system. UL approved indicators, Switchgear, Variable Frequency drive & relays. Single phase preventers shall be provided for all 3-phase motors and shall be in conformity with relevant BIS Standards. Single phase preventers shall act when the supply voltage drops down to 90% of the rated voltage, or on failure of one or more phases. All meters and indicating lamps shall be in accordance with IEC regulations. The indicating lamps shall be neon/LED type and of low burden. Each incoming shall be provided with one set of indicating panel, consisting of voltmeter (0-500 volts with three way and off selector switch), CT operated ammeter (of suitable range with three nos. Class 1 CTs of suitable ratio with three way and off selector switch), energy-meter (except for minor panel boards), phase indicating lamps and other indicating lamps as called for. Each phase indicating lamp shall be backed up with 5 amps fuse and toggle switch. Other indicating lamps shall be backed up with fuses. The work shall be carried out in accordance with specification of Indian Electricity Rules as amended up to date and local Municipal Bye-Laws. The power wiring system shall be suitable for 415V, 3 phases, 50 cycles, 4-wire supply. Wiring for motors shall be carried out in PVC sheathed and steel wire or tape armored cable. The control wiring shall be in PVC insulated and PVC sheathed, multi core, stranded copper cable (minimum 1.5 mm² Cu) with the required number of cores. Power cables and wire shall be of copper or aluminum of 1100 V grade, control wires of copper 660 V grade and shall conform to IS: 1554 / IS: 694 as specified. Cables shall be carried on walls or in racks or in cable trays suspended from hangers or laid in trenches as required. Where more than one cable is running, proper spacing shall be provided to minimize the loss in current carrying capacity. Special care shall be taken to ensure that cables are not damaged at bends. The radius of bends shall not be less than minimum specified by the manufacturer to ensure that no undue stress is caused to cable. Where cables pass through pipes, PVC/Neoprene rubber bushes shall be provided at the ends. Where cables pass through floors or walls, pipe inserts shall be provided and opening shall be sealed. Cables shall terminate using weather proof double compression brass nickel plated cable
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		glands and tinned copper crimped lugs shall be provided. Before commissioning of the equipment, the entire electrical installation shall be tested in accordance with code of practice IS 732-1963 (Revised) and test report signed & furnished by a qualified and authorized personnel. The entire electrical installation should be approved by Electrical Inspector and certificate from Electrical Inspector shall be submitted. All tests shall be carried out in presence of Engineer-in-Charge. The safety, functioning and all necessary certificates / approvals shall solely be the responsibility of the contractor. Testing shall also be done to check proper interlocking between various equipment/safety/control cutouts, as required for the particular duty.
1.12	Testing methods as specified.	Factory performance testing to establish the cooling capacity of the unit, air flow rate, dry bulb and wet bulb temperatures of air entering and leaving the coil of the air handling unit using PLC controlled graphical display. All the results must be fully computerized and can be seen on real time basis. The testing setup shall be in accordance with DIN EN 14511. Minimum 4 hours continuous real time readings should be recorded for computation of operational parameters. Additionally, electrical safety Hi-pod testing, dry run testing for control logic, thermal bridging test and leakage testing of cabinet at works must be complied with as part of performance test of the AHU-PIP embedded Plasma-BI unit
1.13	Test Documents to be submitted as described.	Plasma-BI shall reduction of approximately 2 log units of the bacteriophage with the corresponds to 99% reduction in 10 min exposure to Plasma-BI. Shall test in the order of 0.70-0.85 log pfu/cm² was obtained on the table, mask and measurement device surfaces (HI-H3 samples), corresponding to almost 80% of reduction. From the test result, shall be concluded that the installation of the Plasma Air bipolar cold plasma ionization system shall test to reduce by approximately 99% the concentration of the bacteriophage MS2 in the air 70-80%.

2	LAMINAR AIRFLOW 8x8	The ceiling laminar airflow filtration system shall design to ensure unidirectional distribution of sterile air with differential flow velocities decreasing from center to perimeter of the surgical theatre to ensure the cleanliness of all the area covered by the air flow. The complete filtration ceiling system should be factory assembled. Its holding structure, Filter frames and top plenum should be made of AISI 304 Stainless steel.
2.1	Specification	MPPS average efficiency: > 99.95% 3 Micron D OP efficiency > 99.99% Final Pressure drop: 600 pa(max) Maximum Operating Temp: 60 degrees Celsius The air management system should be designed to achieved the following parameters: F.S. 209 classification = 100 (100 particles/ft3) Bacteriological class =B (5 CFU/m3)* Filters shall meet following specification. Protective grids: white epoxy painted Micro drawn grid Separators: continuous Thermo-plastic chord Sealant: Polyurethane.
2.2	Features	The ceiling system shall be equipped with HEPA filters & different performances according to their position in the ceiling to achieve different flow velocities. The filtration ceiling system should have flow equalizer to achieve uniform & constant air distribution over the whole surface.
2.3	Standard & classification	The filters installed in the terminal shall be suitable for application for clean room ISO 14644/1. H-14 Standard HEPA filters. AISI 304 stainless steel/Aluminum/PCGI. Particle decontamination kinetics CP =5 min biological decontamination kinetics CB = 5min ECG-GMP Annex 1

		classification = Class A ISO 14644/1 classification. The supplier shall provide test certificate for HEPA filter and Sterile Air Terminal from the original manufactures. Size of Sterile Air terminal Box size shall minimum of 2400mmX2400mm. The diffuser with aluminum extrusion frame & sealed gasket conforming to DIN 4799 standards for the air distribution system with hepa filter having efficiency 99.97% down to 0.3 micron. Diffuser should be in two layer monofilament precision woven polyester of uniform porosity with an open area of sufficient resistance to create laminar from diffusers face and integral lighting should be as per IP 54 which has to be used inside the laminar flow.
3	FIRE RATED DUCTING & MOTORISED DAMPERS	Ducts shall be straight and smooth and shall have neatly finished joints. All joints shall be made air tight using 5mm neoprene rubber gaskets, and/or RTV-sealed, or soldered as specified. The gasket will be fixed with a suitable adhesive to the flange. Changes in dimensions and shape of ducts shall be gradual. Curved elbows, unless otherwise approved, shall have a center line radius equal to one and a half times the width of the duct. Air turns shall be installed in all abrupt elbows and shall consist of curved metal blades or vanes, arranged to permit the air to make the turn without appreciable turbulence. Turning vanes shall be invariably provided at all turns and grille-collars. Splitters and dampers shall be provided at all branches/tapings whether shown on the drawings or not. All ducts shall be rigid and shall be adequately supported and braced. Where required, standing seams, tees or angles of ample size to keep the ducts true to shape and to prevent buckling, vibration, etc. shall be provided. At all connections between ducts & fans; fire-retardant, lint-free double canvass/rexin connections of heavy gauge shall be provided. One set of canvas connection include required quantity of canvas for one evaporator indoor unit. All duct work shall be independently supported from the building construction. All horizontal ducts shall be rigidly and securely supported in an approved manner on MS hangers provided at sufficiently close intervals to avoid sag in the duct. All supports shall be painted with primer & synthetic paint on installation. Ducts shall be supported by means of GI/ painted rod (minimum 8 mm dia.) taken from the slab using anchor expansion fasteners

		(minimum 10 mm dia.) and MS cleats. Chipping of the slabs shall not be permissible. Flexible connections shall be constructed of fire-resistant double canvass sleeve securely bonded and bolted at both the ends. All hardware shall be hot-dip galvanized or coated with 2 coats of rust preventive primer. At all connections between ducts & fans; fire-retardant, lint-free double canvass/rexin connections of heavy gauge shall be provided. One set of canvas connection include required quantity of canvas for one evaporator indoor unit.
3.1	Construction methods	Double canvass-connection and GI collar of suitable length shall be provided at the outlet of each AHU type and ducted cooling unit. A zipper shall be provided in the canvass connection to facilitate measurement of supply air temperature of ducted units. GI collars should be lined from inside with black expanded polyethylene for noise reduction. SA duct shall be acoustically lined and/or thermally insulated as specified. Part of the duct, acoustic lining & thermal insulation shall be painted black to prevent reflection of light through SA/RA grilles. All duct support shall be black painted. All hardware shall be galvanized. During fabrication and installation, ends of all ducts shall be kept closed to prevent dirt & dust. All ducts shall be thoroughly cleaned before installation. All work should be carried out in supervision and indication of Engineer In-charge. Ducting installed over the false ceiling shall be supported from the slab above or from the beams, etc. But in no case should it rest on the false ceiling or be supported from the false ceiling hangers. If MS hooks are provided at bottom of slab, hanger supports shall be provided by the contractor from these hooks. Bottom level of all ducts should be maintained as shown in the drawing. Leveling of ducts should be checked with a PVC tube water level from a reference point. All ducts shall be totally free from vibration under all conditions of operations. Duct work connected to AHU-PIP that may cause vibration in the duct shall be provided with flexible connections close to the unit.
3.2	Specification	24Gauge PPGI Ducting with all accessories & 13mm Aluminium foiled Fire Rated Class 'O' Nitrile rubber insulation with duct tape on all insulation joints.
3.3	Ducting Standard & Classification	Complied with: BS476-24:1987 ISO 6944-1985 BS 999

		Ducts are fabricated DW144/SMACNA Standards and fully equipped with the updated specifications.
3.4	Motorized Fire Dampers & Smoke Exhaust system	Smoke exhaust system & Fire damper shall be installed in an air distribution system or an air transfer opening designed to close automatically upon detection of heat interrupting airflow and thereby restricting the passage of fire in the process. Fire dampers shall be installed in fire-rated walls/barriers/partitions (sleeve required) where the HVAC ductwork penetrates ensuring that their integrity is maintained. The location and installation procedure of fire dampers should be in accordance with the widely accepted and recommended standard. Construction: Frame: High quality galvanized Iron Sheet of >1mm thickness. Blades: Interlocking type blades roll formed from 0.8.mm thick galvanized steel. Blade Ramp: Formed from >1mm thick galvanized steel with a spring holder. Springs: 2nos. constant force steel springs. Fusible Links: UL listed fusible links which has fire rating of 165° F / 212° F. Description: Fire damper frame shall be made from 1mm thick. High quality galvanized steel sheet. All welded joints are rust proofed by zinc paint coating. The fire damper blades are roll formed from 1mm thick. Galvanized steel. The interlocking type blades are designed with hat shaped reinforcement ridges ensuring strength and stability. The blade ramp is formed from 1mm thick. Galvanized steel with a spring holder. The ramp is firmly secured to the frame by rivets. Constant force stainless steel springs are firmly secured to the blades and held in place on the ramp. The blades are secured by UL listed fusible links which has a fire rating of 165°F / 212°F and thus kept out of the air-stream when not in operation. The heat responsive links on detection of heat beyond 165°F / 212°F release the blades from their position. Upon release, the blades which are connected to the springs are pulled down by the springs and get automatically locked on a latch and remains so until reset. These fire dampers are 1 rated up to 1/2 hours rating with low leakage.

		Upon the termination of fire condition, the damper can be re-opened (usually an access door has to be provided for inspection) by simply pulling up the curtain blades and replacing the fusible link. Fusible Link: Vertical UL Listed 165°F / 212°F fusible link as standard.
3.5	Fire damper standards.	All dampers are manufactured in compliance to the UL 555 standards and the company's quality control procedures.
3.6	Automatic smoke exhaust system & Motorized fire damper Specification	Fire damper is a device installed in an air distribution system or an air transfer opening designed to close automatically upon detection of heat interrupting airflow and thereby restricting the passage of fire in the process. Fire dampers are installed in fire rated walls/barriers/partitions (sleeve required) where the HVAC ductwork penetrates ensuring that their integrity is maintained. The location and installation procedure of fire dampers should be in accordance with the widely accepted and recommended standard. Construction: Frame: High quality galvanized Iron Sheet of >1mm thickness. Blades: Single skin roll formed from high quality steel sheet of thickness 16 gauge. Actuator: Fast acting, two position Honeywell actuator TRD: UL Rated TRD, 165° F temperature rating. Jamb Seal: Steel Description: • All corners of the frame are fully welded (and painted to prevent rust) to ensure sturdy construction for a rattle free operation. • Designed for parallel blade operation. • AMFD model fire dampers are UL 555 classified & manufactured under Airmaster's strict quality control procedures. • All actuators are externally mounted with 230VAC as standard and are supplied without auxiliary switch as standard. • Actuator position shall be based on Clockwise (CW) closure direction as standard.

		• TRD's shall have inbuilt RESET switch to reopen the damper. • All AMFD models shall be factory fitted with 400mm wide & 1.2mm thick steel sleeve as standard. • All dampers and TRD's shall be factory tested to ensure smooth operation before dispatch. Shall be used in walls/partitions of less than 3 hours fire resistance rating as per NFPA 90-A in accordance with ANSI/UL555 standards.
4	Return Air Riser	1.2mm SS Perforated grill with 1.2mm PCGI Frame construction. External damper adjustment provision.
4.1	Specification	1250CFM riser with 20micron washable filter.
4.2	Features	Volume control damper to keep uniform flow in all 4 risers.
4.3	Standard & classification	ISO & CE certified.
5	Double arm Laparoscopic pendent	Laparoscopic double arm pendant.
5.1	Specifications	1. Pendant should have safety factor of 3 2. The length of the drop tube from the extension arm should be suitable to the OT height - Double Arm Pendant should have total length of 1500mm arm 3. Weight carrying capacity of the arm should not be less than 140 Kg 4. The pendant should have a friction braking used should be of high strength aluminium alloy 5. Arm should be capable of 330 degrees of rotation, which can be easily adjusted to suit the desired mode of operation 6. The distribution column should be at least 1200 mm in height & it should be capable of accepting a range of shelves, infusion poles, electrical sockets, gas outlets other accessories as asked in tender 7. Electrical & Gas are separated in different chambers in the distribution column 8. The Pendant should support the range of Physiological Monitor/ Patient Monitor Mounting Solutions 9. Pendant should be supplied of gas outlets with DIN Standard as mentioned below ☐ Oxygen Outlets – 1 nos. ☐ Vacuum Outlets – 2 nos. ☐ Air(4 bar) Outlets - 1 nos. ☐ Co2 outlet - 1 no ☐ Electrical sockets - 10 nos.

		☐ All Gas Outlets should come fitted from the factory ☐ Shelf 50 cms x 50cms with two rails one on each side – 3 no. , Each shelf should have weight capacity of 80 Kg ☐ Shelf 50 cms x 50cms with drawer – 1 no. ☐ Data socket RJ-45 -2 nos
5.2	Certificates	ISO 13485
6	SINGLE ARM ANESTHESIA PENDENT	
6.1	Specifications	1. Pendant should have safety factor of 3 2. The length of the drop tube from the extension arm should be suitable to the OT height 3. Single Arm Pendant should have length of 900mm arm 4. Weight carrying capacity of the arm should not be less than 200 Kg 5. The pendant should have a friction braking used should be of high strength aluminum alloy 6. Arm should be capable of 330 degrees of rotation, which can be easily adjusted to suit the desired mode of operation 7. The distribution column should be at least 800 mm in height & it should be capable of accepting a range of shelves, infusion poles, electrical sockets, gas outlets other accessories as asked in tender 8. Electrical & Gas are separated in different chambers in the distribution column 9. Pendant should be supplied of gas outlets with DIN Standard as mentioned below ☐ Oxygen Outlets – 1 nos. ☐ Vacuum Outlets – 2 nos. ☐ Nitrous oxide – 1 nos. ☐ Air(4 bar) Outlets - 1 nos. ☐ Electrical sockets - 8 nos. ☐ All Gas Outlets should come fitted from the factory ☐ Shelf 50 cms x 50cms with two rails one on each side – 3 no. , Each shelf should have weight capacity of 80 Kg ☐ Shelf 50 cms x 50cms with drawer – 1 no. ☐ IV Fluid Pole with 4 hooks – 1No. ☐ Data socket RJ-45 -2 nos
6.2	Certificates	ISO 13485
7	OPERATION TABLE WITH ATTACHMENTS	The quoted system should be latest model of the manufacturer and should be based on electro hydraulic/Powered technology. State of Art Operation Table for performing advances Surgeries. It should be highly

		technical, sturdy, durable, compact and user friendly and corrosion proof. • It should have C- arm compatible and electro hydraulic drive. All table top movements like elevation, longitudinal sliding head side and leg side, back plate, side tilt, Trendelenburg, flexion / reflex and their reciprocal movement, should be power actuated. • Should be supplied with all standard accessories like head rest, two arm boards, anesthesia screen with elongation arm, body straps, arm protectors, head protector • The table should be made of stainless steel/ABS with space to provide comfortable leg space to the surgeon while operating. • The base column should have telescopic cover of stainless steel and should prevent the ingress of fluid in the system. • All metal components of the table should be made up of corrosion resistant aluminum or stainless steel alloys. • The table should have heavy duty antistatic swivel castors with central electric/ hydraulic locking through hand held controller for easy maneuverability and emergency manual release should be available. • Should have an inbuilt kidney bridge. • Battery backup should be of minimum 5 hours or minimum 50 nos. of operations. • Maximum patient weight - atleast 360 kg or more • Cranial and Caudal traverse atleast 300 mm or more Table top and mattress • The table top should be made up of scratch-less X-Ray/C-arm translucent material. • Mattress should be molded, seamless and anti-decubitus/antistatic, with easy Velcro free fixation/Velcro and should be easy to detach from the top. • The mattress should be easy to clean
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		• All table positions like height, lateral tilt, longitudinal sliding (cranially and caudially), Trendelenburg and reverse Trendelenburg and flex/reflex should be obtainable using remote hand held controller without moving the patient. Technical Specification: • Overall length: 195 cm or more. • Max. Width : Min. 550 mm (With siderails) • Minimum height: 650 mm or less • Maximum height: 900mm or more • Side Tilt: 20 degree. • Trendelenburg: 25 degree • Anti-Trendelenburg : 25 degree • Power input to be 220-240Vac, 50HZ fitted with Indian plug • The quoted equipment should be US-FDA listed and European CE certification. • Electrical safety conforms to standards for electrical safety IEC 60601-1 General Requirements (or equivalent BIS Standard) • Shall meet internationally recognised standard for Electro Magnetic Compatibility (EMC) for electro medical equipment: IEC-60601-1-2 :latest edition Or Equivalent BIS) or should comply with 89/366/EEC; EMC-directive as amended • Certified to be compliant with IEC 60601-2-46 : Particular requirements for the safety of Operating Tables: latest edition or equivalent • All technical specification accepted in compliance statement must be supported by the printed literature from the manufacturer. Standard Accessories: ▪ Leg crutches – 1 Pair ▪ Restraint Strap -1 No. ▪ Anesthesia Screen Frame – 1 No. ▪ Lateral support – 1 Pair
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8	DOUBLE DOME OT LIGHT WITH DETACHABLE CAMERA	Should be Double Dome OT Light with each light-head mounted on a separate arm with swivel arm, spring arm and yoke One dome on each arm should be camera ready, and a detachable camera from same manufacturer should be mounted at the centre of the light-head as per requirement Light-head should have base made of Aluminium, each individual LED should be mounted on the single base of the light to ensure maximum heat-dissipation Light-head should have complete uni-body design, not petal or joint structure Light-head should have round shape to ensure symmetrical illumination Light-head should have 600 mm diameter +/- 50 mm (without external handle, only actual light body) Light-head should have at least 2 openings in its shape to allow clean air flow to pass through operating cavity Each dome should have at least 20 independent point sources to ensures maximum shadow dilution compliance Each dome should have a shadow dilution performance of over 90% with tube (50 mm diameter and 75 mm length - as per IEC 60601-2-41) Should have white leds (warm/cool) to achieve hight CRI (CRI boosting using red, green leds etc. wont be accepted) Should have special illumination mode for deep cavity applications Should have endoscopic illumination mode Should have one click maximum intensity mode to boost illumination Camera ready light-head should have integrated light and camera control on a single controller.						
8.1	Specification	OT Light should have the following optical specifications: <table border="1"> <thead> <tr> <th data-bbox="555 1854 927 1912">Specification</th><th data-bbox="932 1854 1166 1912">Principal Dome</th><th data-bbox="1171 1854 1401 1912">Satellite Dome</th></tr> </thead> <tbody> <tr> <td data-bbox="555 1919 927 1980">Central Illuminance</td><td data-bbox="932 1919 1166 1980">160,000 lux</td><td data-bbox="1171 1919 1401 1980">160,000 lux</td></tr> </tbody> </table>	Specification	Principal Dome	Satellite Dome	Central Illuminance	160,000 lux	160,000 lux
Specification	Principal Dome	Satellite Dome						
Central Illuminance	160,000 lux	160,000 lux						

		Light Field Diameter	150-300 mm	150-300 mm
		Light Head Diameter	600 mm	600 mm
		Depth of Illuminance (at 60%)	More than 350 mm	More than 350 mm
		Colour Rendering Index (3500-4000K) (Ra)	95	95
		Adjustable CCT	3500K – 5500K	3500K – 5500K
		Dimming Range	0-100%	0-100%
		Service Life of LEDs	50,000 hours	50,000 hours
		Shadow Dilution with Tube	More than 90%	More than 90%
		Shadow Dilution with One Mask	More than 70%	More than 70%
		Shadow Dilution with Two masks	More than 50%	More than 50%
		Shadow Dilution with Tube and Two Masks	More than 40%	More than 40%
		Weight of Light head with yoke	Less than 10 kg	Less than 10 kg
8.2	Certification	Manufacturer should have ISO 13485 and ISO 9001 certificates Manufacturer and products should be registered with Indian CDSCO, European CE and USFDA. Relevant documents and website links to showcase registered devices on the website of these regulatory authorities must be provided The device should have IEC 60601-1-1, IEC 60601-1-2, IEC 60601-2-41 test reports available		
8.3	DETACHABLE CAMERA FOR DOUBLE DOME OT LIGHT	Should be FULL HD camera Camera should have autofocus and focus lock option Camera should have auto/manual control over white balance with one push white balance mode available Camera should have flip mode to rotate the image 180 degrees		
8.4	Specification	Detachable Camera should have the following specifications:		

		Specification	Camera Details
		Image Sensor	1/3-type CMOS
		Effective Pixels	4 MP
		Signal System	Full HD (1080p)
		Video Output	HD SDI / HDMI
		Zoom	10X Optical , 16X Digital
		White Balance	Auto / Manual - One Push
		Focus / Iris Control	Auto / Manual - Lock
		Weight of Camera	Less than 2 kg
9	OPERATION THEATRE INTEGRATION	The Multi-channel OT Integration Console should have the following specifications. 28. The Integration system should receive the signal from different sources like Room camera, Endoscopy camera, Overhead camera, Archiving System, Auxiliary devices like C-Arm, Video Microscope, Mobile ultrasound, microphones, AUX-IN & video conferencing, etc. and able to integrate all signal and give flexibility to route the signals/videos at desire destination/monitors. 29. The system should possess the capability to seamlessly integrate all available video signals within the OT and support for simultaneous inputs from up to four video sources, including Full HD (1920 x 1080p) /4K (3840 x 2160p) with HDR capabilities and progressive scan for 25/30 frames. 30. The system should enable a plug-and-play connection for various video sources, with vendor-independent compatibility, encompassing cameras, endoscopes, microscopes, and PC computers. 31. It should offer support for Full HD/4K video display on the local OT monitor, allowing surgeons to view the surgical procedure in high resolution. 32. The system should incorporate a centralized control module equipped with a touchscreen interface for managing all audio and video signals within the OT. Surgeons should have the flexibility to view multiple images simultaneously in Picture-in-Picture (PIP), Picture and Picture (PAP), and Quad view modes, with the ability to customize the positioning of these images.	

		33. It should facilitate integrated audio capture from a separate surgeon's microphone, synchronized with the selected video feed. 34. Real-time display switching should be achievable through the centralized control module. The Audio/Video Router/Switch system should have a minimum of 16 I/Os with open architecture. It should support the input types such as DVI, HD-SDI, S-Video, VGA and HDMI. 35. The system should offer integrated control for the room camera via the centralized control module, with the potential to control the OT light camera if it adheres to a generic control protocol. 36. The Full High-Definition Digital Documentation System should be a high-end Windows 11-based computer system with built-in access security, purpose-built for recording, managing, and archiving surgical images and videos in native full HD resolution. 37. Integration of equipment/Signals/Sources with the Central Control System in such a way that the central control system is capable to route any running high-definition surgical videos, which is being recorded in it, onto any display device in an operating room. 38. It should include a 21.5" or more Full HD (1920 x 1080p) PCAP touchscreen medical-grade monitor bundled with recording software to ensure crystal-clear image viewing. 39. The system should come with integrated storage, capable of archiving video and images up to 1 TB, utilizing the efficient H.264/Mp4 format with compact file sizes. 40. It should feature intelligent and adaptive storage management, with automatic background storage to minimize downtime between surgical procedures. 41. Recording functionalities should include video zoom and vary recording speed for enhanced viewing angles and analysis. 42. The system should support the capture of still images in real-time during procedures. 43. Patient and image data should be able to call up and distributed to required monitors in the operating room. It should feature a unique Patient and Exam entry management system, with robust search and sorting capabilities. 44. Post-exam playback and review should be supported, with the option to integrate doctor's notes. 45. Captured high-definition images and videos should be easily accessible from the hard drive for printing or saving to various external media, including USB storage media via 2.0 and 3.0 optical media, the network drive and the PACs server.
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		46. Video Conferencing system should be offered, and the system should be able to transfer high-quality real-time images and audio signals from multipoint at a minimum speed of 2Mbps. The system should be compatible with 1080p full HD resolution for transmission. 47. The conferencing system should be controlled via the touch screen of the integration system from the OT. 48. The system should seamlessly integrate with popular video conferencing platforms like Zoom, Teams, Skype, enabling easy video conferencing from within the OT. 49. It should support live streaming of video feeds to multiple displays within the hospital network, including integrated audio feed over the local IP network. 50. The system should include integrated security software to protect against malware, operating independently of OS security patches, and exclusively running certified software. 51. The centralized control module should offer customization options to display the hospital name and/or OT name on the control screen. 52. The system should have the flexibility to be mounted on a trolley for enhanced mobility within the OT. 53. The system architecture should be designed with scalability in mind, allowing for future expansion as needed. 54. The project should include comprehensive project management and workspace design services aimed at enhancing OR workflow during both the design and installation phases. Ongoing on-site and remote support, including necessary software updates and on-site training, should be included as part of the package.
10	4K HYSTEROSCOPE WITH ACCESSORIES	A full 4K high definition processor should have native resolution of 3840x2160 pixels. It should have Touch LCD panel operation for easy control. Control of Special Modes from the camera head: Image overlay feature (white-light image integrated with fluorescence in real time, no toggling necessary. Processes two white light images and inserts infrared in between to achieve an overlay on the white light image.) Processor speed of 120fps. Contrast control Should have near Infrared Fluorescent Visualization mode: should displays the image in a grayscale with green overlay. This fluorescence modality provides an enhanced visual assessment of

		blood flow, tissue perfusion, and biliary ducts when activated. Should provide at least 9 or more individual User preset. The System settings, Colour Tone, contrast visualization of fluorescence, enhancement etc Should have compatibility for selecting 4K or Standard HD output signal 3 Chip Ultra-High Definition CMOS camera technology, with minimum 4 buttons on Camera head Auto-light maintains consistent light using an algorithm, determining optimal lighting levels, auto adjusts light output accordingly. Shutter: 1/60-1/22,478 seconds Outputs: 2 nos HDMI/ DVI [Signal Format: 3840x2160, 1080p]
10.1	Advanced Light Source	LED Powerful LED Lightsource using three primary color LED lamps (Red, Green & Blue) Inbuilt 830nm Laser for trans illumination of laser fiber Should automatically corrects poor lighting in posterior compartments and self-adjusts based on anatomy Light Source has Technology to ensure the light cable is securely plugged in. There is an illuminated ring around the cable insertion point to indicate cable connection, and power status Designed to reduce the risk of OR fires, automatically shuts off the light source if the fiberoptic cable becomes disengaged from the scope. Class 1M Laser Product Laser product classified per IEC 60825-1:2014 certification & IEC 60825-1:2014 Transparent Fiberoptic Light Cable 3.5mm or more x 300Cms or more Adaptable to provided Telescope
10.2	4k 32" Medical Grade Monitor	4K Medical grade 32 inch UHD LCD backlit monitor with ultra - high definition resolution of 3840x2160 Aspect ratio: 16:9 Should have multi-image display format - Rotation Image, Side-by-side, Picture-in- picture and flip Pattern to rotate the image

		On-screen display with customized surgeon profiles Native Resolution: 4096 (H) x 2160 (V) Display colour: 1,073,741,824 colours Response Time: 11ms Brightness: 525 cd/m2 Contrast: 1500:1 Inputs: 1x DVI; 1x HDMI; 1x HDMI 4K; 1x RS-232 (SPI router control); 1x USB UL Listed and C.S.A Certified/ BIS
10.3	4K TELESCOPES	10mm: 30-degree ICG compatible with working length of 30-33 cm or more 5mm: 30-degree ICG compatible with working length of 30-33 cm or more Aspherical Lens Technology for minimized optical distortion Improved light transmission and edge brightness when compared to HD scopes
10.4	45L Insufflator	Provides unparalleled I performance and real time pressure sensing with various modes to operate as per the surgery Integrated tube desIgn manages optimal pressure. heating and flow rates to achieve greater accuracy during procedures Designed to handle a wide variety of cases including pediatrics, bariatrics, and vein harvesting Safely maintains pneumoperitoneum in a range of conditions to bring insufflation in the operating room to a new level Intuitive color LCD touch screen ensures quick and easv navigation through the user menu Specifications: Maximum Gas Flow: 45L or more (per min) Power Requirements: 100-240V, 50/60 Hz
10.5	Device Control system / Medical 4K recorder:	Has the capability to control all connected surgical devices from the sterile field using the camera head, remote control, touch panel, and voice control headset. Control of integrated operating room components such as the video router, room lights,

		OR lights, and room cameras are also enabled by the system It allows surgeons to capture, record, stream and print images directly from the 4K Platform. Surgeons can also use the Hub to customize their respective surgeon profiles and desired tower settings to drive efficiency. Capture Resolution: UHD 4K 2160p 30fps with 4K recording software Should have a complete touch screen interface [GUI Touchscreen) Screen size: 8" or more Archiving options: Internal 1TB capacity; External (USB, etc); Cloud based storage accessible; CD/DVD with optional optical drive. Operating system: Intel 15 Quad Core or higher; Windows 10 10T 64 bit 8GB DDR3 Image formats: BMP; JPEG; TIFF; TGA; PNG Should have On Screen Display Should be DICOM ready Voice activation feature: Can navigate- Menu, Device Control, Annotation of images, etc
10.6	ENDOSCOPY TROLLEY WITH ARM	Compatible Endoscopy Trolley for accommodating above items
10.7	Type of Hysteroscope Movement – Rigid	1. Forward Oblique Full HD Hysteroscope 30 deg, diameter 4mm, autoclavable, fiber optic light transmission incorporated: Qty 1 2. Hysteroscope inner sheath for diagnostic for use with 4mm Full HD Hysteroscope: Qty 1 3. Hysteroscope Outer sheath for diagnostic for use with 4mm Full HD Hysteroscope: Qty 1 4. Hysteroscope inner sheath for operating for use with 4mm

		Full HD Hysteroscope: Qty 1 5. Hysteroscope Outer sheath for operating for use with 4mm Full HD Hysteroscope: Qty 1 6. 4 mm Operative Obturator-Qty-1 7. 4 mm Diagnostic Obturator-Qty-1 8. Forward Oblique Full HD Hysteroscope 30 deg, diameter 2.7-3.0 mm, autoclavable, fiber optic light transmission incorporated: Qty 1 9. Hysteroscope inner sheath for operating for use with 2.7-3.0 mm Full HD Hysteroscope: Qty 1 10. Hysteroscope Outer sheath for operating for use with 2.7-3.0 mm Full HD Hysteroscope: Qty 1 11. 2.7- 3.0 mm Operative Obturator 12. Forward Oblique Full HD Hysteroscopes should be compatible with Laproscopy Camera being supplied. 13. General Requirement of safety-IEC-60601-1-2 :2001. (certificate should be submitted) 14. Must be FDA, CE, or BIS approved product, etc.(certificate should be submitted) 15. Forward Oblique Full HD Hysteroscopes and inner & Outer diagnostic and operating sheaths should be from same OEM
10.8	Instruments	The following Hysteroscopy flexible/semi rigid instruments which should be adaptable to above sheath 5fr/7fr diameter should be provided and Make of instruments to be provided in Technical data sheet 1) Foreign body grasping forceps- 02 Qty 2) Scissors semi rigid, pointed jaws 5 Fr., length 41 cm, single action jaws, semi-rigid-Qty- 02 3) Scissors semi rigid hook scissors , 5 Fr., length 41 cm, single action jaws, semi-rigid- Qty- 02 4) Biopsy and Grasping forceps - Biopsy- and Grasping Forceps semi rigid, 5 Fr. , length 33-36cm, double action jaws-02 Qty

		5) Punch Forceps - Punch through Cutting semi rigid 5Fr, length 41 cm- 02 Qty 6) Needle electrode -Unipolar – high frequency cords of any make should be compatible with the above equipment - Qty 02 7) Ball electrode-Unipolar – high frequency cords of any make should be compatible with the above equipment - Qty 02
11	TOUCH SCREEN SURGEONS CONTROL PANEL.	1. High contrasts, high luminance and with strong outer box. Applies DICOM Standard with screen size of 27 inch 2. Stable back light system, supporting the integration of the long- lasting usage. 3. LED back light, ultra-thin and full-flat screen design. 4. Use anti-scratch hence preventing damage while cleaning and disinfecting. 5. High touch accuracy, more than 10,000 point per square inch. 6. Automatic adjustment, high response speed, reliability and stability without drift, more than 5 million times touch control in each point 7. Work with fingers, soft pen and can be used even with gloves/ when hands are wet. 8. Option to change the colour of the UI to suit the customers requirement. 9. Use stable Android operating system with inbuilt software The multi-function control system in the operating room can control the ceiling lighting, operating lights and air conditioning. It is composed of clock timing module, air conditioning monitoring module, medical gas monitoring module, and telephone module. The following features must incorporated in a single touch screen control panel: 1. Operation timing – Elapsed time 2. Anaesthesia Countdown – Countdown timer 3. Time – Real time clock. 4. Date 5. Temperature and Humidity Display and control 6. Hands Free Telephone with option to save over 10 Quick dial numbers 7. Music player with local and Bluetooth options

		8. Medical Gas Alarm System- upto 7 gases 9. Lighting Control for Peripheral , Shadow less dome, Plenum light and View box along with brightness control option in peripheral light from 0-10V as well as DALI 10. Room pressure indication. 11. HEPA Filter status 12. AGSS, IPS and UPS Alarm options 13. Blinds control 2 TOUCH PANEL FEATURES OS: Android CPU: Quanzi H8, 8 cores 2.0GHz RAM: 1GB DDR3 Storage: 8GB EMMC Monitor:2 Ch LVDS, 1920*1080 Dual display: HDMI/LVDS Network:4G/3G, WIFI, Zigbee Bluetooth: Bluetooth 4.0 LAN:10M/100M Serial Port: 2X 485com, 4XTTL, 2X RS232 Audio: 2ch stereo RTC Clocking Update port: OTA, USB OTG Screen Size: 22, 27 or 32 inches available in white or black background Definition:1920*1080 Brightness: 300cd/m2 Contrast: 50000:1 Response time:2ms Touch panel Type: Multipoint capacitive touch screen Life time:>2000000 touch Hardness: 3H Input / Output Switch outputs:9 Relays Analog outputs:2ch 0~10V Analog inputs:3ch 0~10V Switch inputs: 5 switches COMMUNICATION INTERFACE: Telephone slot, Background music input, USB and Bluetooth
12	SET UP OF OT WALLS BY ANTIMICROBIAL 3 SECTION WALL PANELS WITH	Walls of operation theatre should be installed with panels which shall be made of SS304 that shall be easy to clean and extremely hygienic. Operation theatre shall not have any sharp edges, corners and shall not support bacteriological or fungicidal growth and shall be resistant to most chemicals, commonly used in

INTEGRATED SERVICE PANEL WITH ANTIMICROBIAL CEILING PANEL	Hospital Departments. Joints in the panels in the operation theatre shall be sealed by means of Gasket application. The function of sealing shall assure an airtight environment in the room and eliminate services to prevent dust accumulation. Wall Paneling System shall be 100% modular in nature and shall comprise of free- standing sub frames. All four edges of tile shall be flanged at right angles. The tile shall have backing of 18mm thick soaked Polyurethane Foam (PUF) insulation. This insulation shall give rigidity & strength to metal tile. Modular wall panels tiles shall be made of at-least 1.00 mm thick sheet. Wall Panel shall be made in grids of three sections with three different colour as per the choice of user : - - Lower wall element (approx. 900mm high). - Upper wall element (approx. 1800mm high). - Customizable installation module of 200 mm service panel between the lower and upper wall element to provide access to medical gas lines and other facilities. Panels shall have design feature of quick & easy demounting and reinstallation of individual panels without removing the adjacent tiles. Modular wall panels tiles shall be made of SS304 , finished with 60-80-micron Anti- bacterial powder coating with addition of silver ions. Wall panel shall have flanged edges to make a tile of at least 18 mm thick. Panels shall be mounted on a structure made of galvanized steel and shall enable the distribution of medical gases, electricity, sewerage inside the wall. The corner profile shall be made of curvilinear and precisely extruded aluminum profile with colour surface treatment to match the colour shade of the wall panels. The wall panels shall be inserted into this profile in the vertical direction and shall be sealed with expansion sealing inserted into the corner profile. Vertical gap / joint between the wall panels shall be 10 mm maximum and shall be filled with removable extruded gasket sealant matching the colour of the wall panels. The anti-bacterial powder coating with added silver ions shall have zero solvents or VOCs to ensure that the system shall not affect/damage to the environment of Modular Operation Theatre. The finishing panel shall permit subsequent installation of flooring with suitable
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		upward curvature up to a nominal level of 100 mm to ensure zero dirt accumulation. System shall be 100% modular to ensure quick and easy installation, maintenance, retrofitting and up gradation. Proposed system shall be installed at site without any welding. The partitions shall not have corners; adjacent surfaces shall be molded flush. Upper wall element shall have sufficient height to reach the lower edge of the prefabricated ceiling. Vertical level shall be adjusted with the aid of laser measuring systems. There shall be a possibility of wide variety of colors to be used on the wall elements to give the aesthetic and state of the art look to the Operating room. Cardiac Operation Theater Ceiling with antimicrobial ceiling panel: Ceiling of operation theatre should be 50 mm thick Ceiling panels having composite construction of two skins one side SS with 0.8 mm thick SS304 sheets and back side should be made of 0.5 mm PPGI and core consisting of rigid polyurethane foam, which has been injected under high pressure, with a minimum density of 40 Kg/m³ shall be provided for the Operation theatre. Ceiling panels shall be made of SS304, finished with 60-80-micron Anti-bacterial powder coating with addition of silver ions. The individual ceiling panels shall use the tongue and groove technology for joining two panels, no welding shall be allowed. There should be a separate aluminium Ceiling jointer (H Type) provided for joining adjacent panels. Room lighting, air supply inlet, ceiling service units, return air outlets etc. as should be integrated with ceiling system. The cavity between the inner and outer Panels should be left with minimum obstructions for the possible addition of equipment at a later date and to enable services, pipes, conduits etc. to be run within the cavity. All the sharp edges and corners should be chamfered to avoid bacterial contamination. Panels shall be free from scratches & dents, resistant against humidity and cleaning detergent. Paneling should be easy to maintain, durable, antistatic/conductive and fire retardant.
13	STORAGE CABINETS	Providing, Fixing, Supply and Installation of storage unit will be made with the Stainless steel material i.e SS-304
13.1	Features	The unit will be divided into 2 equal parts and each part will have

		individual glass doors with locking system. Each part will have glass racks to keep surgical medicines etc.
13.2	Standard classification	& ISO & CE certified.
14	WRITING BOARD	The writing unit shall be made up of toughened glass and size should not be less than 40 inch.
14.1	Features	The unit shall be opened to create a wall mounted writing surface within the operating room.
14.2	Standard Certification	& ISO & CE.
15	LED TWIN X-RAY VIEWER	The viewer should be in double plates construction as standard product for operating theatre. The system should preferably have electrical safety codes for high & low voltage system. The theatre should be equipped with a 2 plate X-ray viewing screen.
15.1	Features	It should be designed to provide flicker free luminance for the film viewing purpose. It should be installed flushed with theatre wall for hygienic and ease of cleaning purpose.
15.2	Certification	CE certified/ ISO
16	HATCH BOX	A hatch box should be provided in each operation theatre to remove waste materials from the operation theatre to dirty linen area/corridor just adjacent to Operation Theatre. Each hatch box should be equipped with two doors and the door should be operated electrically/motorized. The hatch should be designed in such a way that only one door should be opened at one time. Construction shall be SS304.
16.1	Features	The UV light should be so installed that it is kept on while both the doors are closed. This UV light has to be automatically turned off in case of opening of either of the doors. Indicators should be provided on both sides of the OT so that door open / close status can be monitored from both sides.
16.2	Standard Specification	& ISO & CE
17	CONTINUOUS PERIPHERAL LIGHTS	Housing & Finish shall GI powder coated white after phosphocreatine treatment. Electronic driver shall Powered by an independent Isolated, SELF Output electronic LED driver (SMPS based constant current supply) with Output Short-circuit protection.
17.1	Specification	Class Declaration: Class-II

		IK Rating: IK03 IP rating: IP54 Color Temperature: 5700K System Lumens: 3300lm Watt: 30W CRI: ≥ 80 Power Factor: ≥ 0.95 Operating temperature: -10 °C to +45 °C
17.2	Features	Optics shall High transmittance polystyrene opal diffuser for glare free symmetric light distribution. Light source shall High efficiency long life LED package in integral module with lumen efficacy of >140 lm/W and viewing angle of 120° to ensure better uniformity.
17.3	Certifications	Surge protection & other safety test as per IS:15885 Part 2/Sec 14.
18	PRESSURE RELEASE DAMPER	A modular OT should always have a positive pressure as compared to the outside environment. As more and more Sterile air is being inducted into the room, a suitably sized Air Pressure Releaser should be installed in the room. It should be S.S. fabricated.
18.1	Features	It should be fitted outside the air ceiling system area and flush (with the ceiling in the operation theatre suitable to required illumination of OT. Peripheral lights and clean room luminaires fitted in the frame should be 1 Nos or more depending on the size of OT.
18.2	Certifications	ISO/CE
19	MGPS WORK	The Medical Gas Pipeline inside the OT shall provide Valve box. Shall bring the Medical Gas Pipeline inside the OT till ceiling pendants and provide NIST connections for each gas pipeline
19.1	Features	Medical Gas Piping by means of NIST connections.
19.2	Specifications	5 gases (O ₂ , CO ₂ , N ₂ O, Vacuum, Surgical Air).
19.3	Standard Certification	& As per EN 737 / HTM standards or equivalent. "The Gas piping used for transportation should be as EN 13348 / EN 1057 standards with copper fittings as per EN 1254 standards.
20	OT-ELECTRICAL WORK WITH MEDICAL ISOLATION PANEL	All high voltage equipment is installed in a separate enclosure. The remote cabinet houses the operating lamp transformers main failure relays, electrical for all circuits within the operating theatre. All internal wiring is terminated in connectors with screw and clamp & spring connections of the clip-on type mounted, on

		a DIN rail labeled with indelible proprietary labels. Individual house or miniature circuit breakers protect all internal circuits with 5/16-amp switch Sockets for Operation theatre. Medical Isolation Panel: shall have single-phase isolating transformer according to IEC 60364-7-710 with a maximum rated power of 10 kVA and shall be designed according to IEC 61558-2-15 and have secondary voltage of AC 250 V and a maximum transformer secondary leakage current of 0.5 mA to earth as per IEC 60364-7-710. The secondary circuit shall be ungrounded (IT) system.
20.1	Isolation Panel Technical Specification	➤ The isolation transformer shall be provided with overload and over-temperature monitoring alarm through PTC thermistors. A visual alarm shall be issued when the permissible load current and/or temperature are exceeded. ➤ An insulation monitoring device (IMD) shall be provided at the secondary ungrounded side of the isolation transformer to indicate the occurrence of a first fault from live part to exposed-conductive-parts or to earth. ➤ Measuring technology shall be highly accurate with no spurious alarm even in case of modern electronic equipment work for all ungrounded system with AC, DC loads and shall be able to work and locate faults in the varying load conditions. It shall use the latest adaptive measuring pulse-based technology instead of normal DC/AC injection measurements. ➤ IMD specifications shall be in accordance with IEC 60364-7-710 & BIS SP30-2011. ➤ The insulation monitoring devices shall comply with IEC 61557-8. ➤ The no. of load feeders maximum 12 shall be available for smaller size distribution system. 230 VAC DP MCB protection with 20A max with breaking capacity 10kA shall be provided with short circuit protection without overload protection. ➤ The earth fault location system shall consist of on-line

		IMD integrated with test pulse device, earth fault evaluator, 12 nos. of special CBCTs (Sensors). ➤ The on-line insulation monitor shall continuously measure the insulation resistance of the entire galvanically connected ungrounded system including all connected loads. Whenever the insulation current transformers with evaluators. The design of the system shall be such that it rejects the noises in the power supply and distribution systems and shall be robust and reliable without generating nuisance alarms. For medical safety reasons the test current shall be limited to 1 mA. ➤ The sensitivity of sensors shall be 0.1 mA minimum and measuring range between 0.1 mA – 1 mA. The earth fault location system shall comply with IEC 61557-9 for Medical Locations. ➤ The distribution cabinet/panel shall house the input CB, output CB, insulation monitor, load distribution MCBs and insulation fault location system. The cabinet shall be fabricated out of 16-gauge MS CRCA sheet steel floor mounted, dust and vermin proof with reinforcement of suitable size angle iron, channels T sections and / or flats wherever necessary. Degree of protection IP30 minimum. Knockouts shall be provided at the top of the panel for cable entry purposes. Panels shall be treated with all anti-corrosive process before painting. Paint shade shall be light grey or as approved. Cabinet/Box shall be with all components mounted and pre-wired. Incoming & outgoing cables shall be directly wired to Switches & Breakers or through terminals. ➤ Ambient Temperature: - 10 deg. C to 55 deg. C ➤ Relative Humidity: 95% non-condensing ➤ EMC Qualification for Insulation Monitor & Fault Location System as per IEC 61326-1. of the system drops below the preset value of 50Kohms an alarm shall be generated and the faulty feeder be detected on-line selectively by means of special residual
21	ANTI-STATIC	Imported Flooring shall be >2mm antistatic seamless PU

	CONDUCTIVE FLOORING	flooring. Floor should be smooth, non-slip, impervious material conductive enough to dissipate static electricity but not conductive enough to endanger personnel from electric shock.
21.1	Technical characteries	Electrostatic charge dissipation combat PU seamless flooring of very high quality should be provided. Thickness not less than 2 mm. Should not be affected by temperature variation within the LR. Corners should be uniformly curved. Final surface should be noncorrosive to biological fluids and detergents. Color should be uniform pleasant and matching with ambience.
21.2	Electrical Resistant	The floor should efficiently discharge electric charges up to 2 kV. The electrical resistance (point to ground) should be within 2.5×10^4 to 5×10^6 ohms. The floor should not allow buildup of electrical charge beyond 100 volts due to antistatic effect.
21.3	Flooring Resistant	Flooring shall be mechanically shock proof, scratch proof, flame retardant and anti-microbial. PU tiles should be used and joints should be welded by special PU thermal welding units using PU welding bars of same color. The sheets should be highly durable with resistance to shock and indentation. It should be scratchproof & 100% recyclable. The conductive material should be uniformly impregnated as grains, permanently conductive with carbon backing. It should be inert to body fluids, chemicals and disinfectants
21.4	Installation Methods	Flooring should be done by skilled workers of accredited agencies authorized by the supplier of PU sheets. The corners should not be terminated sharply and concealed cove- former (aluminum) should be used to overlap the wall panel to a height of approx.25mm and sealed perfectly and uniformly. Self-leveling compounds should be used. The conductive copper grid laid underneath the PU sheet should be supported by liquid epoxy compounds allowed to set as a uniform and level surface. The copper strips to be made visible by grinding and no copper strip should project more than 0.5mm above level surface to avoid damage to the PU sheet. One earthing lead should be brought out from every 150sq.ft area and attaching it to the main earthing strip/ground. Copper grounding strips (0.05 mm thick, 50 mm width) should be laid flat on the floor in the conductive adhesive and connected to copper strip of grounding. The connection from copper grid should be brought out uniformly at places to form equipotential grid.
21.5	Flooring Standards	ISO 1058 (EN 649), ISO 10581, CE, EN 14041, DIN EN 846 Part C, DIN 51130 EN 13893, EN 684.

22	AUTOMATIC HERMATIC SEALED SLIDING DOOR:	
22.1	Specifications	Supply & Installation of Fully Automatic hermetically sealed Sliding Doors with facility to operate manual operating (1500mm wide 2100mm height), equipped with Microprocessor based Electronic Control Unit for Door, with sensors for automatic door open-closing, controlling the movement with motor, having a track system wherein the door blade is guided with approximately 6mm deep indentations at the closed position. It equipped with Having a special inside & outside Stainless Steel lever handle that lifts out the door blade from its hermetic closing position, thus allowing even very heavy doors to be opened effortlessly, manually, Encased within an extruded anodized aluminum profile frame all around the door blade with solid high pressure laminate on both sides with door blade to have a special 3-tier specially designed 3 side heavy duty replaceable EPDM gasket, for the hermetic sealing on the wall frame. The bottom sealing should be with a 2-tier heavy duty EPDM gasket to flush with the finished floor. The door automation / door can be controlled/operated using either push-button switch, Kick switch Or Sensor (touch less – infra-red) switches OR all in combination, The Hermetically sealed sliding door will be equipped with all necessary accessories etc. complete with glass vision window of 300mm x300mm with all necessary accessories etc.
23	2-BAY SCRUB SINK	The unit should be made of 304 grades high-quality stainless-steel square tubes and the entire body should be out of high-quality stainless steel of 16 & 18 Gauge with satin polish finish. The unit should have a floor mount design with pedestal base. Tailor made to suit the site available. The unit should be compatible with all the regular and standard plumbing. The unit should have irrigation facility which allows washing of instruments, tubes, endoscopes etc.
23.1	Features	The body should be designed to eliminate backsplash, overflow and stagnation. The unit should have an option of manual actuated water supply by or foot operated taps. Soap operation should have hand pump as well as hand free controls. The unit should have jet irrigation facility which allows washing of instruments, tubes, endoscopes etc.

23.2	Specifications	2 bay tap with sensor operated & timer.
23.3	Standard & Certification	ISO & CE.
24	EMERGENCY DRUG TROLLY	SS304 construction
24.1	Features	CRCA tubular framework. • 12 no's-colored bins. • SS I.V. Rod and Cardiac massage board. • Five no's CRCA sheet drawers. • Two I.V. bottle storage trays. • SS Handle. Oxygen cage attachment
24.2	Specification	Overall approx. size: 990mm L X 490mm D X 1600mm H. Trolley mounted on four non-rusting 125 mm dia. Polyurethane Wheels 2 with brakes and 2 without brakes. • 8 tank powder coating processed pollution control certified.
24.3	Certification	• ISO 13485:2003, CE certified
25	DRESSING TROLLY WITH BOWL & BUCKET	SS 304 construction with easy moving provision
25.1	Features	Approx. 25mm- dia SS tubular framework • Two SS shelves with railing on top • Trolley mounted on 100mm – dia, non-rusting twin roller castor, SS bowl 360mm-dia • SS bucket 300mm-dia
25.2	Specification	Overall approx. size 1080mm L X 490mm W x 840mm H
25.3	Certification	ISO 13485:2003, CE certified
26	MAYO'S TROLLY	Double bar SS with SS 304 construction. SS 304G rectangular & square tube frame. Trolley mounted on 50 mm-dia wheels.
26.1	Specification	Overall approx. size: 760 mm L x 570 mm D x 850 to 1300 mm
26.2	Certification	ISO13485:2003, CE Certified.

27	EMERGENCY RECOVERY TROLLY- HYDRAULIC	• X-Ray permeable two section top with pushing handle covered with PVC grip • Sliding X-Ray cassette holder tray • Backrest adjustment on ratchet
27.1	Feature	Height adjustment by imported hydraulically operated type linear actuator pump foot operated actuation • Trendelenburg and reverse Trendelenburg by gas spring mechanism • Four 125mm-dia, non-rusting body twin roller castor wheel, two with brake • Two IV rod location • S.S. Swing away side safety railings • Oxygen cylinder cage • Corner Buffers • Suitable Rexene covered mattress
27.2	Specification	Overall approximate dimension 2065mm Lx 730mm W • Height adjustment – Min 670mm to Max 980mm • Removable stretcher size 1975mm Lx 595mm W
27.3	Certification	ISO 13485:2003 ,CE certified
28	REUSABLE CAPACITIVE COUPLING CURRENT QUALITY MONITORING ELECTRODE	1- Reusable Capacitive coupling current quality monitoring electrode made of viscoelastic polymer. 2- Should have Current limiting nature & hence eliminate Patient pad site burns 3- Should be based on Capacitive coupling principle 4- Should made of akton polymer 5- Can be used for all patient's weight >350 grams 6- Should be Radiolucent & latex free, no adhesive related irritation to patient skin. 7- Should be US FDA approved 8- Should be compatible to any Electrosurgical generator

		9- Size: 36" L x 20" W x 1/8" thickness
29	ELECTRO SURGICAL CAUTERY MACHINE	1. Unit should have microprocessor-controlled tissue feedback technology. 2. Unit should have Combo Generator Technology having conventional ESU, and Saline Plasma Bipolar system. 3. It should feature a touchscreen display of 7 inches or larger, clearly indicating the true power on the screen. 4. Self-illuminated accessory socket with auto selection during setting of the generator & blinking of light to indicate activation in selected accessories. 5. It should have separate and isolated sockets for the Monopolar, Bipolar and Saline resection. 6. It should complete self-Diagnosis during power on and should show an error code with its solution if any fault is detected. 7. It should accept dual-area (Disposable) and single-area (Reusable) patient return electrodes. Should give Green Indication if dual area patient plate applied to patient & Red indication with alarm tone if the patient plate is not applied. 8. It should have at least 100 user programs for different surgical procedures. 9. Unit should have a remote power setting facility from the sterile field with a conventional Hand switching Pencil. 10. Unit should have pure sinusoidal output waveform in HF power output in cut and bipolar modes. 11. Operating Frequency of the unit should be between the 300kHz to 500kHz, it should not be more or less than this range 12. Unit should be useful for underwater procedures in monopolar as well as saline resection. 13. It should have RANDOMIZED spray coagulation for larger area coverage. 14. Unit should have Seven different modes for Cutting with a max output of 400 Watt 15. Unit should have Seven different modes for Coagulation with max output 200Watt. 16. Unit should have Five Bipolar modes with a max output of 120 watts. 17. Unit should have Auto Bipolar with delay time adjustment. 18. It should have an Alarm facility after the completion of bipolar coagulation. 19. Bipolar Micro mode, power range from 0.1 to 10 watts is adjustable in 0.1watt step. 20. Power Should change from 1 to 40 by step of 1W, 40 to 100 by step of 5W & 100 to max power by step of 10 W for fast

	setting of the generator. 21. Unit should have Three Saline Plasma Bipolar Cut mode with 300Watt and Three Saline plasma Bipolar Coag with max output 200Watt. 22. Unit should suitable to do TURP in Saline with Monopolar TURP Set with Isolated Bipolar Sheath. 23. Unit should give an alarm in case of Saline Plasma Bipolar cable is broken or activated in non-saline medium activation. 24. Unit should have tissue feedback, and pulsed interval-controlled ENDO CUT function. 25. Unit should have Time out function to avoid the prolonged activation of HF output in monopolar. 26. Unit should be supplied with Double Paddle footswitch with toggle function to change the usability between the monopolar, bipolar, without going back to the generator. 27. Unit must have European CE with 4 digits notified body certified and ISO 9001:2015 and ISO 13485:2016 these certificates have to submit with a technical sheet. 28. General Safety Standards: IEC 60601-1-1, IEC 60601-2-2 and EMI/EMC Compatibility Standard: IEC 60601-1-2 for Electrosurgical Generator. 29. It should be supplied with the following accessories: - • Dual Area Silicon Patient return electrode Reusable..... 1No. • Cable for return electrode.....1No. • Disposable patient return electrode 1No. • Hand switching pencil Reusable 1No. • Foot switching pencil.....1No. • Bipolar forceps.....1No. • Cable for bipolar forceps.....1No. • Monopolar Foot Switch Toggle paddle) 1No. • Universal adaptor 1No. • Set of electrodes 1No. • Luer Lock Adaptor with RF connection.....1No. • Cord for Endoscopy.....1No. • Bipolar Loop, Cutting, Single
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		Stem.....2Nos.
30	SMOKE EVACUATOR	The Smoke Evacuator should evacuate, and filter surgical smoke plume and aerosols created in any surgical procedure by an active surgical energy device. • The Smoke Evacuator should simultaneously activate with all Surgical Energy Devices Ultrasonic, Advance Bipolar, Bipolar & Monopolar. • Smoke Evacuator filter should be four stage ULPA grade to captures particulates and micro-organisms from .1 to .2 microns at an efficiency of 99.999%, should able to absorb odors and toxic gases produced in surgery. • Smoke Evacuator should have five different run time setting for suction of residual smoke in different surgical procedures. • System should offer 5 different suction speed for Lap & Open Surgeries. • Filter Life Should be > 34 Hours with filter life indicator. • Suction Speed should be 5 Lt / Minuit - 41 Lt / Minuit for Lap procedures to maintain Pneumoperitoneum, Open Procedures suction speed should be > 70 Lt / Minuit. • The smoke evacuation system should comply with IEC60601.1 electrical specifications & should have Class I protection against electrical shock (UL60601-1, Clause 5.1) • System should comply with electromagnetic emission CISPR11. • Should be US FDA approved. • Technical Specifications: WEIGHT: Less than 30 lbs OPERATING ENV. Temp.: 5o – 55o C Range of operating environment. POWER REQUIREMENTS: 220/240 VAC Frequency, auto sensed: 50/60 Hz Duty Cycle- Continuous

		Dimensions LWH- 16 X 15 X 7.4 in Vacuum Pressure - 4.95 psi The unit should comprise of following instrument. 1. RF sensor for Simultaneous activation with Monopolar 2. Four Stage ULPA filter 3. Fluid trap 4. Open surgery smoke evacuator pencil with PTFE coated tip (reduce smoke generation) & telescopic length of device allows surgeon to adjust the pencil by a full of 6 inches 5. Laparoscopic tubing 6. Connecting Cable for simultaneous activation with Ultrasonic, Advance Bipolar, Bipolar & Monopolar Devices
31	SINGLE GENERATOR FOR ULTRASONIC CUTTING AND COAGULATION ALONG WITH RF ENERGY	Single Generator Ultrasonic Cutting Coagulation Device with 7mm Vessel Seal device with RF Energy Operational Requirements: • The system should be used for Laparoscopic & open Procedures. The system should have open and laparoscopic probes for both ultrasonic & RF Energy vessel sealing system. Technical Specifications: • Universal connector to connect Ultrasonic energy and Advanced RF energy instruments. • Automatic instrument recognition. • USFDA and CE approved. • Touch screen display for fast and setup, operation and on-screen diagnostics. • System should have the ability for software updates via USB memory stick. • Single generator that provides Ultrasonic energy at 55.5kHz and Advanced RF energy technology for soft tissue dissection and vessel sealing • Hand-piece with transducer & silicon cable • Capability of being operated by hand control or foot switch. • Single foot-switch attachment for operating ultrasonic energy or advanced RF energy instruments • System should have on screen warning display system for generator overheating, generator software upgrade, hand piece errors and instrument errors. • Stand-by mode for better safety • System diagnostics and troubleshooting guide

	• Warning system for malfunctioning cable, probe etc (Audible/ Visual) • Should be capable of sealing vessels at least 7mm in diameter • Should be compatible with coagulation shears for laparoscopic surgery with integrated transducer – 5mm diameter 30 & 45 cm long, capable of sealing of 7mm with pure ultrasonic energy • Should have different audible tone settings for different modes • System should have at least 3-5 power settings levels with power level display for ultrasonic energy Instruments • Should be compatible with articulating RF Energy instruments with articulation of 55 deg either side and total of 110 degree of articulation with 360-degree shaft rotation and can simultaneously seal and transect vessel 7mm, large tissue pedicles and vascular bundles with system feedback • Should have very minimal lateral thermal spread not more than 1 mm • RF energy instruments compatible with generator should have controlled gap mechanism for uniform compression across the instrument jaw for better sealing and transection of vessels and tissue bundles of 7mm simultaneously. • System should have Advanced RF Energy hand instruments with a unique electrode configuration to minimize the lateral thermal spread. • Should provide temperature-controlled energy delivery which should maintain tissue temperature approximately at 100 deg C and hand instruments that provide tissue/vessel seal strength to withstand burst pressure of 7 times the systolic pressure • Should be compatible with pure ultrasonic energy instruments which can simultaneously seal and transect vessels of 7mm, large pedicles and vascular bundles with ultrasonic energy only with system feedback B77 • System should conform to the following international standards EN(IEC), 60601-1, EN (TEC), 60601-1-2, EN (IEC), 60601-2-2, EN(IEC) 60601-1-8 • System should provide Class 1 protection against electric shock System Configuration Accessories, spares and consumables: Accessories: • Foot-switch with cable. • Adapter for ultrasonic instruments. • Cart for Generator • Ultrasonic Hand piece (Transducer)– compatible with open and lap hand instruments • Disposable coagulation shears for open surgery – 9cm & 17cm long • Disposable coagulation shears for laparoscopic surgery – 5mm diameter 36 cm long, capable of sealing vessel of 7mm with pure ultrasonic energy • Disposable coagulation shears for laparoscopic surgery with integrated transducer – 5mm diameter 36 cm long, capable of
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		sealing of 7mm with pure ultrasonic energy • Advanced bipolar tissue sealer with 5mm shaft diameter, 24 mm Jaw length, 21.8 mm cut length and 13.4 mm Jaw aperture designed for use in laparoscopic surgical procedures with curved and tapered tip and uses an advanced algorithm for intelligent and efficient energy delivery with shat length 25 cm. Device to have intuitive design with separate Seal and Cut button and 360 degree continuous shaft rotation • Advanced bipolar tissue sealer with 5mm shaft diameter, 24 mm Jaw length, 21.8 mm cut length and 13.4 mm Jaw aperture designed for use in laparoscopic surgical procedures with curved and tapered tip and uses an advanced algorithm for intelligent and efficient energy delivery with shat length 37 cm. Device to have intuitive design with separate Seal and Cut button and 360 degree continuous shaft rotation
32	ANESTHESIA WORKSTATION	1. General Requirement a) Compact and modular, three gas Anaesthesia workstation with an integrated ventilator for adult to infants and integrated airway monitor for airway pressures and volume. b) The machine should be suitable for low and minimal flow anesthesia application with compliance compensation of breathing ckt, fresh gas flow compensation/ decoupling. c) The machine should have 3 drawers d) The anaesthesia machine, inbuilt ventilator, 1 vaporiser for isoflurane/sevoflurane should be manufactured by same company to maintain uniformity of part and efficient after sale service. e) Dual Cascade type flow meter tubes for Oxygen & N2O.Range 20 ml / min to 10 Lit/min. Calibrated in multiple scales. Single tube for air 100 ml to 14 L/ min. f) The system should have upto 2 Hrs. battery backup g) System should confirm to European CE and EN 60601-2-13 (Requirement for safety and essential performance of anaesthesia system) 2. Gas delivery system a) Should have pin index yokes for Oxygen & Nitrous Oxide besides separate connection for Central gas supply for Oxygen,

	Nitrous Oxide and Air. b) The machine should have pressure gauges for cylinders & central supply lines mounted on front of Anaesthesia machine for better visibility. The gas connections should be non-interchangeable. c) The system should be suitable to use at minimal flow upto 700ml fresh gas setting. d) Automatic cutoff of N₂O by Oxygen pressure failure. e) Hypoxic guard for linear regulation of minimum oxygen concentration at 23% volume f) To ensure patient safety minimum Oxygen flow of 200 ml at low fresh gas flow settings even below total 500 ml fresh gas flow. g) Audible visual oxygen failure alarm. h) Emergency Oxygen flush at 30 – 70 L/min bypassing the vaporizer. i) In the event of complete power loss and battery failure it shall be possible to manually ventilate and deliver anaesthetic agent. 4. Breathing System a) Should have fresh gas de-coupled semi closed circle absorber system. b) Should have adjustable pressure relief valve from 5 to 75 mbar. c) Should have change over from Spontaneous to Bag ventilation with single step. d) The system should have leak and compliance test (including patient hoses upto the Y piece). e) Should have compact breathing system with approx 1.7 Ltr. Volume capacity. f) Should have an external fresh gas outlet for connecting
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	Magill or Bain's circuit g) The device should have port for anaesthesia gas scavenging system. 7. Anaesthesia Ventilator a) The system should have inbuilt ventilator with electronically controlled and electrically driven technology. Should not require driving gas. b) Should not require changing of bellows for adult & infants. c) Should have colour screen size of minimum 6". d) Modes: Manual/Spont, Volume controlled and Pressure controlled e) The same ventilator should be capable to be upgrade to SIMVPS or pressure support. f) Tidal Volume : 20 ~ 1400 ml g) PEEP : 0 ~ 20 mbar h) Breathing Frequency : 4 to 60 BPM i) I:E Ratio : 4:1 to 1:4 j) Inspiratory pause : 0 – 50% of Ti k) Should have Desflurane compensation. l) Should be able to ventilate with atmospheric air, in case of total gas supply failure. 8. Integrated Airway monitoring and display of following parameters: a) Expiratory Tidal Volume b) Expiratory Minute volume c) PEEP, Peak & Mean and Plaetau airway pressure d) Frequency e) Waveform display for Airway pressure.
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		9. Adjustable high/low alarm limits with audio and visual alarms for the following: - Minute volume, - Airway pressure (incl stenosis and disconnect), - Insp oxygen concentration, - Audio power supply fail alarm, - Fail to cycle warning. 10. Machine should have RS 232 connectivity port Specifications for Multipara monitor - Should be suitable for adult, paediatric neonatal patients monitoring. - Should monitor ECG, Respiration, NIBP, SpO₂, Dual Temperature, Three IBP as standard - Should have ST analysis, Arrhythmia detection, pacer spike detection, Drug Dose Calculation and OxyCRG as standard in every monitor - Should have integrated 12" TFT-LCD colour touch screen display (resolution min 1024*768) with minimum 8 channels of waveforms. - Defib and ESU protection should be present - Should have monitoring, surgery and diagnostic mode of monitoring - Should have Advance Arrhythmia monitoring for Asystole, Vfib/Vtac, VT>2, Couplet, Bigeminy, Trigeminy, R on T, PVC, Tachy, Brady, Missed Beats, IRR, PNC, Vbrady. - Monitor access should be with Touch screen, rotary knob and fast access key for quick function. 120 hrs of trend and 60 events with waveform as standard in all monitors
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	10. Color or position of waveforms or parameters should be able to be adjusted based on users preferences. Big font on screen format should be present. 11. Nurse call, VGA output port should be standard in every monitor. 12. Monitor should have USB port for software upgrade 13. Should have inbuilt three channel recorder. 14. Should have min of 5hours of battery backup as standard in every monitor 15. Upgradeable to export the Vitals as HL7 messages to the HIS 16. Monitor should be ready for interface with select model of equipment like Anaesthesia machine/ventilators for displaying ventilation parameters, waveforms & loops. 17. Connectivity to the central station both via wired and wireless network. 18. Should be European CE complying to European Directive 93/42/EEC for both Monitor and software to control physiologic monitoring systems. 19. Bed to Bed monitoring as standard 20. Upgradable to Cardiac Output Monitoring 21. Anti left lock facility should be possible for better hospital asset management Should have following parameters ECG ☐ Monitor should have capability for display upto 7Lead. ☐ ST Analysis ☐ Waveform Freeze option with review of 120 sec ☐ Range: 15 to 350bpm RESPIRATION ☐ Through impedance pneumography method or EtCO2
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		SpO2 ☐ Should provide value for arterial oxygen saturation as well as plethysmographic pulse waveform NIBP ☐ By oscillometric principle of measurement. ☐ Should display Systolic, diastolic, mean pressure in large easy to read display ☐ Range: 10 to 270mmHg EtCO2 Monitor should have Mainstream EtCO2 Monitoring Dual Temperature – core & skin. Range: 0 to 50 Deg C Three IBP – Should include Starter kit and simultaneous monitoring of three temp and three IBP should be possible. Range: -50 to 300mmHg Following upgrades should be offered as options – (Quote unit prices in price bid) 1. Slave display 17” with connection cable etc. 2. Wall Mounts or Anaesthesia mounts as applicable depending on department to be used Scope of supply must include: a. 3 gas Anaesthesia machines b. Two Vaporisers Sevo & ISO c. Trolley with 3 drawers d. Writing surface e. Pin Index yokes for O2 & N2O f. Pipeline connections for all three gases
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		g. Anaesthesia ventilator h. Patient monitor i. Semiclosed breathing system j. Adult & Paediatric autoclavable patient tubings k. Anaesthetic mask size – Adult & child l. Central gas supply hoses (Color coded) m. Monitor basic unit with ECG, Resp, SpO2, Dual Temp, NIBP, Three IBP, inbuilt battery n. 5 lead ECG Cable – 1 no each per monitor o. ECG disposable electrodes – 30 nos per monitor p. SpO2 finger sensor – 1 no per monitor q. Skin temperature probe – 1 no per monitor r. NIBP Hose - 1no per monitor s. Adult & Paediatric cuff – 1no each per monitor t. Should be supplied with intermediate IBP cable– 2 no per monitor u. Disposable transducers – 10nos v. Instruction for use
	OTHER WORK	AHU Protection shed Fencing compound, internal civil work as per Approved drawing.

Signature

Date

Place

Annexure XI: Compliance sheet for Technical Proposal

Compliance Sheet for all Equipment

Sr.no	Technical specifications /composition of tender enquiry	Compliance on each parameter with detailed substantiation how the offered product meets the requirement. (Do not write simply yes or complied or as per licenses mentioned in the bid. If written then bid will be rejected)	Brand name(only For importer)	Medical devices/ import license	MSME/ SSE	Remarks, If any
A	B	C	D	E	F	G

Signature

Date

Place

Appendix XII: Place of delivery

Place Of Delivery	DH Thane
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Signature

Date

Place

Annexure-XIII: Self Declaration Affidavit (on Rs.500/- Stamp Paper)

I age address
..... (Authorized signatory to sign the contract), hereby submit, vide this affidavit in truth, that I am the owner of the contracting firm / authorized signatory and I am submitting the documents in envelope no.1 for the purpose of scrutiny of the contract. I hereby agree to the conditions mentioned below: -

- a. I am liable for action under Indian Penal Code for submission of any false / fraudulent paper / information submitted in envelope no.1.
- b. I am liable for action under Indian Penal Code if during contract period and defect liability period, any false information, false bill of purchases supporting proof of purchase, proof of testing submitted by my staff, subletting company or by myself, I will be liable for action under Indian Penal Code.
- c. I am liable for action under Indian Penal Code if any paper is found false / fraudulent during contract period and even after the completion of contract (finalisation of final bill).

(Signature of Bidder)

(Seal of company)

Annexure-XIV: Manufacturer's Authorization Form

(Manufacturer's or Producer's Letter head)

To,
The Chief Executive Officer,
Maharashtra Medical Goods Procurement Authority,
1st Floor, Arogya Bhawan,
P.D' Mello Road, Mumbai- 400001.

WHEREAS (*Name of Manufacturer or producer*) (hereinafter, "we" "us") who is established and reputable manufacturer's or producers of (*name and/or description of Goods requiring this authorization*) having production facilities at (*Insert address of the factory*) do hereby authorize (name and address of Bidder) (herein after, the" bidder") to submit a bid, and sign the Contract with you against Request For Proposal ref no. (*Title and reference of RFP*) including the above goods produced by us.

We hereby extend our full guarantee and warranty for the above specified Goods described above in accordance with the terms and conditions of this Request for Proposal and Contract to be executed between the Bidder and Authority.

For and on behalf of the Manufacturer or Producer

Signed: _____

Date: _____

In the capacity of (*Title, position, or other appropriate designation*) and duly authorized to issue Authorization Form on behalf of (*Name of Manufacturer or producer*)

Note:

This Letter /form should be signed by a person competent and having the power of attorney/authority to legally bind the manufacturer. This should be included by the bidder in it's bid.

This Letter /form is required to be provided by Importer and Authorized Distributor.

Annexure-XV: Format for EMD Bank Guarantee

To be submitted in original at MMGPA office

B.G. No. Dated:

1. In consideration of you, Maharashtra Medical Goods Procurement Authority, having its office at 1st Floor, Arogya Bhawan St. George's Hospital Compound, Near C.S.M.T. Railway Station, Mumbai - 400 001 Maharashtra (hereinafter referred to as the "Authority", which expression shall unless it be repugnant to the subject or context thereof include its, successors and assigns) having agreed to receive the bid of(mention nature of entity and acts under which it is registered) and having its registered office at (hereinafter referred to as the "Bidder" which expression shall unless it be repugnant to the subject or context thereof include its/their executors, administrators, successors and assigns), for the **Supply, Installation and Commissioning of Equipment for District Hospital on turnkey Basis Group A** (hereinafter referred to as "the Project") pursuant to the RFP Document dated issued in respect of the Project and other related documents (hereinafter collectively referred to as "Bidding Documents"), we (Name of the Bank) having our registered office at and one of its branches at (Hereinafter referred to as the "Bank"), at the request of the Bidder, do hereby irrevocably, unconditionally and without reservation guarantee the due and faithful fulfilment and compliance of the terms and conditions of the Bidding Documents (including the RFP Document) by the said Bidder and unconditionally and irrevocably undertake to pay forthwith to the Authority an amount of Rs. (Rupees only) as bid security (hereinafter referred to as the "Guarantee") as our primary obligation without any demur, reservation, recourse, contest or protest and without reference to the Bidder if the Bidder shall fail to fulfil or comply with all or any of the terms and conditions contained in the said Bidding Documents.
2. Any such written demand made by the Authority stating that the Bidder is in default of the due and faithful fulfilment and compliance with the terms and conditions contained in the Bidding Documents shall be final, conclusive and binding on the Bank.
3. We, the Bank, do hereby unconditionally undertake to pay the amounts due and payable under this Guarantee without any demur, reservation, recourse,

contest or protest and without any reference to the Bidder or any other person and irrespective of whether the claim of the Authority is disputed by the Bidder or not, merely on the first demand from the Authority stating that the amount claimed is due to the Authority by reason of failure of the Bidder to fulfil and comply with the terms and conditions contained in the Bidding Documents including failure of the said Bidder to keep its Bid open during the Bid validity period as set forth in the said Bidding Documents for any reason whatsoever. Any such demand made on the Bank shall be conclusive as regards amount due and payable by the Bank under this Guarantee. However, our liability under this Guarantee shall be restricted to an amount not exceeding Rs. (Rupees only).

4. This Guarantee shall be irrevocable and remain in full force for a period of 240 (two hundred and forty) days from the Bid Due Date inclusive of a claim period of 60 (sixty) days or for such extended period as may be mutually agreed between the Authority and the Bidder, and agreed to by the Bank, and shall continue to be enforceable till all amounts under this Guarantee have been paid.
5. We, the Bank, further agree that the Authority shall be the sole judge to decide as to whether the Bidder is in default of due and faithful fulfilment and compliance with the terms and conditions contained in the Bidding Documents including, *inter alia*, the failure of the Bidder to keep its Bid open during the Bid validity period set forth in the said Bidding Documents, and the decision of the Authority that the Bidder is in default as aforesaid shall be final and binding on us, notwithstanding any differences between the Authority and the Bidder or any dispute pending before any Court, Tribunal, Arbitrator or any other authority.
6. The Guarantee shall not be affected by any change in the constitution or winding up of the Bidder or the Bank or any absorption, merger or amalgamation of the Bidder or the Bank with any other person.
7. In order to give full effect to this Guarantee, the Authority shall be entitled to treat the Bank as the principal debtor. The Authority shall have the fullest liberty without affecting in any way the liability of the Bank under this Guarantee from time to time to vary any of the terms and conditions contained in the said Bidding Documents or to extend time for submission of the Bids or the Bid validity period or the period for conveying acceptance of Letter of Award by the Bidder or the period for

fulfilment and compliance with all or any of the terms and conditions contained in the said Bidding Documents by the said Bidder or to postpone for any time and from time to time any of the powers exercisable by it against the said Bidder and either to enforce or forbear from enforcing any of the terms and conditions contained in the said Bidding Documents or the securities available to the Authority, and the Bank shall not be released from its liability under these presents by any exercise by the Authority of the liberty with reference to the matters aforesaid or by reason of time being given to the said Bidder or any other forbearance, act or omission on the part of the Authority or any indulgence by the Authority to the said Bidder or by any change in the constitution of the Authority or its absorption, merger or amalgamation with any other person or any other matter or thing whatsoever which under the law relating to sureties would but for this provision have the effect of releasing the Bank from its such liability.

8. Any notice by way of request, demand or otherwise hereunder shall be sufficiently given or made if addressed to the Bank and sent by courier or by registered mail to the Bank at the address set forth herein.
9. We undertake to make the payment on receipt of your notice of claim on us addressed to [name of Bank along with branch address] and delivered at our above branch which shall be deemed to have been duly authorised to receive the said notice of claim.
10. It shall not be necessary for the Authority to proceed against the said Bidder before proceeding against the Bank and the guarantee herein contained shall be enforceable against the Bank, notwithstanding any other security which the Authority may have obtained from the said Bidder or any other person and which shall, at the time when proceedings are taken against the Bank hereunder, be outstanding or unrealised.
11. We, the Bank, further undertake not to revoke this Guarantee during its currency except with the previous express consent of the Authority in writing.
12. The Bank declares that it has power to issue this Guarantee and discharge the obligations contemplated herein, the undersigned is duly authorised and has full power to execute this Guarantee for and on behalf of the Bank.
13. For the avoidance of doubt, the Bank's liability under this Guarantee shall be restricted to Rs. (Rupees only). The Bank shall be liable to pay the said amount or any part thereof only if the Authority serves a written claim on the Bank in accordance with

paragraph 9 hereof, on or before [..... (Indicate date falling 240 days after the Bid Due Date)].

Signed and delivered by Bank

By the hand of Mr/Ms, its and authorised official.

(Signature of the Authorised
Signatory)

(Official Seal)

MMGPA TENDER

Annexure-XVI: Format for Performance Security Bank Guarantee

To,
The Chief Executive Officer
Maharashtra Medical Goods Procurement Authority
1st Floor, Arogya Bhawan
P. D'Mello Road, Mumbai- 400001

Dear Sirs.

Whereas you intent to enter into a contract, as per your Letter of Intent, Reference No. _____ dated _____ (Hereinafter referred to as "the contract") with M/s _____ as vendor for the supply of _____ defined in contracts schedule, (hereinafter referred to as "the goods / services") and whereas the vendor has undertaken to produce a performance cum warranty bond for amount of Rs _____ being equal to 3% of the total contract value of the goods / services to be delivered as specified contract No _____ dated _____ referred to as "contract to secure its obligations to the beneficiary with respect to the goods specified in the invoice.

1. We _____ (Name of the Bank), hereby expressly, irrevocably, and unreservedly undertake and guarantee as principal obligators on behalf of the Seller that in the event that the beneficiary submits a written demand to us stating that the Seller has not performed according to the terms and conditions of the contract, we will pay you on demand and without demur any sum up to a maximum amount of (3% of the contract value). Any claims must bear the confirmation of your bankers that the signatures thereon are authentic. Your written demand shall be conclusive evidence to us that such written demand. For the avoidance of doubt any documents received by way of facsimile or similar electronic means is/are not acceptable for any purpose(s) under this guarantee.

2. We shall not be discharged or released from this undertaking and guarantee by any arrangements, variations made between beneficiary and the seller or any forbearance whether as to payment, time performance or otherwise.

3. In no case shall the amount of the guarantee be increased.

4. Unless a demand under this guarantee is received by us in writing on or before the expiry dates (unless this guarantee is extended by the seller), all your rights under this guarantee shall be forfeited and we shall be discharged from the liabilities hereunder.

5. This guarantee shall be a continuing guarantee (which means guarantee will also be valid if the bank is in under liquidation or bankruptcy) and shall not be discharged by any change in the constitution of the bank or in the constitution of the Seller.

6. Please return this letter of guarantee immediately after our liability thereafter has ceased to be valid.

7. Our liability under this guarantee will cease to be valid even if the guarantee deed is not returned to us.

8. This guarantee is personal to the beneficiary and not assignable to a third party without our prior written consent.

9. This guarantee shall be governed by Indian Law. This guarantee is valid until (Insert date in dd/mm/yyyy)

Signature and Seal of Guarantors _____

Date _____

Address: _____

(Signature of Bidder)

(Seal of company)

MMGPA TENDER

Appendix II: Commercial Proposal Templates

II. General

The Bidders are expected to respond to the RFP using the forms given in this section for Commercial Proposal (Envelop - 2).

Annexure XVII: Letter comprising the Commercial Bid

Annexure XVII: PART I

Letter comprising the Commercial Bid

PRICE BID FOR THE CURRENT TENDER) *(To be kept in Envelope No. 2)*

Item Description	Unit	Qty	Ex-factory cost per unit (In Rs.)	GST applicable for Govt. Supply (In Rs.)	Other incidental charges (Please specify) (In Rs.)	Total landed cost per unit (4+5+6) (In Rs.)	Total Cost Rs. (3x7)
1	2	3	4	5	6	7	8
Advance Cath Lab	Nos.	2					
Cardiac Operation Theatre							
ICU with Equipment and turnkey basis							
Advance Neurological Operation Theatre with microscope and Equipment on Turnkey Basis	Nos.	1					
Gynac OT-2	Nos.	2					

Total tender price (in words)

The price should be quoted only in Indian currency Note:

In case of discrepancy between unit price and total price, the unit price shall prevail. Only total landed cost per unit considered for rate comparison (column No.7)

L1 will be decided based on price entered in <https://mahatenders.gov.in> site.

Signature of the
Tenderer

Name

Designation

Business address

To be uploaded in the form of Excel

Annexure XVII: PART II

(Statement showing comparative prices offered by the tenderer in other tenders of the same product)

**ONLY FOR ADDITIONAL INFORMATION AS TO RATES OFFERD BY THE
TENDERER IN VARIOUS OTHER TENDERS.**

Please mention quoted rates of above item of different years for All equipments

Sr. No.	Financial Year	Unit	Unit Price offered in other Bids/ Tenders/Rate contracts (in Rs.)
1.	2023-24		
2.	2024-25		
3.	2025-26		

Additional rows for information of other years can be inserted.

Signature

Seal

Annexure-XVIII Checklist

Make and Model with country of origin

Sr. No.	Equipment Name	Make	Model	Country of Origin
1	Advance Cath Lab (Capital Goods)			
	Cardiac Operation Theatre (Capital Goods)			
	ICU with Equipment and turnkey basis (Capital Goods)			
2	Advance Neurological Operation Theatre with microscope and Equipment on Turnkey Basis (Capital Goods)			
3	Gynac OT-2 (Capital Goods)			

2.Documents Checklist

Sr. No.	Documents	Submitted	Not Submitted
1	Tender Fees		
2	EMD		
3	Legal Entity Document		
4	Manufacturer/Importer/Authorized Distributor		
5	Manufacturer's Authorization (Annexure XIV)		
6	Manufacturing License		
7	DPIIT (Foreign Border)		
8	Product used in country of origin		
9	Import Export Certificate for imported equipments		
10	Affidavit of import for last three years imported equipments		
11	Letter comprising Technical Bid (Annexure 1)		
12	Pre-qualification compliance (Annexure II)		
13	Proforma for Production and sale Statement (Annexure III)		
14	Annual Turnover and positive net worth Certificate (Annexure IV)		
15	Supply orders in past 3 years (Govt/State/Pvt)		
16	Details of Manufacturing Unit (Annexure V)		
17	Production capacity		
18	Non-Blacklisting affidavit (Annexure VII)		
19	Mandate Form (Annexure VIII)		
20	Power of Attorney (Annexure IX)		
21	Technical Specifications (Annexure X)		
22	Technical Compliance (Annexure XI)		
23	Brochure / Product Literature		
24	Delivery Place Acknowledgement (Annexure XII)		
25	Self-Declaration Affidavit (Annexure XIII)		
26	Two Service Centres in Maharashtra		
27	GST Registration		

28	PAN		
29	MSME Certificate		
30	EM II for medium Enterprises		
31	BIS/CE/USFDA certificate		
32	CDSCO		
33	ISO 13485		
34	Installation Prerequisites		