Date: 08-01-2024

Tender (Ref: IISc-Med-2024-25/2)

GLOBAL TENDER ENQUIRY

To Whom It May Concern

This RFQ (Request for Quote) seeks proposals for the planning, supply, installation, testing, commissioning, and training of two distinct systems: a 3 Tesla MRI system for Radiology, designed for advanced diagnostic imaging with multi-nuclear spectroscopy and high channel capability, and an Intraoperative MRI system for the Operating Theatre (OT), focused on providing real-time imaging during surgeries. Each system is tailored to meet specific clinical requirements, ensuring optimal performance in their respective environments at IISc, Bangalore. Additionally, the package may include items from other vendors and related components, alongside the equipment from Original Equipment Manufacturers (OEMs) for the specified systems for IISc, Bangalore.

At IISc, the planned infrastructure encompasses a wide array of medical equipment to support advanced imaging capabilities essential for patient care, teaching, and research. The vendors are requested to factor this exposure's value into their quotes. Details of IISc can be gleaned from:

https://medicine.IISc.ac.in/

A. Procedure:

1. Vendors are required to submit a technical proposal and a commercial proposal in two separatesealed envelopes. Only vendors who meet the technical requirement will be considered for the commercial negotiation.
2. The deadline for submission of proposals is **January 30, 2025, Thursday, 5:30 pm Indian Standard Time.**
3. Bids in the sealed envelope should arrive at the office of Dean (A & F), Main building, Indian Institute of Science, Bangalore 560012, India, by the above deadline.
4. The technical proposal should contain a technical compliance table with 6 columns.
    a. The first column must list the technical requirements in the order that they are given in the technical requirement below in tender specifications.
    b. The second column should provide specifications of the equipment against the requirement (please provide quantitative responses wherever possible.)
    c. The third column should describe your compliance with a "Yes" or "No" only. Ensure that the entries in column 2 and column 3 are consistent.
    d. The fourth column should state the reasons/explanations/context for deviations, if any.
    e. The fifth column can contain additional remarks from the OEM. You can use this opportunity to highlight technical features and qualify the response of previous columns.
    f. The Sixth column should contain the datasheet & technical offer Page reference number.
5. Vendors are encouraged to highlight the advantages of their equipment over comparable equipment from the competitors.
6. In the commercial bid, please provide the itemized cost of the equipment and required accessories, etc.
7. Please provide itemized cost for any suggested/optional accessories/add-on items that may enhance the equipment usability, capability, accuracy or reliability. Vendors are encouraged to quote for as many add-ons as their product portfolio permits.
8. In the quote, you are requested to provide itemized cost for spares, accessories, consumables expected over 2 years of use.
9. Please indicate the warranty provided with the equipment.
10. Any questions or clarifications can be directed to:

Dean (A & F)
Main building, Indian Institute of Science,
Bangalore 560012
tenders@IISc.ac.in

B. Terms and Conditions

1. Only the Original Equipment Manufacturer or their authorized representatives across the globe shall participate in the bid.
2. The order will be placed only on the bidder who participated in the bid.
3. The decision of the purchase committee of IISc will be final.
4. The vendor is responsible for the planning, supply, installation, testing and commissioning of the equipment & the training of personnel of the installed equipment at the IISc.
5. The RFQ must include references to previous installations including the list of all customers where similar systems were installed in the past 5 years. Please provide the names and contact addresses of the referees so that the committee can contact them independently. Details of such systems with model numbers and users should be provided. The reference letters can be used to disqualify vendors with poor track records of service, build quality, system performance, or poor availability of spares.
6. The vendor should have qualified technical service personnel for the equipment based in India and must assure a response time of <2 hours after receiving a service request. The schedule for periodic preventive maintenance for the equipment and all the items related to OEMs should be provided.
7. The indenter reserves the right to withhold placement of the final order and to reject all or any of the quotations and to split up the requirements or relax any or all of the above conditions without assigning any reason.
8. Wherever requested in this specifications sheet, data must be supplied along with technical compliance documents. Technical bids without supporting data will be deemed as technically non-compliant.
9. Upon request, all guaranteed specifications will have to be demonstrated in an active installation. Failure to demonstrate any promised specifications will be deemed as technical non-compliance.
10. Printed literature and published papers to support compliance with the prescribed specifications may be provided duly authenticated by qualified personnel in the company.
11. Technical evaluation by the IISc may include a demonstration to verify the functionalities and capabilities of the equipment quoted. Any discrepancy between the promised and demonstrated specifications will be deemed technical non-compliance. If the need arises, the vendor must be ready to visit IISc for a techno commercial discussion physically.
12. The validity of commercial quotations should be at least 90 days from the last date for the submission of tender documents.
13. The quotations should be on FOR-IISc Bangalore basis.
14. **Payment terms:** LC will be opened with 70% payment on shipment of the documents and remaining 20% on installation, testing & commissioning and 10% on user satisfaction. Insurance coverage should be till the commissioning of equipment.
15. The functionalities and capabilities of the equipment to be provided as part of documentation. Any discrepancy in technical specification between what was committed during technical evaluation and demonstrated specification on ground will be deemed technical non-compliance. If the need arises, the vendor must be ready to visit IISc for a techno commercial discussion in person.

C. Other terms

1. Shipment and Delivery Terms

1.1 Partial Shipments

a. Partial shipments are allowed; however, transshipment is strictly prohibited.

1.2 Delivery Confirmation

a. Delivery shall only be made after receiving written confirmation from the IISc purchase team.

1.3 Consignee Details

a. The address of the consignee and the markings on the containers must be clearly stated as per the details provided by IISc.

1.4 Packing Slip and Documentation

a. A packing slip detailing each item and its quantity shall accompany every shipment.
b. The packing slip must be securely attached to the exterior of one of the containers in a visible manner.
c. The purchase order (PO) number must be clearly marked on all packing slips, invoices, and correspondence.

1.5 Missing Items and Substitutions

a. Any items that are not found upon delivery must be clearly noted on the packing slip, and the anticipated availability of such items shall be indicated.
b. Substitutions of items shall not be made without prior written authorization from IISc.

1.6 Packing of Fragile Equipment

a. Fragile equipment shall be packed in wooden boxes to prevent damage during transit.

1.7 Packing of Critical Components

a. Critical components must be packed using foam/bubble wrap and cartons, and securely stuffed within containers to prevent any damage during transit or handling at the site.

1.8 Protection during Transit

a. The Seller shall ensure that all items are securely protected and packed in accordance with best established practices to avoid damage under conditions such as multiple handling, transportation by ship/road, storage, and exposure to heat, moisture, rain, etc.

1.9 Seller's responsibility for damage

a. The Seller shall bear full responsibility for any breakage, damage, or pilferage (including during transit or handling within the hospital) resulting from faulty packing.

1.10 Marking and Packing Slip

a. All packages must be visibly marked with the purchase order (PO) number and name of the Buyer in bold letters.
b. Copies of the packing slip must also be placed inside each package.

2. Insurance and Freight

a. Cost of all Freight & Insurance is Included in thepurchase order value will be arranged by the supplier. The insurance should be from the vendor warehouse to the site till Installation & commissioning at IISc.

2.1 Seller Notification for Insurance

a. If IISc needs to arrange insurance, the Seller must notify promptly.

3. Warranty Terms

3.1 The equipment along with all the 3rd party items should carry a warrantyof 12 months from the date of successful commissioning**.**

3.2 The warranty shall commence from the submission of a duly filled “Medical Equipment Acceptance Sheet Checklist,” accompanied by all relevant documents, as per the specifications and requirements.

3.3 After-Sale Service

a. After-sales service will be provided by a service engineer trained by the principal company.
b. The credentials and certification of the service engineer shall be shared with IISc for approval.

3.4Preventive Maintenance and Calibration

a. Preventive maintenance and calibration shall be performed according to the recommendations of the Original Equipment Manufacturer (OEM).
b. Preventive maintenance and calibration shall include calibration for any major breakdowns and be conducted in accordance with local rules and regulations, as well as OEM recommendations.
c. Maintenance and calibration shall also be based on the equipment performance history, using calibrated equipment traceable to international or NABL standards, as required.

3.5 Responsibility for Malfunctions

a. The seller shall take full responsibility for any mishaps or malfunctions related to the ordered equipment caused by delayed periodic maintenance or calibration under warranty & subsequently in a comprehensive annual maintenance contract.

3.6 Maintenance and Calibration Costs

a. Preventive maintenance and calibration shall be executed free of cost during the warranty and Annual Maintenance Contract (AMC) period.
b. The seller shall clearly inform IISc about the list of consumables or maintenance kits that may incur additional costs (not covered under the maintenance contract) before the equipment is supplied.
c. All accessories, including computer systems, printers, laptops, and software versions, shall be covered free of charge under warranty, rental contracts, and subsequent maintenance agreements.

3.7 Annual Maintenance Contract (AMC) and Comprehensive AMC (CAMC)

The CAMC rate shall be quoted absolute value of the equipment cost per year till nine years post warranty period of equipment. Please refer the template for GENERAL TERMS AND CONDITIONS FOR COMPREHENSIVE/LABOUR MAINTENANCE CONTRACT(CMC/AMC).

3.8 No Additional Terms to be imposed

a. The seller shall not impose any additional terms on the buyer when an Annual Maintenance Contract (AMC) is established on a yearly basis.

b. All the terms mentioned in the tender and subsequent purchase order shall remain applicable without any modifications.

3.9 Warranty Terms during CAMC

a. The warranty terms, including those for preventive maintenance and calibration, shall remain valid and applicable throughout the duration of the CAMC, as per the terms outlined in the tender and subsequent purchase order.

3.10 Payment for AMC and CAMC

a. Payment for CAMC will be made on a quarterly or annual basis.
b.Payments will be disbursed upon the successful completion of preventive maintenance and calibration activities, in line with the terms and conditions of the tender and subsequent purchase order.

3.11 Consumables List

a. The vendor shall provide a list of consumables required for the equipment, along with their associated costs, before the supply of the equipment to IISc.

3.12 Equipment Recall and Standby Equipment

a. The vendor shall notify IISc of any recall related to the supplied equipment and ensure proper action is taken as per the buyer's recall terms and policies.
b. In the event of an equipment recall, the seller shall provide suitable standby equipment, ensuring the clinical functionality of the buyer is not impacted.

3.13 Adverse Event Reporting

a. Any adverse events associated with the medical devices shall be promptly reported to IISc.
b. The vendor shall ensure that any adverse event is communicated to the National Collaboration Centre-Materiovigilance Programme of India, in accordance with regulatory requirements.

4. Maintenance and Calibration

4.1 Preventive Maintenance and Calibration

a. Preventive maintenance and calibration will be conducted free of charge under the warranty period and any subsequent Annual Maintenance Contracts (AMC).
b. Calibration will be performed in accordance with industry standards and OEM specifications.

4.2 Report of Maintenance and Calibration

a. The Seller shall provide a report of maintenance and calibration with details of the work performed, including calibration standards and methods.

4.3 Qualification of Engineers

a. The Seller must ensure the trained engineers are certified and qualified for preventive maintenance and calibration.

5. Spare Parts

5.1 Supply of Spare Parts

a. The Seller shall supply spare parts for the entire lifetime of the equipment and guarantee availability for a minimum of 10 years from the date of commissioning of equipment.

5.2 Price of Spare Parts

a. The Seller will provide the prices of major spare parts, which should not exceed 30% of the total equipment value.
b. A list of critical spare parts and their estimated prices shall be submitted with the tender as part of commercial bid.

5.3 Spare Parts Availability

a. The Seller must maintain a minimum stock of spare parts to ensure quick availability for repairs.

5.4 Spare Parts Pricing

a. The prices of spares shall be firm for 5 years, after which adjustments can be negotiated considering inflation and exchange variations.

6. Uptime and Compensation

6.1 Uptime Requirement

a. The bidder must ensure a minimum uptime of 98% based on a 365-day working year.
b. In case the uptime falls below the specified 98%, the Warranty/CAMC shall be extended by a ratio of 1:7 days for every additional day of downtime.

6.2 Compensation for Test Failures or Erroneous Results

a. The seller shall be liable to compensate the buyer for any test failures or erroneous results generated by the ordered equipment.
b. The compensation amount will be mutually agreed upon by both parties, and this provision will be legally binding.

7. Software and Support Services

7.1 Software Licenses

a. All software supplied as part of the equipment must come with the necessary licenses for use in India.
b. The seller shall provide a copy of the software license along with proof of ownership.

The supplied application & operating system software will be kept updated in the form of Free of cost as & when they are released by the factory.

However, for new application software any additional hardware is needed, the cost will be borne by IISc management at negotiated special price.

7.2 Software Support Services

a. Any software updates or bug-fixing services will be free of charge during the lifetime of equipment.

8. Integration with Clients HIS & PACS-RIS

8.1 Integration Requirement

a. The Seller must integrate the equipment with clients' Hospital Information System (HIS) & PACS-RIS at no extra cost.

9. Confidentiality and Ownership Transfer

9.1 Confidentiality

a. The service provider must not acquire or retain any confidential data from IISc.

9.2 Ownership Transfer

b. Any change in the ownership of the principal company must honour all existing agreements with IISc.

10.Recall of Equipment

10.1 Equipment Recall

a. In the event of any recall of equipment, the Seller shall promptly inform IISc in writing.
b. During the period when the equipment is under recall, the Seller shall provide suitable standby equipment of similar or higher specifications to IISc, at no cost.

11.Force Majeure

If either Party is unable to carry out his obligations under this Contract due to an Act of God, war, riot, blockade, strike (I.e. national/ state or city), lockout, flood or earthquake or Government orders/ restrictions not within the control of the parties hereto which results In an Inability, In spite of due diligence of either party in performing its obligation In time, this Contract shall remain effective, but the obligation which the affected party Is unable to carry out shall be suspended for a period equal to the duration of the relevant circumstances provided that :

The non-performing party shall give the other Party prior written notice describing particulars of the Inability including but not limited to the nature of occurrence with its expected duration and the steps which the non-performing parties is taking to fulfil its obligation.

Upon receipt of such notice the other party shall discuss the matter with the non-performing party with a view to helping the non-performing party to fulfil obligations. This clause does not envisage financial assistance.

If in any event the Force Majeure situation continues for a period of three weeks both the parties shall meet again and discuss whether the Contract can be amended to overcome the Force Majeure situation so the Project can proceed further.

Notwithstanding anything contained to the contrary it is clarified that economic hardship, non--availability of material, labour and transport shall not constitute Force Majeure. The overall responsibilities and obligations of the parties shall not be excused by reasons of Force Majeure situation.

Notwithstanding the above If the Force Majeure continues for a period of three months or more in that event without prejudice to the rights of the parties, the Buyer shall have the right thereafter to terminate this contract.

12.Seller’s Personnel at Buyer’s Premises

12.1 Adherence to Safety Regulations

a. Seller’s personnel on IISc premises must adhere to all IISc safety regulations and protocols.

12.2 Seller’s Responsibility for Personnel’s Safety

a. The Seller is responsible for their personnel's safety and health while on IISc premises and shall indemnify IISc for any accidents or injuries.

13.Site Evaluation

a. The Seller must conduct a site evaluation including transportation path, power, air conditioning and other requirements before equipment installation.

b. The Seller shall submit detailed drawings, specifications, and colour codes for all ordered items for Buyer review and approval via email or other methods. Manufacturing shall commence only after drawing approval and joint inspection of the proposed site.

14.Skilled & trained Engineer for Installation

a. Installation must be carried out by a skilled engineer and is considered complete only when the equipment is fully operational as per the tender specification.

15.Inspection and Quality Plan

15.1 New Equipment Requirement

a. Only brand-new equipment will be accepted, and it must be accompanied by quality conformance and manufacturer test certificates.

15.2 Training

a. Hands-on training for IISc engineers and technicians must be provided at noextra cost.

16.Marketing Support

a. The Seller shall provide marketing support to IISc as mutually agreed upon.

Sl.No.	MEDICAL EQUIPMENT PRE-COMMISSIONING CHECK-LIST (To be filled during commissioning handover)	Vendor to fill the details
1	Equipment name	
2	Main Unit Model & Serial No	
3	Date of receipt of equipment at site	
4	Goods opening report (item wise)	
5	Principal Company name	
6	Dealer/ Vendor name	
7	Vendor contact details including email address	
8	Equipment Model name	
9	User Department name	
10	End User (Head of Dept) Signature	
11	Clinical Engineers name	
12	Clinical Engineers Signature	
13	Service Engineers name and Contact number	
14	Application specialist name and contact number	
15	Main Unit - hardware as per Purchase Order (Vendor-signed PO and list of items supplied as per PO with invoice) to be enclosed as part of the commissioning documentation.	
16	Main Unit - software as per Purchase Order (Vendor-signed PO and list of software supplied as per PO with invoice) to be enclosed as part of the commissioning documentation.	
17	OEM items as per Purchase Order (Vendor-signed PO and list of items supplied as per PO with invoice) to be enclosed as part of the commissioning documentation.	
18	Accessories as per Purchase Order (Vendor-signed PO and list of items supplied as per PO with invoice) to be enclosed as part of the commissioning documentation.	
19	Consumables as per Purchase order (Vendor signed PO and List of items supplied as per PO with invoiced) to be enclosed as part of commissioning documentation.	
20	Brochure of equipment to be enclosed as part of the commissioning documentation.	

21	Technical Data Sheet to be enclosed as part of the commissioning documentation.	
22	Set of service manuals (1 hard copy & 1 PDF soft copy) to be handed over to the Clinical Engineering Dept.	
23	Set of instruction manuals - Two copies (1 hard copy and 1 PDF) to be handed over to the Clinical Engineering Dept.	
24	List of spares & additional accessories with re-ordering codes and costs used along with the equipment as a standard package (PDF).	
25	Equipment demo training information materials like PPT/Video to be handed over to the Clinical Engineering department.	
26	Duly signed letter from the vendor organization head (MD/CEO) stating that the supplied unit, accessories & OEM items are brand new from the factory, to be enclosed as part of the commissioning documentation.	
27	Quality test certificate of equipment from the factory, duly signed by the factory production in-charge, to be enclosed as part of the commissioning documentation.	
28	Software license document (PDF); including OS, system and application software, and commitment to support over the lifetime of the equipment, to be enclosed as part of the commissioning documentation.	
29	All cables from the equipment should have proper cable management, i.e., cable labelling.	
30	2S and HIRA (Hazard Identification and Risk Assessment) to be conducted during preventive maintenance wherever applicable to keep the working area clean.	
31	First-level training to Clinical Engineering (training certificate).	
32	Application training to the end-user on all functions demonstrated (training certificate).	
33	Do's and Don'ts for the equipment for the user group to be provided as part of the training module, to be enclosed as part of the commissioning documentation.	
34	Preventive maintenance frequency calculated based on Equipment Risk Classification, Usage and Operational Intensity, Manufacturer's Recommendations, Historical Performance, and Failure Data.	
35	Preventive maintenance (PM) checklist to be predefined & duly filled during preventive maintenance, to be enclosed as part of the commissioning documentation.	
36	Preventive maintenance kit specification & details to be shared in advance, to be enclosed as part of the commissioning documentation.	
37	Preventive maintenance schedule should be done during non-clinical work operational hours based on prior approval from the user.	

38	Calibration schedules should be based on Manufacturer's Recommendations and after every major equipment breakdown servicing.	
39	The calibration process should follow NABL 126 guidelines.	
40	With each maintenance work, the service provider should hand over two physical copies of the service report (one for the user and one for the Clinical Engineering Dept.) along with a duly filled PM checklist. If physical copies are not available, soft copies should be provided to both the user and the Clinical Engineering Dept. Accepted downtime in hours & accepted equipment breakdown frequency as per PO terms should be understood by the service team, including downtime penalty	
41	Accepted Downtime in hours & accepted equipment breakdown frequency as per PO terms are understood by the service team including downtime time penalty.	
42	The service provider should maintain a logbook of maintenance at the user site.	
43	Shelf-life details of critical spares/accessories/consumables to be provided, to be enclosed as part of the commissioning documentation.	
44	Commissioning report should include (IQ/PQ/OQ) as part of equipment commissioning documents, duly signed by the user group, to be enclosed as part of the commissioning documentation.	
45	Cleaning & disinfection methodology, including the material used, to be provided at the time of commissioning of equipment, to be enclosed as part of the commissioning documentation.	
46	User application training schedule to be provided along with the PM schedule.	
47	Training materials soft copy (PPT/Video) to be shared for installation sign-off.	
48	Letter from the principal manufacturer stating their commitment to IISc for support of equipment for the coming years as per Purchase Order terms to be provided.	
49	CE/FDA/CDSCO Certificate to be enclosed as part of the commissioning documentation.	
50	The single-phase power cord supplied along with the equipment should have a 3-pin plug (Neutral, Phase, Earth) for Indian usage.	
51	Warranty card and details of the warranty to be enclosed as part of the commissioning documentation.	
52	Short shipped items (if any) with quantity. The warranty will start only after full supply, installation, testing, and commissioning of hardware, application software, and third-party equipment supplied along with the main equipment.	

53	OEM and Dealer Sales and Service Escalation contact details, including CEO/MD, to be enclosed as part of the commissioning documentation.	
54	Life of the equipment ascommitted during technical discussions to be provided with maintenance and spare support during the course of the year, irrespective of dealer change, as per PO terms and conditions, to be given on the OEM letterhead. In case the OEM stops service support during the sales-committed life, the vendor is expected to compensate with the depreciated cost of equipment or provide buyback or upgrade options according to the hospital's requirements.	
55	Any adverse events and recalls related to the equipment, if reported, need to be intimated to IISC in a timely manner to ensure patient & staff safety by the vendor.	
	Signature: User Dept Head Head-Clinical Engineering	
	Date and Time	
	All these details should be given in a spiral bound document by vendor to IISc.	
	EQUIPMENT WARRANTY WILL START ONLY AFTER FULL COMPLIANCE OF ABOVE FORM	

GENERAL TERMS AND CONDITIONS FOR COMPREHENSIVE/LABOUR MAINTENANCE CONTRACT(CMC/AMC)	
1)	ALL TERMS AND CONDITIONS REMAIN UNCHANGED AS PER SALES PO
2)	AMC & CMC VALID FROM _____ TO _____
3)	THIS CONTRACT INCLUDES
1	All equipment and items supplied by the OEM are covered under service contracts and must be replaced /repaired free of cost under CMC.
2	All equipment must be serviced by trained, authorized service engineers. The training certificate of the engineer must be submitted to the IISC Clinical Engineering Team in advance.
3	Preventive maintenance frequency is calculated based on equipment risk classification, usage, operational intensity, manufacturer's recommendations, historical performance, and failure data.
4	The equipment preventive maintenance must be performed according to the predefined checklist provided in the service manual.
5	Operating system and anti-virus updates are an integral part of preventive maintenance.
6	The vendor will not allow their service engineer to train junior staff on our equipment.
7	Vendor to attend unlimited breakdown calls.

8	Call response time of two hours to be maintained; response time to attend calls within 4 hours is applicable, including holidays and non-working hours.
9	Breakdown frequency should not exceed twice the frequency of preventive maintenance.
10	Vendor must submit soft copies of all reports in two copies.
11	Vendor must maintain a service logbook at the user department.
12	Yearly downtime and breakdown frequency will be calculated based on the call logbook.
13	Any damage to hospital property during maintenance by the company engineer should be compensated to the hospital.
14	Vendor must ensure two preventive maintenance visits per year before the due date. Any malfunction or harm to the patient due to delayed preventive maintenance or calibration will be the sole responsibility of the vendor, including legal compensation. Preventive maintenance and calibration must be mandatory after repair or replacement of any spare parts, and necessary kits are to be provided FOC.
15	A copy of the preventive maintenance report with a checklist and a soft copy of calibration, if applicable, is to be shared within one day of execution. The preventive maintenance and calibration label, with done and due dates, must be affixed to the machine without fail, along with the clinical engineer.
16	Periodic training to clinical engineers and end-users, as and when applicable, is mandatory. Training documents must be provided for all concerned staff prior to the renewal of the contract. It is the vendor's responsibility to ensure training, including application training for all staff, without fail. Relevant training materials like PPT/Video must be submitted to the clinical engineering team prior to any training.
17	Vendor should provide the cleaning and disinfection protocol for the equipment, carry out necessary training periodically, and ensure that all concerned members are trained on the same.
18	Any recall related to the above equipment must be notified in writing, and required corrective actions must be carried out FOC. Necessary training must be provided to concerned staff.
19	Any adverse event reported must be intimated to the Materiovigilance department, and corrective action must be shared within one working day with the hospital.
20	Complete breakdown details, including downtime and preventive maintenance/calibration history, must be shared before the renewal of the next contract. Any downtime of more than 48 hours must include root cause analysis and corrective & preventive action with due diligence. Service reports must be legible and include call received, call attended, and call closed (including date & time) accurately. Any report missing this information will be deemed incomplete.
21	Unlimited spare support must be provided, except for consumables (filters). All accessories and parts are covered and included in the contract. Spares must be ordered and moved immediately after diagnosis, including during holidays and non-working hours.
22	Uptime must be maintained at 98%, including holidays and non-working hours.
23	Uptime is defined by the machine working for its intended purpose without compromising patient care or revenue. Any deviation will count as downtime, and for any additional downtime, the contract will be extended by 1:7 days.
24	A maximum of two breakdowns per preventive maintenance frequency is permitted. Any deviation will increase the preventive maintenance frequency in the subsequent year with no cost escalation.
25	Standby equipment must be provided within a day if the issue cannot be resolved for movable equipment

	like pressure injector.
26	The vendor escalation matrix, including sales and service contact details (mobile numbers & email IDs), must be provided without fail.
27	First-level service training must be provided for the concerned equipment, and the training report must be provided to the clinical engineering team members.
28	Preventive maintenance must not be executed during peak working hours and must be carried out as per the user's convenience. The preventive maintenance kit is included in the CMC and must be replaced during preventive maintenance.
29	The AMC bill will only be cleared after the submission of the equipment log report, which must include details of downtime and preventive maintenance (PM) or calibration history. This report must be provided prior to the renewal of the contract.
30	For equipment under AMC, the quotation for spare parts must be provided within one day of the service engineer's recommendation in the service report.
31	For equipment under AMC, no cannibalization of spare parts from working equipment by the service engineer is allowed.
32	Any spare part ordered for equipment under CMC must reach the hospital site within 120 hours.
33	If the equipment remains non-functional after spare part installation, the concerned service engineer must be replaced from the IISC site.
34	All defective spare parts under labour AMC will be retained by the hospital. For equipment under Comprehensive AMC, IISC will mark the spare part as defective, and a non-returnable gate pass will be issued.

Template for purchase order terms
General: Acceptance of this Purchase/ Work Order (hereinafter referred to as "PO/Order") includes the acceptance of the following terms & conditions and is made expressly conditional on Seller's assent to the exact terms contained herein. None of the terms in the Order may be modified, added to, or superseded, except with the written consent of Indian Institute of Science ("Buyer").
1.**Price:** The prices mentioned in this Order are the prices at which Buyer has agreed to purchase the Goods or Services (as applicable). No escalation in the aforesaid prices shall be binding on Buyer, notwithstanding anything that may be mentioned in Seller's terms of acceptance of Order.
2.**Advice of Dispatch:** A full and comprehensive dispatch advice notice shall be sent to stores or concerned departments of the Buyer ("Buyer Stores"). Instructions regarding dispatch & Insurance as mentioned in this Order should be complied with and the packing slips giving reference of Buyer order number shall be included securely with the goods in closed envelopes.

3.**Delivery Terms:** (a) Deliver Date: Time is the essence in any Purchase Contract. Time of delivery/performance as mentioned in this Order shall be the essence of the Agreement and no variations shall be permitted except with prior authorization in writing from the Buyer. (b) Place of Delivery: The goods/services shall be delivered/performed strictly as per the instructions in the Order. All Goods/Services delivered/performed at should reach Buyer Stores before 2.00 p.m. on weekdays except that no deliveries/ dispatches shall be made or accepted on Sundays or holidays in the working place of the Buyer. (c) Delayed Delivery: The time and date of delivery/performance as stipulated in the Order shall be deemed to be the essence of the Agreement. In case of delay in performance of its obligations by the Seller, or any extension granted by the Buyer, the Buyer shall at his option either (i) accept delayed deliveries at price reduced by a sum/ percentage (%) mentioned in the Purchase Order for every week of delay or part thereof; and/or (ii) cancel the Order in part or in full and purchase such cancelled quantities from open market at the prevailing market price at the risk & cost of the Seller without prejudice to his rights under 3(c) (i) noted above in respect to the goods delivered; and/or (iii) refuse to accept the Goods delivered beyond the delivery date and claim/set-off the difference between the prevailing market price and contracted price of such quantity delivered belatedly by the Seller. (d) Delay due to force majeure: In the event of cause of force majeure occurring within the agreed delivery terms, the delivery date may be extended by the Buyer at its sole and absolute discretion on receipt of application from the Seller without imposition of liquidated damages. Only those cause which have duration of more than seven (7) consecutive calendar days will be considered the cause of force majeure. The Seller must inform the Buyer, by a Registered Post or courier letter duly Certified by the Chamber of Commerce or Statutory Authorities, the beginning and the end of the cause of delay immediately, but in no case later than ten (10) days from the beginning and end of each cause of force majeure as defined above. (e) The goods shall correspond with the description of the samples of the original specification thereof in full details and must be delivered and dispatched within the stipulated time, as the case may be. Otherwise, the same shall be liable to be rejected and the Seller shall be deemed to have failed to deliver the goods in breach of the PO. The Buyer shall in that event at its sole and absolute discretion, will be entitled to either purchase such goods from other sources on Seller's account, in which case, the Seller shall be liable to pay to the Buyer any difference between the price at which such goods have been purchased and the price calculated at the rate set out in this Order or to hold the Seller liable to pay the Buyer damages for non-delivery of goods for such breach. (f) Packing: Goods supplied against this order must be suitably and properly packed (conforming to special conditions stipulated by the Buyer, if any, for safe and/or undamaged transport by road or rail.)

4. **Examination of goods:** Irrespective of the fact that the goods are delivered to the Buyer by the Seller at the Seller's place or at Buyer's said office or are dispatched as per Buyer’s instructions by rail or road, the goods shall always be supplied, subject to detailed inspection, at the Buyer works or such other destinations as specified in the Order for ascertaining whether the goods are in conformity with the Agreement or not and until then in no event the Buyer shall be deemed to have accepted such goods and upon any rejection of goods in question the Seller shall be deemed to have failed to deliver the concerned goods in accordance with the Agreement.

5. **Rejection/ Removal of rejected goods and replacement:** Buyer shall have the right to reject the goods whether in full or parts which are not delivered in accordance with the terms of the PO. within fifteen days from the receipt of the intimation from the Buyer of his rejection to accept the goods the Seller shall remove, at his own cost, the rejected goods from the Buyer's works or wherever such goods are lying. The Buyer shall not be in any way responsible for or be held liable for any loss or deterioration of the rejected goods as this shall be at the Seller's risk entirely. The Seller shall pay to the Buyer reasonable storage charges for storing such rejected goods for a period exceeding 15 days as aforesaid. Upon rejection, if the Seller fails to replace the goods with the goods acceptable to the Buyer within the contractual period then the Buyer may, solely at his discretion, exercise all or any of the following options in respect of the rejected/undelivered quantity:- a. Dispose-off the rejected goods and claim/set-off the difference between the prevailing market price and contracted price of such undelivered/rejected quantity to the Seller's account; and/or b. purchase such undelivered/rejected quantity from the open market at the prevailing market price at the risk and cost of the Seller.

6. **Transit Insurance:** In case insurance is not included in Seller's scope he must furnish details such as reference, Lorry Receipt, Note No., nature of packing, number of cases, gross weight net weight, train carrying the goods, value of the goods dispatched etc. immediately on dispatch to Buyer's office to take up insurance in case of goods sent by Regd... Post, the Regd. Post parcel No. should be furnished to the Buyer with a packing slip when action will be taken to insure the goods. This procedure will be adopted unless specially advised by the Buyer to the contrary.

7. **Insurance:** Seller agrees that during the term of its performance hereunder, it shall, at its sole cost, maintain worker's compensation insurance and other legally required insurance in accordance with and meeting requirements of applicable law.

8. **Invoices:** All bills/ invoices for supplies/ services made bearing registration number of the Seller should be marked to concerned Office or as mentioned in Order (quadruplicate) duly endorsed with Purchase Order, Reference Number and Date and be accompanied by advice of dispatch detailed packing list and by an appropriate certificate necessary under the GST Registration Rules and Regulations.

9. **Billing Instructions:** Seller must follow the billing instructions carefully and correctly to enable early settlement of his dues. Disregarding the same may involve delay in such settlement. Seller must mention the following information in his bill: (1) Vendor Code Number (2) Purchase Order Item Number (3) Material Code Number, if any. The abovementioned information will be always available in this Order sent to him. One copy of the above document is to be sent to Buyer at The Assistant Registrar, Stores and Purchase Section, Indian Institute of Science, Sir C V Raman Avenue, Bengaluru-560012 or to the address as advised by the Buyer.

10. **Compliance with laws:** It is clearly reiterated that the Seller is representing an Entity which is strictly complying with all the Laws of the Land as is expected generally from a Seller of a product. It is also made explicitly clear that (a) the Seller has and shall maintain as valid shall under this order strictly comply with the specifications and the requirements agreed upon. At any given point of time, the seller is obliged to produce all applicable licenses, permits, approvals, authorizations and/or or other statutory approvals required to perform its obligation/s under the PO; (b) shall at all times duly observe, perform and comply with all obligations, requirements and/ or prohibitions contained in any statutes, regulations or ordinance of any authority whether governmental or provincial, relating to or in any way affecting or regulating the respective performance of the PO by it.

11. **Standard GST Clause:** a. The price quoted in this PO for supply of goods shall be exclusive of any applicable Goods and Services Tax, Customs duties, or any other indirect tax as may be imposed by the Government of India from time to time. The Seller shall provide a proper invoice in the form and manner prescribed under GST Invoice Rules containing all the particulars mentioned therein. In the event that the Seller fails to provide the invoice in the form and manner prescribed under rules, Buyer shall not be liable to make any payment against such invoice. Notwithstanding anything contained anywhere in the Agreement, in the event that the input tax credit of the GST charged by Seller is denied by the tax authorities to Buyer, Buyer shall be entitled to recover such amount from the Seller by way of adjustment from the next invoice. In addition to the amount of GST, Buyer shall also be entitled to recover interest at the applicable rate and penalty, in case any penalty is imposed by the tax authorities on Buyer. b. As required by any applicable legislation, where identifiable cost savings are realised by virtue of the enactment of the GST law, those cost savings will be reflected in the calculations of the consideration under this Agreement and shall be passed on by the Seller to Buyer. c. Event of default clause – In the event that the Seller does not deposit the GST charged on the invoice issued to Buyer or such GST charged on the invoice and paid by Buyer is not reflected in online tax credit ledger on common GSTN portal of the govt. as eligible input tax credit for any reason whatsoever, this Agreement shall be liable to be terminated with immediate effect and Seller shall be liable to pay such damages as may be reasonably estimated by Buyer. In the event that the compliance rating prescribed under the GST Act, 2017 read with GST Rules, 2017 of Seller falls below prescribed level for any reason whatsoever, this Agreement shall be liable to be terminated with immediate effect and Seller shall be liable to pay such damages as may be reasonably estimated by Buyer. d. Representation and warranties clause – The Seller represents and warrants that it shall have and maintain in effect level of compliance rating as prescribed by the govt.

12. **Warranty:** The Seller warrants that goods and/or services supplier shall be of the highest grade and quality unless otherwise specified; shall conform to the specifications, drawings, samples or other descriptions contained in the Order or furnished or specified by the Buyer; shall be performed in a workmanlike manner; shall be fit and sufficient for the purpose intended; shall not violate any third party intellectual property rights and shall be merchantable, of good material and workmanship and free from all the defects whether latent or patent. In case the same is found to be defective, inter-alia, in respect of materials, workmanship, design or process of manufacturing within a period 12 months after the same had been put in use or 20 months from the date of acceptance of the goods by the Buyer, whichever is earlier, the Seller shall refund the price paid by the Buyer in respect of the said goods. The Seller shall guarantee that the material Seller further agrees that all materials / goods shall be repaired or replaced as the case may be as noted in Clause 20 below. All spare parts should carry the following: a) Name of the Machine b) OEM/Party's name c) Sr. at his / her own expense. The Seller shall be liable for all costs and damages and replacements at the sole option of the Buyer. These warranties are in addition to those implied by or available at law to Purchaser and shall exist notwithstanding the acceptance and/or inspection by Purchaser of all or part of the goods or services.

13. **Right of the Buyer to Set Off:** In the event, the Seller fails to deliver the goods in accordance with the terms of this PO, the Buyer shall have the right to cancel the PO forthwith and claim refund of any payment made by the Buyer as advance or otherwise to the Seller under the PO. The Buyer shall also have the absolute right to withhold, adjust, and/ or set-off any payment required to be made by the Buyer to the Seller under this PO or any other PO entered into between the parties against the cost, losses, damages etc. suffered by the Buyer due to the failure of the Seller to deliver the Goods in accordance with the terms of this PO, and the Seller expressly waives any objections it may have in this respect.

14. **Cancellation/Termination:** The Buyer reserves the right to cancel/terminate this Purchase Order or any part thereof. The Buyer shall be entitled to rescind the Agreement wholly or in part in a written notice to the Seller if (i) The Seller fails to comply with the terms of the Purchase Order; or (ii) The Seller goes bankrupt or goes into liquidation proceedings; or (iii) The Seller fails to deliver the goods on time and / or replace the rejected goods promptly; or (iv) the Seller fails to deliver the Goods/Services of desired quality, weight, specification, drawing, layout, design, etc.; or (v) The Seller makes general assignment for the benefit of the creditors; or (vi) Receiver is appointed in respect of property of the Seller. The Buyer shall also be entitled to cancel this Order without assigning any reasons or becoming any way liable in such cancellation.

15. **No Assignment:** This Purchase Order shall not be assigned to any other agency by the Seller without obtaining prior written consent of the Buyer.

16. **Force Majeure**: Failure or omission to carry out or observe any of the stipulation or condition of the Agreement shall not give rise to any claim or be deemed a breach of the Agreement if the same shall arise from any of the following causes. viz. the imposition or restriction on Import, Acts of God. The Seller submits his acceptance of this agreement with the above conditions by acceptance of Buyer’s Order even in cases where the confirmation has been made under assumption of different conditions.

17. **Special Conditions:** Seller will ensure that all statutes, regulations of the Central or State Government are strictly followed. Buyer shall not be liable to pay any damages/compensation due to non-compliance of these rules / regulations by Seller.

18. **Arbitration:** Any dispute arising out of or in connection with the agreement shall be settled by Arbitration in accordance with the Arbitration Conciliation Act, 1996. The arbitration proceedings shall be conducted in English in Bengaluru by the sole arbitrator appointed by the Buyer. The cost of arbitration shall be shared equally between the parties unless decided otherwise by the arbitrator.

19. **Dispute & Jurisdiction of Bengaluru:** All disputes shall be subjected to the exclusive jurisdiction of the court in Bengaluru only or as provided in the PO/Order.

20. **Limitation of Liability:** In no event shall Buyer be liable to Seller, or to Seller's officers, employees or representatives, or to any third party, for any indirect, consequential, incidental, special, punitive or exemplary damages of whatsoever nature (including, but not limited to, lost business, lost profits, damage to goodwill or reputation and/or degradation in value of brands, trademarks or trade names, service names or service marks, or injury to persons) whether arising out of breach of contract, warranty, tort (including negligence, failure to warn or strict liability), contribution, indemnity, subrogation or otherwise.

21. All spare parts should carry the following: a) Name of the student b) OEM/Party's name c) Sr. No. as per the catalogue d) Buyer's Order No. and date and e) Quantity all relevant information.

22. Works carried out in Buyer's Institution or premises by the Sellers representatives etc.: Agent representative or employees of the Seller who in pursuance of the Agreement have to work in Buyer/Owner's Institution/Premises will be subject to the rules and regulations existing in the works. The Buyer shall not be liable for any accident which may cause to the Sellers personnel.

23. **Intellectual Property Rights:** All drawings, specifications and other documents furnished by Buyer and the Buyer's consultants, and copies thereof furnished to the Seller, are for use solely with respect to this Order. Such drawings, specifications and other documents are to be returned to the Buyer at the completion of the Order or earlier termination of this Agreement. All drawings, specifications and other documents prepared by or for Seller in contemplation of, in the course of, or as a result of performing the work shall be deemed works for hire and all right, title and interest therein shall vest in Buyer, whether or not the Order is ultimately completed. To the extent such drawings, specifications or other documents cannot be considered, by operation of law, works for hire, Seller shall assign to Buyer all right, title and interest thereto and all copies of such drawings, specifications and other documents shall be delivered to Buyer upon completion of the Order or earlier termination of this Agreement. Seller agrees to provide Buyer with reasonable assistance necessary to perfect Seller's interest in intellectual property created under this Agreement. This shall include, but not be limited to, the execution of documents necessary for the Copyright registration. No drawings, specifications or other documents may be used by the Seller or any Sub seller or material or equipment supplier on other projects or for additions to their Project outside the scope of the work without the specific written consent of the Buyer. The Seller, Sub suppliers, Sub-Sub suppliers and material or equipment suppliers are authorized to use and reproduce applicable portions of the drawings, specifications or other documents appropriate to and for use in the execution of their work under the contract documents. All copies made under this authorization shall bear the statutory copyright notice, if any, shown on the drawings, specifications and other documents prepared by or for the Buyer. Submittal or distribution to meet official regulatory requirements or for other purposes in connection with this Project is not to be construed as publication in derogation of the Purchaser's copyrights or other reserved rights. Any intellectual property conceived or developed during the course of the Order based upon or arising from Buyer's confidential and proprietary information shall be solely owned by Buyer. Except as expressly provided herein, no license or right is granted hereby to the Seller, by implication or otherwise, with respect to or under any patent application, patent, claims or patent or proprietary rights of Buyer.

24. The terms and conditions of this Order constitute the entire Agreement between the parties here to and changes will be binding only if the amendments are made in writing and signed by the authorized representatives of the Buyer and the Seller.

25. Risk of loss and/or damage to any goods furnished hereunder shall be upon Seller until the goods are physically delivered to Buyer's facility specified on the face of the Order and accepted by the Buyer.

26. **Indemnification:** Seller agrees to defend, indemnify and hold harmless the Buyer, its affiliated companies or parent companies, and their officers, employees, agents, guests, invitees and customers from and against any and all liability, loss, damage, fine, penalty, cost or expense (including attorneys' fees) by reason of any allegation, claim, action or suit, whether for death, personal injury, property damage or otherwise, arising out of (1) failure of the goods or services supplied to meet specifications or warranties or for the goods or services to be otherwise defective; or (2) any alleged or actual, direct or contributory infringement or misappropriation of any patent, copyright, trade secret or other proprietary right arising from the purchase, use or sale of such goods or services; or (3) any leak or spill of any goods while being transported or delivered to Buyer; or (4) any breach by Seller of any term or condition contained in the Order; or (5) violation of applicable laws; or (6) alleged defect in the Goods and/or packaging material, or packed Product, or due to the Goods or packaging thereof being alleged to not adhere to any standard or quality set out herein or under any applicable laws; and/or (7) the acts, omissions, or wilful misconduct of Seller's employees and subcontractors, including their agents and representatives, and all other persons performing any services under the Order with the Seller, whether or not caused in part by a party indemnified hereunder. In the event that the goods or services, in Purchaser's reasonable opinion, are likely to infringe a patent or copyright, or misappropriate a trade secret (and in any event, if a court of law finds that the goods or services, in fact, do infringe or misappropriate), then Seller shall further provide Buyer one of the following forms of relief to be chosen by Seller: (a) obtain a license on Buyer's behalf to continue to use or sell the goods or services; (b) redesign the goods or services so that they do not infringe or misappropriate; or (c) refund Buyer the price paid for the goods or services in question. In any and all claims against Buyer by any employee of Seller, any subcontractor, anyone directly or indirectly employed by any of them, or anyone for whose acts any of them may be liable, the indemnification obligation under the Paragraph shall not be limited in any way by any indemnity or limitation on the amount or type of damages, compensation or benefits payable by or for Supplier, any subcontractor, or anyone directly or indirectly employed by any of them under workers' compensation acts, disability benefit acts, or other employee benefit acts.

27. **Confidentiality:** Seller shall keep confidential all specifications and proprietary information furnished by Buyer or prepared by Seller in connection with the performance of the Order (including the existence and terms of the Order) and shall not divulge or use such specifications or information for the benefit of itself or any other party, except as required for the efficient performance of the Order. Upon completion of the Order, Supplier shall make no further use, either directly or indirectly, of any such specifications or information.

28. **Disposal:** If applicable, Seller shall at all times retain title of ownership to any and all materials, substances or chemicals not incorporated into the work that Seller or any subcontractor brings onto Buyer's premises. Seller shall be solely responsible for the handling, transportation and disposal of any and all materials, substances and chemicals. Seller or any subcontractor brings onto Buyer's premises, and any waste generated or resulting from the use thereof. Seller shall not dispose or permit the release of any materials, substance or chemical, or any waste generated or resulting from the use thereof on Buyer's premises. Seller shall handle, transport, and dispose of any and all substances and chemicals, including but not limited to hazardous wastes and substances as defined by applicable federal, state and local laws, rules, regulations, codes and ordinances.

29. **Severability:** If any provision of this Agreement is held to be invalid, illegal or un- enforceable, either in whole or in part, that holding will not affect the validity, legality or enforceability of the remaining provisions of this Order

31. Original Excise Gate pass must accompany each delivery for excisable goods, if applicable.
32. The Seller will not claim without our knowledge any refund from the excise authorities for the amount of Central Excise duty on the supplies made to us. The Seller shall also undertake to refund to the Buyer all money recovered by him from Govt. authorities for which he has been paid by the Buyer.
33. Unless a specific objection to each of the terms of this Purchase order is raised within 24 hours from the date of Purchase order/email under which this PO is sent, it shall be deemed to be accepted in full.
34. Supplier (Seller) Code of Integrity: The Seller/ Supplier agrees to follow code of integrity and code of conduct as prescribed by General Financial Rules 2017.

D. Tender specification

Sl. No	TECHNICAL SPECIFICATION FOR MRI 3 Tesla
1	The manufacturer/bidder must quote the latest 'state of the art' MRI scanner with 3.0 Tesla capability. The manufacturer should also confirm End of Life service for 10 years from the date of installation. (Document proof from the manufacturer should be attached)
2	The vendor will guarantee that the system supplied is not refurbished. The MRI system quoted should be the latest and best available model in the segment (3.0 T MRI scanner with at least a 70 cm bore) at the time of delivery and should submit an undertaking in this regard.
3	The offered model should be CDSCO/USFDA/ EUROPEAN CE approved. (Authentic and legible certificates for these approvals should be annexed.)
4	**MAGNET**
A	MAGNET -The system should have a 3.0 Tesla superconducting magnet with a bore diameter of at least 70 cm or more. The magnet should include a display that provides information on coil connectivity, physiological curves, scan initiation, alarm management. The magnet should have a zero boil-off rate.
B	FIELD STRENGTH -The system should include a helium-only 3.0 Tesla superconducting magnet, with a facility for a quick shutdown of the magnet in case of an emergency.
C	FIELD STABILITY OVER TIME -The system should include active shielding and external interference shielding to ensure excellent field stability. The magnetic field's temporal stability should be maintained according to the homogeneity criteria outlined below.

D	HOMOGENEITY -Specify the homogeneity of the magnetic field at 10 cm, 20 cm, 30 cm, and 40 cm DSV (Diameter of Spherical Volume), as well as at the maximum FOV (Field of View) achievable with the quoted scanner. The guaranteed homogeneity of the magnet, using the VRMS (Root Mean Square Variation) method, should be stated.
E	MAGNET BORE -The magnet should have a bore size of at least 70 cm available at the centre. Please specify the exact bore size of the magnet.
F	ACTIVE SHIELDING / FRINGE FIELD -Specify the values for the 5 Gauss and 1 Gauss lines in both radial and axial directions from the centre of the magnet, measured in meters.
G	EXTERNAL SHIELDING-The external interference shielding should be sufficient to enclose the magnet effectively.
H	MAGNET COOLING SYSTEM. -Devices for monitoring helium levels should be included.
5	**SHIM SYSTEM**
A	The system should feature a high-performance and highly stable shim system with global and localized shimming capabilities, both manual and automatic, to ensure a high homogeneity magnetic field for MRI, DTI, fMRI, and magnetic resonance spectroscopy.
B	The auto-shim system should quickly adjust the magnet's homogeneity with the patient in position, minimizing the time required for shimming.
C	Second-order shimming should be offered as standard.
D	Third-order shimming should be offered as standard.
6	**PATIENT TABLE**
A	A dock- able table with an embedded coil should be included as standard.
B	Dock- able Table should be able to take at least 200 kg load.
C	Bolus chasing with an automatic/continuous moving table should be offered.
7	**PATIENT COMFORT FEATURES**
A	Two-way patient communication, including a headphone, microphone, necessary accessories, and a patient audio alarm, should be provided.
B	A closed-circuit TV camera for patient monitoring should be provided, ensuring that it does not produce image artifacts during the scan.
8	**GRADIENT SYSTEM**
A	An actively shielded gradient system in the x, y, and z planes should be provided.
B	System should offer Gradient performance of peak amplitude of at least 76 mT/m and a peak slew rate of 200 T/m/s.

C	A 100% duty cycle for the full field of view (FOV) should be standard.
D	Specify the gradient amplifier specs, including the maximum output voltage and maximum output current.
9	**ACQUISITION IMAGE RESOLUTION PARAMETERS**
A	Specify the minimum and maximum field of view (FOV) achievable for the quoted MRI system.
B	Specify the minimum slice thickness in both 2D and 3D modes at matrix resolutions of 128x128, 256x256 & 512x512
C	The system should be capable of performing single-shot Echo Planar Imaging (EPI) with matrix sizes of 64x64, 128x128, and 256x256. This capability should include conventional and fluoroscopic imaging in three orthogonal planes as well as oblique planes.
D	The system should be equipped with an effective cooling system for both the gradient coil and power supply, ensuring uninterrupted operation throughout all seasons.
10	**RF TRANSMIT/RECEIVE UNIT**
A	The system should include the latest RF transmit technology with dual RF amplifiers to enhance B1 uniformity, signal homogeneity, and to reduce patient-induced inhomogeneities.
B	The system should include a fully digital RF system capable of transmitting sufficient power, with the power value quoted as per FDA guidelines. The operating frequency of the RF system should also be specified.
C	Specify the maximum transmitter RF power available.
D	At least 140 RF channels and an equivalent number of ADCs should be offered as standard.
E	Specify the RF receiver bandwidth for each channel.
F	The system should include the necessary hardware to support quadrature phased array coils and flexible (flex) coils.
G	SAR limits should comply with FDA guidelines for all protocols, including neuro and abdominal imaging.
11	**COILS**
A	The number of channels and elements for each coil should be the highest available in the vendor's product range.
B	If the vendor does not supply or manufacture a specific coil, third-party coils may be used. The vendor is responsible for providing all necessary hardware and software interfaces to ensure full compatibility with the MRI system, including RF sequences.
C	Head Coil: Specify the number of channels for the head coil, ensuring it is suitable for high-resolution brain imaging, and EPI/DTI applications. The head coil must also be compatible with the fMRI projection device provided with the system.

D	Head-Neck Coil: For routine brain and neurovascular exams, a separate head-neck coil with at least 45 channels in single or in combination of coils in a given FOV should be quoted as standard. Please specify the number of channels for this coil.
E	Integrated Spine Array Coil: The integrated spine array coil should have at least 50 channels. Please specify the exact number of channels.
F	Body array coil with 50 channels in one FOV by Single or combination of Spine Coil (anterior coil.no of channel in single scannable FOV to be specified); (Qty:2)
G	Peripheral or Whole-Body Coil: The peripheral or whole-body coil should provide coverage of at least 80 cm, using a maximum combination of 2 coils. Please specify the coverage and number of channels.
H	Flexible Coils: The system should include the latest state-of-the-art flexible coil with 18 channels or more. This coil should be designed to avoid coupling effects even when wrapped around patient anatomy, such as extremities (shoulder, knee, foot & ankle, and wrist), without any loss of signal. (Both Large & Medium flex coil should be offered)
I	Dedicated Knee Coil of at least 16 channels should be offered as standard
12	**HOST COMPUTER AND ARRAY PROCESSORS**
A	The vendor should supply an image processor with ample RAM to support ultra-fast image reconstruction. The processor must be capable of performing real-time image reconstruction efficiently. A minimum of 64 GB should be available.
B	Computational Speed:Should be sufficient to support single shot echo planar imaging (EPI), interactive angiography, multi-planar 3D reconstruction, surface rendering, dynamic imaging, and vascular imaging/angiography.
C	Storage:Adequate capacity for storing images and other data relevant to the MRI applications.
D	Hard Disk Memory:The system should include hard disk memory with a capacity to store a minimum of 200,000 (two lakh) images.
E	Monitor: A medical-grade monitor of 23 inches or larger, with a resolution of 2 MP and enhanced graphics acceleration.
F	Measurement Console**:** A main console capable of data acquisition, all online calculations required for all sequences, and post-processing for all applications as specified in the tender
G	Licensing**:** licenses for acquisition, post-processing, and any special packages required. The vendor should list all capabilities of the quoted product, including both basic and premium packages.
H	Pulse Sequence Software: The main console should include pulse sequence software licenses necessary for modifying and running pulse sequences. If this is not feasible, the vendor must provide the required hardware and software solutions.
13	**CD/DVD ARCHIVAL**

A	DVD RW Drive and Software: The system should include a DVD RW drive capable of writing images, spectra, and raw data. The necessary software for reading images and spectra from DVDs/CDs and storing capabilities should also be provided.
	Archival Provision: The system should include a provision for archiving k-space data and raw (unprocessed) images.
14	**NETWORKING**
A	Protocol and Standards: The system should support Ethernet TCP/IP standards for image transfer with DICOM 3.0 over standard Ethernet IEEE 903, including DICOM send, receive, and query modes.
B	PACS Connectivity: The vendor should ensure compatibility and provide connectivity with the PACS (Picture Archiving and Communication System).
C	Network Speed and Cabling: The network speed and cabling should conform to the latest industry standards (e.g., 10BASE-T, 100BASE-T, or 1GB).
D	**IP Configuration:** The system should be configured with a range of IP addresses to avoid conflicts with existing equipment in different departments.
E	Networking and Configuration Assistance: The vendor should provide necessary networking and configuration assistance for integration with existing PACS, HIS (Hospital Information System), and RIS (Radiology Information System).
15	**DATA ACQUISITION**
A	2D and 3D Acquisitions: The system should be capable of 2D and 3D acquisitions in conventional, fast, and ultra-fast spin echo, as well as gradient echo modes, allowing for real-time online image observation if needed. All sequences available from the vendor at the time of quote/delivery should be included as per their manual. (Details specifically related to the breast coil are not required and are excluded from this specification)
B	Multi-Slice Imaging: The system must support multi-slice imaging in all planes (axial, sagittal, coronal, oblique, and double oblique).
C	Matrix Acquisitions: The system should support up to 1024 x 1024 matrix acquisitions for all compatible applications.
D	Techniques such as half Fourier or other methods to reduce scan acquisition time while maintaining adequate SNR (Signal-to-Noise Ratio) should be available.
E	System should be Capable of 3D volume, multiple contiguous slabs, multiple interleaved slabs, and overlapping slabs and shall be offered as standard
F	Slice thickness in 2D and partition in 3D should be freely selectable.
G	Dynamic acquisition (serial imaging) with the capability to initiate scan sequences from either the magnet panel or the console should be available.
H	Ability to perform dynamic acquisition with several repeat scans and delay times that can be either identical intervals or selectable.

I	Gating and Triggering: Support for physiological signal gating (ECG, pulse, respiratory) and external signal triggering with interlace for external input pulse. Provision should also be available at the console for fMRI, EEG, etc. The latest and most advanced technology should be offered.
J	Simultaneous Data Processing: Capability for simultaneous acquisition, processing, and display of image data in 2D multi-slice mode.
K	Ability to select voxels from oblique slices during spectroscopy should be available.
L	Techniques for artefact reduction, imaging enhancement, image filtering, image subtraction, addition, multiplication, and division should be available.
M	Fat saturation techniques using frequency-selective RF pulses to suppress fat signals in the measured FOV, with regional fat suppression options.
N	Magnetization transfer saturation using off-resonance RF pulses to suppress signals from stationary tissue in the FOV.
O	Phase contrast capability in 2D and 3D modes should be available.
P	Image intensity correction capabilities should be available.
Q	Breath-hold acquisition capabilities should be available.
R	Diffusion Tensor Imaging (DTI) with a minimum of 280 directions should be available.
S	The system shall be capable of data acquisition in all three standard planes—axial, sagittal, and coronal—as well as in oblique, double oblique, and additional oblique planes as required. Same is to be offered as standard.
T	The system should offer higher matrix acquisition capability in single shot EPI (Echo Planar Imaging) mode. The acquisition time, TR (repetition time), TE (echo time), and slice thickness should be explicitly stated.
U	The vendor should provide a multi-coil acquisition system designed to optimize throughput and expand the effective field of view (FOV). Each individual acquisition element within every coil must be specified and detailed in the offer.
V	The system should incorporate deep learning-based image reconstruction from raw data to enhance image quality (IQ) and reduce scan time. This feature should be applicable to 2D, 3D imaging, diffusion, and motion correction sequences.
W	Advanced Compressed Sensing Imaging: The system should be equipped with advanced compressed sensing imaging technology for high-speed image acquisition, applicable to brain, body, and musculoskeletal (MSK) imaging.
	Additionally, the system should support simultaneous multi-slab acquisition for diffusion imaging and functional MRI (fMRI) of the brain.
X	Mutli-contrast imaging and quantitative evaluation should be possible from single acquisition.

Y	The system must be able to estimate the myelin content in the brain, using techniques that are approved by the US FDA for clinical use. Additionally, the system should provide accurate calculations of brain volume to support comprehensive neurological assessments.
16	**IMAGING PULSE SEQUENCES/Equivalent**
A	Multi-Slice Single Echo: The system should support multi-slice single echo sequences for clear and precise imaging.
B	Multi-Slice Multi-Echo: The system should support multi-slice multi-echo sequences with 8 echoes or more for enhanced imaging capabilities.
C	Symmetrical and Asymmetrical Echo Intervals: The system should include Spin Echo sequences with both symmetrical and asymmetrical echo intervals to cater to different imaging needs.
D	Fast Spin Echo (FSE): The system should offer fast spin echo sequences for rapid acquisition while maintaining image quality
E	Magnetization Transfer Spin Echo (MT-SE): The system should support MT-SE imaging sequences to enhance tissue contrast and suppress background signals.
F	Short TI Modified IRSE: The system should include inversion recovery sequences with short TI (Time to Inversion) for rapid suppression of specific tissue signals, enhancing contrast in certain imaging scenarios.
G	FLAIR (Fluid-Attenuated Inversion Recovery): The system should support FLAIR sequences for superior imaging of brain lesions and other pathologies by suppressing cerebrospinal fluid (CSF) signals.
H	DIR (Double Inversion Recovery): The system should offer double inversion recovery sequences to suppress two different tissue types simultaneously, providing improved contrast and tissue differentiation.
I	Transverse Gradient/RF Spoiling: The system should support gradient echo sequences with transverse gradient and RF spoiling capabilities to optimize image contrast and reduce artefacts.
J	Transverse Gradient Re-Phasing**:** The system should include gradient echo sequences with transverse gradient re-phasing, such as GRASE (Gradient and Spin Echo) or equivalent, for enhanced imaging performance and reduced scan times.
K	3D Gradient Echo with Shortest TR and TE: The system should offer 3D gradient echo sequences with the shortest possible TR (Repetition Time) and TE (Echo Time), allowing free selection of flip angles while maintaining a high signal-to-noise ratio (SNR) for high-quality imaging
17	**FAST SEQUENCES/Equivalent**
A	The MRI system should be equipped with sequences for Fast Spin Echo (FSE) and Gradient Echo (GE) in both 2D and 3D modes, capable of acquiring the maximum number of slices with T1, T2, and Proton Density (PD) contrast, using a given TR (Repetition Time) and minimum TE (Echo Time), with an echo train length in FSE to be 380 or higher.

B	Half Fourier acquisition capabilities should be available with or without diffusion gradients and in combination with Fast Spin Echo (FSE) sequences.
C	Fast gradient spin echo with multi-slice multi-echo mode and maximum echo train length (ETL) should be available. Sequences should incorporate RF focusing to achieve ultra-fast gradient spin echo.
D	Fast gradient echo sequences should incorporate RF spoiling and other techniques for ultra-fast 2D and 3D imaging.
E	EPI-optimized sequences (with and without fat suppression) should be available.
F	Sequences for T1, T2, and PD imaging, perfusion, and regular diffusion should be offered.
G	EPI FLAIR, EPI-IR, EPI FLAIR diffusion tensor, EPI MT FLAIR, tensor diffusion (with at least 280 directions), and diffusion studies should be provided.
H	Suitable artifact and fat suppression techniques should be incorporated in the sequences to ensure optimal image quality and should be available.
I	The capability to calculate ADC maps (isotropic and anisotropic) from regular diffusion and tensor data should be offered.
J	Optimized sequences for special applications should be provided.
K	Multi-band EPI with simultaneous multi-slice accelerated advanced applications should be available.
18	**MR SPECTROSCOPY**
A	The system should have the capability to perform multi-planar proton imaging.
B	Proton MRI sequences for single-voxel acquisition, with selectable fat/lipid saturation bands, and options for water saturation (e.g., VAPOR, CHESS, etc.), with all post-processing software, should be provided.
C	Proton multi-voxel CSI (2D and 3D) acquisition and metabolite mapping with all necessary RF sequences (and post-processing algorithms) should be available with all post-processing software.
D	If separate coils are needed for carrying out MRI spectroscopy, they should be provided.
E	If there are any specialized or optimized sequences available, the same should be offered with all post-processing software.
F	Water and lipid suppression in automated sequences should be available.
19	**POST PROCESSING AND EVALUATION**
A	Client-server configuration with 5 clients (workstations with the latest hardware, all post-processing applications should work concurrently, (excluding Cardiac as mentioned below).

B	Cardiac function, morphology, tissue characterization, strain, T1, T2 mapping, and 4D flow with one license should be provided. (Can be a separate workstation)
C	The vendor must provide their specialized and optimized imaging sequences in the main acquisition console; All post-processing packages should also be provided in the main acquisition console except cardiac.
D	Body, Prostate, and Liver imaging (including 3D T1 fat saturation for dynamic liver imaging) should be available.
E	Oncology, Paediatric, and Breast imaging packages should be available.
F	Angiography (including DSA approach, capturing arterial, capillary, and venous phases in a single acquisition with a single bolus) should be provided.
G	Orthopaedic and MSK imaging with metal artefact reduction software should be provided as standard for imaging joints with prostheses.
H	Multi-planar reconstruction (MPR) in any arbitrary plane, including curved planes with freely selectable slice thickness and slice increments, should be available.
I	MIP (Maximum Intensity Projection) display in cine mode for 2D and 3D modes, with targeted/segmented MIP in any orthogonal axis, should be available with minimal processing time.
J	Evaluation and display of diffusion images, ADC maps, and fMRI in reference to EPI optimized sequences should be provided.
K	Perfusion image evaluation with time-intensity graphs and other statistical parameters should be available.
L	Evaluation package for calculating rCBV, rCBF, MTT, perfusion maps, corrected CBV calculations, and fusion of perfusion maps with contrast-enhanced 3D T1 images should be provided. Mention the package/software offered with a brochure.
M	Flow quantification and evaluation for vascular (high & low), CSF, bladder outlet, and cine display should be available.
N	The system should include a 3D FSE ASL processing and quantification package.
O	Liver volumetric analysis should be provided.
P	Software for evaluation of functional mapping, neuro-metabolite mapping, and bold evaluation should be available.
Q	Post-processing package for DTI and tractography, including estimation of ADC, FA (lambda parallel, perpendicular separately and combined), Fiber tracking, Fiber statistics, and display of Fiber tracts on anatomical images, should be provided.
R	Measurement of distance, area, volume, angle, mean, SD, image addition, subtraction, multiplication, division, interpolation, segmentation, thresholding, histogram should be available.
S	Image filtering and image fusion software should be provided.
T	Software for co-registering MRI, fMRI, MRS, and metabolite mapping images with images from CT, PET, and SPECT should be available.

U	Evaluation features such as zoom, rotation, scrolling, roaming, image synthesis, multi-point T1 and T2 calculation (more than 8), window stretching, text dialogues, graphics, sorting, search, archiving, and recalling should be available.
V	Full post-processing for single-voxel MRS, CSI (multi-voxel MRS), metabolite mapping with colour coding (metabolic images), etc., for brain, prostate, and other applications should be provided.
W	Post-processing should include FFT, baseline correction, curve optimization, automatic phase correction, metabolite imaging, spectral mapping, and magnetic resonance spectroscopic imaging (molecular imaging) with naming and peak integral values for all in vivo metabolites.
X	Any advanced organ-specific imaging with automatic planning, scanning, and post-processing applications should be quoted.
20	**FUNCTIONAL MRI ACCESSORIES AND POST-PROCESSING**
A	Functional imaging should include a BOLD (Blood Oxygen Level-Dependent) imaging and processing package, capable of real-time processing and display of colour overlays. This should be compatible with the 40-channel or more head coil supplied with the system.
B	A complete fMRI solution should be provided, including an audio-visual projection system (3D capable) with headphones offering very good noise suppression (>30 dB). It is preferable to have LCD/LED monitor projection.
C	The system should be integrated with stimulus presentation/paradigm generator software, including a permanent license. The paradigm presentation should be synchronized with the scanner for starting along with measurements.
21	**QUALITY ASSURANCE AND PHANTOMS -Phantoms for routine quality assurance should be provided for all coils, including the body coil.**
22	**SPECIFICATION FOR MRI ACCESSORIES/OEM ITEMS**
A	Rechargeable hand-held metal detectors.
B	Walk-through metal detector
C	MR-compatible patient monitor and MR-compatible infusion pump (specifications are mentioned separately).
E	MR-compatible dual pressure injector.
F	MR-compatible anaesthesia machine (specifications are mentioned separately).
G	MR-compatible patient trolley (to transfer patients to the magnet table) with vertical lift and minimum load capacity of 150 kg.
H	MR-compatible wheelchair: with cushion, backrest, and anti-roll features.
I	Internal RF shielding and other interior work. (As per Scope of work defined)
J	colour Printer: One high-resolution colour printer for printing VRT images for patients with vascular diseases during preoperative and follow-up evaluations.

K	UPS with 30 minutes backup to support the entire system.
L	Dehumidifier.
M	Chiller unit.
N	Film printer software should be inbuilt in workstations
O	**Dry laser camera:**
	- Resolution: Preferably 32 bits / 500 dpi
	- Ports: Minimum 3
	- Number of film trays: Minimum 3
	- Supported film sizes: 17x14, 10x12, and others
P	MR-compatible laryngoscope (adult and paediatric).
Q	Musical system with headphones.
R	Glass with window frame or viewing from console to MRI room.
S	Oxygen level monitor.
T	Microphone & speaker for communication.
U	Cupboard to keep coils.
V	Injector syringes (Quantity: 50).
W	Paper set for photo printer.
X	ECG electrodes (Pack of 50).
Y	MRI compatible fire extinguisher
Z	MRI compatible iv pole
23	**MRI COMPATIBLE SYRINGE INFUSION PUMP**
A	MRI Compatibility: Compatible up to 3 Tesla, supplied with syringe pump and volumetric pump.
B	Syringe Size Compatibility: Supports syringes of 2 ml, 5 ml, 10 ml, 20 ml, and 50/60 ml.
C	Drug Library: Integrated drug library for enhanced safety and flexibility.
D	Syringe Brand Support: Compatible with a wide range of syringe brands, including major international and local makes.
E	Drug Delivery Modes: Supports ml/hr, volume/time, mg/kg/min, and other delivery modes.

F	Bolus Rate Setting: Allows for precise bolus rate adjustment.
G	Infusion Rate Range: Infusion rates from 0.01 ml/hr to >1000 ml/hr.
H	Occlusion Pressure Display: Displays the buildup of occlusion pressure in the line on the pump screen.
I	Battery Backup: Provides at least 10 hours of battery backup after a full charge.
J	Ease of Use: User-friendly design with a patient tube holder.
K	Alarms: Includes audio and visual alarms to alert clinicians for prompt intervention.
L	Post-Occlusion Bolus Reduction: Reduces bolus delivery after occlusion for enhanced safety.
M	Regulatory Approval: European CE or USFDA approved.
N	Magnetic Field Indicator: Integrated magnetic field indicator for MRI safety.
O	MRI-safe free-standing IV pole and a wireless remote control operating in the 2.4 GHz spectrum should also be quoted.
P	It should be European CE, US FDA, or BIS approved.
Q	All accessories, including batteries, should be provided for 10 years.
24	**MRI COMPATIBLE ANAESTHESIA MACHINE**
A	MRI-compatible (up to 3 Tesla) anaesthesia machine with at least a 12-inch touch screen, integrated electronic ventilator, two vaporizers, inbuilt suction, and a circle absorber.
B	Integrated anaesthesia ventilator system with the capability to vary respiratory parameters and ventilate adult, paediatric, and infant patients.
C	Electronic or mechanical hypoxic guard ensuring a minimum of 25% oxygen across all O2-N2O mixtures.
D	Includes a remote monitor for placement in the console room.
E	Temperature, pressure, and flow compensation mechanisms with high accuracy for the delivered concentration of volatile anaesthetic agents. Maintenance-free.
F	Vaporizers should include sevoflurane (preferred). Two vaporizers will be preferred if available.
G	Integrated breathing circuit with a circle absorber, easy to clean, autoclavable, and with fewer parts to reduce leaks.
H	Tidal volume ranges from 20-1500 ml (volume control), with a rate of at least 4-80 bpm.

I	Capable of ventilating adults, paediatric patients, and neonates with a tidal volume range of 5–1200 ml or better.
J	Antistatic, heavy frame and base, equipped with high-quality casters and front brakes.
K	Free replacement of galvanic oxygen cell sensors for the entire warranty period. If paramagnetic sensors are used, ensure no downtime during repair and provide a standby alternative.
L	Ventilation software supports volume control, pressure control, pressure support modes, and advanced modes such as SIMV and PSV, along with integrated suction functionality.
M	AGM (Anaesthesia Gas Monitoring) module.
N	Includes oxygen, nitrous oxide, and air flow meters.
O	The machine should have the facility to mount at least two vaporizers, with the latest technology, key filler, and selectable type with tool-free installation and interlocking facility. Vaporizers should preferably be of the same make as the machine.
P	All necessary safety alarms should be available.
Q	Supplied with 500 per-patient consumables for each year of the warranty period.
R	Ventilator should have at least a 30-minute rechargeable battery backup.
S	The anaesthesia workstation should be USFDA, European CE, or BIS approved.
T	It should have the capability to mount one O2 and one N2O pin-indexed cylinder.
25	**MRI COMPATIBLE PATIENT MONITOR**
A	Monitor should be MRI compatible with up to 3 Tesla scanner.
B	Should have at least a 15-inch monitor & touch screen operation and should be mounted on a company-manufactured trolley or stand.
C	Active color LCD screen with 1024 x 768 pixels and option to change backdrop and graph colors for better visibility.
D	Should be FDA & CE approved.
E	Should have real-time magnetic field indicator.
F	It should be capable of monitoring ECG, SpO2, NIBP, EtCO2, IBP, temperature & have an option for remote monitoring.
G	The monitor should be able to monitor adult, paediatric, and neonatal patients and should be user-friendly.

H	The SpO2 & ECG sensors should be wireless.
I	It should have an internal battery that lasts for at least 6 hours.
J	Should have integrated power supply for charging the monitor, sensors, and all accessories inside the MRI Room.
K	Should have the option to upgrade to EtCO2, AGM, temperature, and additional IBP in the future.
L	Should be supplied with per-patient consumables for 100 patients.
M	The solution should be a fully non-magnetic multi-parameter portable patient monitoring system, designed to be small, easy to use, and lightweight.
N	The MRI vital sign monitor should be able to travel with the patient.
O	It should enhance staff efficiency by simplifying inter-department transfers and enabling faster emergency response with the monitor docked to the patient's bed.
P	The system should come with a wireless lightweight control room monitor and base station with a backup charging dock.
Q	Pricing for SpO2 probes and BP cuffs (adult and paediatric) should be quoted separately for further purchase if required.
R	The system should be CDSCO, European CE, USFDA, or BIS approved.
S	All probes and accessories for both adult and paediatric age groups should be provided.
26	**MULTI NUCLEAR SPECTROSCOPY**
A	The system should be capable of performing multi-nuclear spectroscopy.
B	Quote Optionally for MNS Coils
27	The supplier acknowledges the necessity of providing all components, both explicitly listed and inherently required for the optimal functionality of the supplied system. This includes but is not limited to software, hardware, accessories, and any other components essential for the system's operation.
28	Kindly indicate any recall if happened earlier or are active for the quoted model (FDA/CE/CDSCO)
29	System should be compatible for RT planning
30	System should have a compatibility for MRI HIFU (necessary hardware and software for integration should be provided as applicable)
31	System should have a compatibility for MR Elastography.

32	System should be upgradable to future major enhancements (During the warranty and Maintenance contract period, any software updates that are launched globally should be supplied and installed.
33	System should be able to offer research applications and platform to safely switch between clinical and research mode.
34	The system should allow high speed transmission and viewing of data with adequate security measures against viruses and unauthorized access to prevent misuse.
35	The MRI system should be regularly maintained in the latest version of computing software, including software platform upgrades released for the respective system that can prepare it for future enhancements. If a hardware upgrade is required to run the latest software version to its normal performance, the respective hardware should be upgraded at no additional costs during the complete life of the system Under CMC / Warranty
36	If any software is being used for operations of this equipment, then it should be: interfaceable with the hospital EMR/HIS using HL7/ FHIR standards
37	The software should also be compliant with the requirements of the National Health stack and should have undergone ABDM sandbox testing if indicated in the NHA guidelines.
38	Material Supplied from or having a country of origin from a country which shares a land border with India are not accepted.
39	Should have import / manufacturing license from central licensing Authority or state licensing authority of CDSCO for medical devices and a copy of valid license should be submitted for the quoted model.
40	For all patient related data generated in the equipment: Guidelines given in the DPDP act to be followed.

Sl. No	**TECHNICAL SPECIFICATION FOR INTRAOPERATIVE MRI SYSTEM**
1	The manufacturer/bidder must quote the latest 'state of the art' MRI scanner with 1.5Tesla capability. The manufacturer should also confirm End of Life service for 10 years from the date of installation. (Document proof from the manufacturer should be attached)
2	The vendor will guarantee that the system supplied is not refurbished. The MRI system quoted should be the latest and best available model in the segment (1.5T MRI scanner with at least a 70 cm bore) at the time of delivery and should submit an undertaking in this regard.
3	The offered model should be CDSCO/USFDA/EUROPEAN CE approved. (Authentic and legible certificates for these approvals should be annexed.)
4	**MAGNET**

A	MAGNET -The system should have a 1.5Tesla superconducting magnet with a bore diameter of at least 70 cm or more. The magnet should include a display that provides information on coil connectivity, physiological curves, scan initiation, alarm management. The magnet should have a zero boil-off rate.
B	FIELD STRENGTH -The system should include a helium-only 1.5Tesla superconducting magnet, with a facility for a quick shutdown of the magnet in case of an emergency.
C	FIELD STABILITY OVER TIME -The system should include active shielding and external interference shielding to ensure excellent field stability. The magnetic field's temporal stability should be maintained according to the homogeneity criteria outlined below.
D	HOMOGENEITY -Specify the homogeneity of the magnetic field at 10 cm, 20 cm, 30 cm, and 40 cm DSV (Diameter of Spherical Volume), as well as at the maximum FOV (Field of View) achievable with the quoted scanner. The guaranteed homogeneity of the magnet, using the VRMS (Root Mean Square Variation) method, should be stated.
E	MAGNET BORE -The magnet should have a bore size of at least 70 cm available at the centre. Please specify the exact bore size of the magnet.
F	ACTIVE SHIELDING / FRINGE FIELD -Specify the values for the 5 Gauss and 1 Gauss lines in both radial and axial directions from the centre of the magnet, measured in meters.
G	EXTERNAL SHIELDING-The external interference shielding should be sufficient to enclose the magnet effectively.
H	MAGNET COOLING SYSTEM. -Devices for monitoring helium levels should be included.
5	**SHIM SYSTEM**
A	The system should feature a high-performance and highly stable shim system with global and localized shimming capabilities, both manual and automatic, to ensure a high homogeneity magnetic field for MRI, DTI, fMRI, and magnetic resonance spectroscopy.
B	The auto-shim system (global and voxel shim) should quickly adjust the magnet's homogeneity with the patient in position, minimizing the time required for shimming.
6	**PATIENT TABLE**
A	A dock- able table with an embedded coil should be included as standard.
B	Dock- able Table should be able to take at least 200 kg load.
C	Bolus chasing with an automatic/continuous moving table should be offered.
7	**PATIENT COMFORT FEATURES**
A	Two-way patient communication, including a headphone, microphone, necessary accessories, and a patient audio alarm, should be provided.

B	A closed-circuit TV camera for patient monitoring should be provided, ensuring that it does not produce image artefacts during the scan.
8	**GRADIENT SYSTEM**
A	An actively shielded gradient system in the x, y, and z planes should be provided.
B	System should offer Gradient performance of peak amplitude of at least 44 mT/m and peak slew rate of 200 T/m/s.
E	A 100% duty cycle for the full field of view (FOV) should be standard.
F	Specify the gradient amplifier specs, including the maximum output voltage and maximum output current.
9	**ACQUISITION IMAGE RESOLUTION PARAMETERS**
A	Specify the minimum and maximum field of view (FOV) achievable for the quoted MRI system.
B	Specify the minimum slice thickness in both 2D and 3D modes at matrix resolutions of 128x128, 256x256 & 512x512.
C	The system should be capable of performing single-shot Echo Planar Imaging (EPI) with matrix sizes of 64x64, 128x128, and 256x256. This capability should include conventional and fluoroscopic imaging in three orthogonal planes as well as oblique planes.
D	The system should be equipped with an effective cooling system for both the gradient coil and power supply, ensuring uninterrupted operation throughout all seasons.
10	**RF TRANSMIT/RECEIVE UNIT**
A	The system should include the latest RF transmit technology with RF amplifier to enhance B1 uniformity, signal homogeneity, and to reduce patient-induced inhomogeneities.
B	The system should include a fully digital RF system capable of transmitting sufficient power, with the power value quoted as per FDA guidelines. The operating frequency of the RF system should also be specified.
C	Specify the maximum transmitter RF power available.
D	At least 125 RF channels and an equivalent number of ADCs should be offered as standard.
E	Specify the RF receiver bandwidth for each channel.
F	The system should include the necessary hardware to support quadrature phased array coils and flexible (flex) coils.
G	SAR limits should comply with FDA guidelines for all protocols, including neuro and abdominal imaging.

11	COILS
A	The number of channels and elements for each coil should be the highest available in the vendor's product range.
B	If the vendor does not supply or manufacture a specific coil, third-party coils may be used. The vendor is responsible for providing all necessary hardware and software interfaces to ensure full compatibility with the MRI system, including RF sequences.
C	Head Coil/ Head-Neck Coil: Specify the number of channels for the head coil, ensuring it is suitable for high-resolution brain imaging, brachial plexus, nerve imaging, and EPI/DTI applications. The head coil must also be compatible with the fMRI projection device provided with the system.
D	Integrated Spine Array Coil: The integrated spine array coil should have at least 40 channels. Please specify the exact number of channels.
E	Body array coil with 45 channels in one FOV by Single or combination of Spine Coil (anterior coil.no of channel in single scannable FOV to be specified) (Qty:2)
F	Peripheral or Whole-Body Coil: The peripheral or whole-body coil should provide coverage of at least 80 cm, using a maximum combination of 2 coils. Please specify the coverage and number of channels.
G	Breast Coil: The dedicated breast coil should have at least 16 channels and be equipped for biopsy grids. Please specify the exact number of channels for this coil, and ensure it is offered as standard.
H	Flexible Coils: The system should include the latest state-of-the-art flexible coil with 18 channels or more. This coil should be designed to avoid coupling effects even when wrapped around patient anatomy, such as extremities (shoulder, knee, foot & ankle, and wrist), without any loss of signal. (Both Large & Medium flex coil should be offered)
I	Dedicated Knee Coil of at least 16 channels
12	**HOST COMPUTER AND ARRAY PROCESSORS**
A	The vendor should supply an image processor with ample RAM to support ultra-fast image reconstruction. The processor must be capable of performing real-time image reconstruction efficiently. A minimum of 64 GB should be available.
B	Computational Speed: Should be sufficient to support single shot echo planar imaging (EPI), interactive angiography, multi-planar 3D reconstruction, surface rendering, dynamic imaging, and vascular imaging/angiography.
C	Storage: Adequate capacity for storing images and other data relevant to the MRI applications.
D	Hard Disk Memory: The system should include hard disk memory with a capacity to store a minimum of 200,000 (two lakh) images.
E	Monitor: A medical-grade monitor of 23 inches or larger, with a resolution of 2 MP and enhanced graphics acceleration.

F	Measurement Console: A main console capable of data acquisition, all online calculations required for all sequences, and post-processing for all applications as specified in the tender
G	Licensing: licenses for acquisition, post-processing, and any special packages required. The vendor should list all capabilities of the quoted product, including both basic and premium packages.
H	Pulse Sequence Software: The main console should include pulse sequence software licenses necessary for modifying and running pulse sequences. If this is not feasible, the vendor must provide the required hardware and software solutions.
13	**CD/DVD ARCHIVAL**
A	DVD RW Drive and Software: The system should include a DVD RW drive capable of writing images, spectra, and raw data. The necessary software for reading images and spectra from DVDs/CDs and storing capabilities should also be provided.
B	Archival Provision: The system should include a provision for archiving k-space data and raw (unprocessed) images.
14	**NETWORKING**
A	Protocol and Standards: The system should support Ethernet TCP/IP standards for image transfer with DICOM 1.5over standard Ethernet IEEE 903, including DICOM send, receive, and query modes.
B	PACS Connectivity: The vendor should ensure compatibility and provide connectivity with the PACS (Picture Archiving and Communication System).
C	Network Speed and Cabling: The network speed and cabling should conform to the latest industry standards (e.g., 10BASE-T, 100BASE-T, or 1GB).
D	**IP Configuration:** The system should be configured with a range of IP addresses to avoid conflicts with existing equipment in different departments.
E	Networking and Configuration Assistance: The vendor should provide necessary networking and configuration assistance for integration with existing PACS, HIS (Hospital Information System), and RIS (Radiology Information System).
15	**DATA ACQUISITION**
A	2D and 3D Acquisitions: The system should be capable of 2D and 3D acquisitions in conventional, fast, and ultra-fast spin echo, as well as gradient echo modes, allowing for real-time online image observation if needed. All sequences available from the vendor at the time of quote/delivery should be included as per their manual.
B	Multi-Slice Imaging: The system must support multi-slice imaging in all planes (axial, sagittal, coronal, oblique, and double oblique).
C	Matrix Acquisitions: The system should support up to 256/512 matrix acquisitions for all compatible applications.

D	Techniques such as half Fourier or other methods to reduce scan acquisition time while maintaining adequate SNR (Signal-to-Noise Ratio) should be available.
E	Capable of 3D volume, multiple contiguous slabs, multiple interleaved slabs, and overlapping slabs
F	Slice thickness in 2D and partition in 3D should be freely selectable.
G	Dynamic acquisition (serial imaging) with the capability to initiate scan sequences from either the magnet panel or the console should be available.
H	Ability to perform dynamic acquisition with several repeat scans and delay times that can be either identical intervals or selectable.
I	Gating and Triggering: Support for physiological signal gating (ECG, pulse, respiratory) and external signal triggering with interlace for external input pulse. Provision should also be available at the console for fMRI, EEG, etc. The latest and most advanced technology should be offered.
J	Simultaneous Data Processing: Capability for simultaneous acquisition, processing, and display of image data in 2D multi-slice mode.
K	Ability to select voxels from oblique slices during spectroscopy should be available.
L	Techniques for artefact reduction, imaging enhancement, image filtering, image subtraction, addition, multiplication, and division should be available.
M	Fat saturation techniques using frequency-selective RF pulses to suppress fat signals in the measured FOV, with regional fat suppression options.
N	Magnetization transfer saturation using off-resonance RF pulses to suppress signals from stationary tissue in the FOV.
O	Phase contrast capability in 2D and 3D modes should be available.
P	Image intensity correction capabilities should be available.
Q	Breath-hold acquisition capabilities should be available.
R	Diffusion Tensor Imaging (DTI) with a minimum of 280 directions should be available.
S	The system should be capable of data acquisition in all three standard planes—axial, sagittal, and coronal—as well as in oblique, double oblique, and additional oblique planes as required.
T	The system should offer higher matrix acquisition capability in single shot EPI (Echo Planar Imaging) mode. The acquisition time, TR (repetition time), TE (echo time), and slice thickness should be explicitly stated.
U	The vendor should provide a multi-coil acquisition system designed to optimize throughput and expand the effective field of view (FOV). Each individual acquisition element within every coil must be specified and detailed in the offer.

V	The system should incorporate deep learning-based image reconstruction from raw data to enhance image quality (IQ) and reduce scan time. This feature should be applicable to 2D, 3D imaging, diffusion, and motion correction sequences.
W	Advanced Compressed Sensing Imaging: The system should be equipped with advanced compressed sensing imaging technology for high-speed image acquisition, applicable to brain, body, and musculoskeletal (MSK) imaging.
X	Additionally, the system should support simultaneous multi-slab acquisition for diffusion imaging and functional MRI (fMRI) of the brain.
Y	Mutli-contrast imaging and quantitative evaluation should be possible from single acquisition.
16	**IMAGING PULSE SEQUENCES /Equivalent**
A	Multi-Slice Single Echo: The system should support multi-slice single echo sequences for clear and precise imaging.
B	Multi-Slice Multi-Echo: The system should support multi-slice multi-echo sequences with 8 echoes or more for enhanced imaging capabilities.
C	Symmetrical and Asymmetrical Echo Intervals: The system should include Spin Echo sequences with both symmetrical and asymmetrical echo intervals to cater to different imaging needs.
D	Fast Spin Echo (FSE): The system should offer fast spin echo sequences for rapid acquisition while maintaining image quality
E	Magnetization Transfer Spin Echo (MT-SE): The system should support MT-SE imaging sequences to enhance tissue contrast and suppress background signals.
F	Short TI Modified IRSE: The system should include inversion recovery sequences with short TI (Time to Inversion) for rapid suppression of specific tissue signals, enhancing contrast in certain imaging scenarios.
G	FLAIR (Fluid-Attenuated Inversion Recovery): The system should support FLAIR sequences for superior imaging of brain lesions and other pathologies by suppressing cerebrospinal fluid (CSF) signals.
H	DIR (Double Inversion Recovery): The system should offer double inversion recovery sequences to suppress two different tissue types simultaneously, providing improved contrast and tissue differentiation.
I	Transverse Gradient/RF Spoiling: The system should support gradient echo sequences with transverse gradient and RF spoiling capabilities to optimize image contrast and reduce artefacts.
J	Transverse Gradient Re-Phasing: The system should include gradient echo sequences with transverse gradient re-phasing, such as GRASE (Gradient and Spin Echo) or equivalent, for enhanced imaging performance and reduced scan times.

K	3D Gradient Echo with Shortest TR and TE: The system should offer 3D gradient echo sequences with the shortest possible TR (Repetition Time) and TE (Echo Time), allowing free selection of flip angles while maintaining a high signal-to-noise ratio (SNR) for high-quality imaging
17	**FAST SEQUENCES /Equivalent**
A	The MRI system should be equipped with sequences for Fast Spin Echo (FSE) and Gradient Echo (GE) in both 2D and 3D modes, capable of acquiring the maximum number of slices with T1, T2, and Proton Density (PD) contrast, using a given TR (Repetition Time) and minimum TE (Echo Time), with an echo train length in FSE to be 380 or higher.
B	Half Fourier acquisition capabilities should be available with or without diffusion gradients and in combination with Fast Spin Echo (FSE) sequences.
C	Fast gradient spin echo with multi-slice multi-echo mode and maximum echo train length (ETL) should be available. Sequences should incorporate RF focusing to achieve ultra-fast gradient spin echo.
D	Fast gradient echo sequences should incorporate RF spoiling and other techniques for ultra-fast 2D and 3D imaging.
E	EPI-optimized sequences (with and without fat suppression) should be available.
F	Sequences for T1, T2, and PD imaging, perfusion, and regular diffusion should be offered.
G	EPI FLAIR, EPI-IR, EPI FLAIR diffusion tensor, EPI MT FLAIR, tensor diffusion (with at least 280 directions), and diffusion studies should be provided.
H	Suitable artefact and fat suppression techniques should be incorporated in the sequences to ensure optimal image quality and should be available.
I	The capability to calculate ADC maps (isotropic and anisotropic) from regular diffusion and tensor data should be offered.
J	Optimized sequences for special applications should be provided.
K	Multi-band EPI with simultaneous multi-slice accelerated advanced applications should be available.
18	**MR SPECTROSCOPY /Equivalent**
A	The system should have the capability to perform multi-planar proton imaging.
B	Proton MRI sequences for single-voxel acquisition, with selectable fat/lipid saturation bands, and options for water saturation (e.g., VAPOR, CHESS, etc.), with all post-processing software, should be provided.
C	Proton multi-voxel CSI (2D and 3D) acquisition and metabolite mapping with all necessary RF sequences (and post-processing algorithms) should be available with all post-processing software.
D	If separate coils are needed for carrying out MRI spectroscopy, they should be provided.

E	If there are any specialized or optimized sequences available, the same should be offered with all post-processing software.
F	Water and lipid suppression in automated sequences should be available.
19	QUALITY ASSURANCE AND PHANTOMS -Phantoms for routine quality assurance should be provided for all coils, including the body coil.
20	**POST PROCESSING AND EVALUATION**
A	Client-server configuration with 3 clients (workstations with the latest hardware, all post-processing applications should work concurrently, (excluding Cardiac as mentioned below).
B	Cardiac function, morphology, tissue characterization, strain, T1, T2 mapping, and 4D flow with one license should be provided.
C	The vendor must provide their specialized and optimized imaging sequences in the main acquisition console; post-processing packages should also be provided in the main acquisition console.
D	Body, Prostate, and Liver imaging (including 3D T1 fat saturation for dynamic liver imaging) should be available.
E	Oncology, Paediatric, and Breast imaging packages should be available.
F	Angiography (including DSA approach, capturing arterial, capillary, and venous phases in a single acquisition with a single bolus) should be provided.
G	Orthopaedic and MSK imaging with metal artefact reduction software should be provided as standard for imaging joints with prostheses.
H	Multi-planar reconstruction (MPR) in any arbitrary plane, including curved planes with freely selectable slice thickness and slice increments, should be available.
I	MIP (Maximum Intensity Projection) display in cine mode for 2D and 3D modes, with targeted/segmented MIP in any orthogonal axis, should be available with minimal processing time.
J	Evaluation and display of diffusion images, ADC maps, and fMRI in reference to EPI optimized sequences should be provided.
K	Perfusion image evaluation with time-intensity graphs and other statistical parameters should be available.
L	Evaluation package for calculating rCBV, rCBF, MTT, perfusion maps, corrected CBV calculations, and fusion of perfusion maps with contrast-enhanced 3D T1 images should be provided. Mention the package/software offered with a brochure.
M	Flow quantification and evaluation for vascular (high & low), CSF, bladder outlet, and cine display should be available.
N	The system should include a 3D FSE ASL processing and quantification package.
O	Liver volumetric analysis should be provided.

P	Software for evaluation of functional mapping, neuro-metabolite mapping, and bold evaluation should be available.
Q	Post-processing package for DTI and tractography, including estimation of ADC, FA (lambda parallel, perpendicular separately and combined), Fiber tracking, Fiber statistics, and display of Fiber tracts on anatomical images, should be provided.
R	Measurement of distance, area, volume, angle, mean, SD, image addition, subtraction, multiplication, division, interpolation, segmentation, thresholding, histogram should be available
S	Image filtering and image fusion software should be provided.
T	Software for co-registering MRI, fMRI, MRS, and metabolite mapping images with images from CT, PET, and SPECT should be available.
U	Evaluation features such as zoom, rotation, scrolling, roaming, image synthesis, multi-point T1 and T2 calculation (more than 8), window stretching, text dialogues, graphics, sorting, search, archiving, and recalling should be available.
V	Full post-processing for single-voxel MRS, CSI (multi-voxel MRS), metabolite mapping with colour coding (metabolic images), etc., for brain, prostate, and other applications should be provided.
W	Post-processing should include FFT, baseline correction, curve optimization, automatic phase correction, metabolite imaging, spectral mapping, and magnetic resonance spectroscopic imaging (molecular imaging) with naming and peak integral values for all in vivo metabolites.
X	Any advanced organ-specific imaging with automatic planning, scanning, and post-processing applications should be quoted.
21	**FUNCTIONAL MRI ACCESSORIES AND POST-PROCESSING**
A	Functional imaging should include a BOLD (Blood Oxygen Level-Dependent) imaging and processing package, capable of real-time processing and display of colour overlays. This should be compatible with the 21-channel or more head coil supplied with the system.
B	A complete fMRI solution should be provided, including an audio-visual projection system (3D capable) with headphones offering very good noise suppression (>30 dB). It is preferable to have LCD/LED monitor projection.
C	The system should be integrated with stimulus presentation/paradigm generator software, including a permanent license. The paradigm presentation should be synchronized with the scanner for starting along with measurements.
X	ECG electrodes (Pack of 50).
22	**QUALITY ASSURANCE AND PHANTOMS -Phantoms for routine quality assurance should be provided for all coils, including the body coil.**
23	**SPECIFICATION FOR MRI ACCESSORIES/OEM ITEMS**
A	Rechargeable hand-held metal detectors.

B	Walk-through metal detector.
C	MR-compatible patient monitor and MR-compatible infusion pump (specifications are mentioned separately).
E	MR-compatible dual pressure injector.
F	MR-compatible anaesthesia machine (specifications are mentioned separately).
G	MR-compatible patient trolley (to transfer patients to the magnet table) with vertical lift and minimum load capacity of 150 kg.
H	MR-compatible wheelchair: with cushion, backrest, and anti-roll features.
I	Internal RF shielding and other interior work. (As per Scope of work defined)
J	colour Printer: One high-resolution colour printer for printing VRT images for patients with vascular diseases during preoperative and follow-up evaluations.
K	UPS with 30 minutes backup to support the entire system.
L	Dehumidifier.
M	Chiller unit.
N	Film printer software should be inbuilt in workstations
O	**Dry laser camera:**
	- Resolution: Preferably 32 bits / 500 dpi
	- Ports: Minimum 3
	- Number of film trays: Minimum 3
	- Supported film sizes: 17x14, 10x12, and others
P	MR-compatible laryngoscope (adult and paediatric).
Q	Musical system with headphones.
R	Glass with window frame or viewing from console to MRI room.
S	Oxygen level monitor.
T	Microphone & speaker for communication.
U	Cupboard to keep coils.
V	Injector syringes (Quantity: 50).
W	Paper set for photo printer.
24	**MRI COMPATIBLE SYRINGE INFUSION PUMP**

A	**MRI Compatibility: Compatible up to 3 Tesla**
B	Syringe Size Compatibility: Supports syringes of 2 ml, 5 ml, 10 ml, 20 ml, and 50/60 ml.
C	Drug Library: Integrated drug library for enhanced safety and flexibility.
D	Syringe Brand Support: Compatible with a wide range of syringe brands, including major international and local makes.
E	Drug Delivery Modes: Supports ml/hr, volume/time, mg/kg/min, and other delivery modes.
F	Bolus Rate Setting: Allows for precise bolus rate adjustment.
G	Infusion Rate Range: Infusion rates from 0.01 ml/hr to >1000 ml/hr.
H	Occlusion Pressure Display: Displays the buildup of occlusion pressure in the line on the pump screen.
I	Battery Backup: Provides at least 10 hours of battery backup after a full charge.
J	Ease of Use: User-friendly design with a patient tube holder.
K	Alarms: Includes audio and visual alarms to alert clinicians for prompt intervention.
L	Post-Occlusion Bolus Reduction: Reduces bolus delivery after occlusion for enhanced safety.
M	Regulatory Approval: European CE or USFDA approved.
N	Magnetic Field Indicator: Integrated magnetic field indicator for MRI safety.
O	MRI-safe free-standing IV pole and a wireless remote control operating in the 2.4 GHz spectrum should also be quoted.
P	It should be European CE, US FDA, or BIS approved.
Q	All accessories, including batteries, should be provided for 10 years.
25	**MRI COMPATIBLE ANAESTHESIA MACHINE**
A	**MRI-compatible (up to 3 Tesla) anaesthesia machine with at least a 12-inch touch screen, integrated electronic ventilator, two vaporizers, inbuilt suction, and a circle absorber.**
B	Integrated anaesthesia ventilator system with the capability to vary respiratory parameters and ventilate adult, paediatric, and infant patients.
C	Electronic or mechanical hypoxic guard ensuring a minimum of 25% oxygen across all O2-N2O mixtures.
D	Includes a remote monitor for placement in the console room.

E	Temperature, pressure, and flow compensation mechanisms with high accuracy for the delivered concentration of volatile anaesthetic agents. Maintenance-free.
F	Vaporizers should include sevoflurane (preferred). Two vaporizers will be preferred if available.
G	Integrated breathing circuit with a circle absorber, easy to clean, autoclavable, and with fewer parts to reduce leaks.
H	Tidal volume ranges from 20-1500 ml (volume control), with a rate of at least 4-80 bpm.
I	Capable of ventilating adults, paediatric patients, and neonates with a tidal volume range of 5–1200 ml or better.
J	Antistatic, heavy frame and base, equipped with high-quality casters and front brakes.
K	Free replacement of galvanic oxygen cell sensors for the entire warranty period. If paramagnetic sensors are used, ensure no downtime during repair and provide a standby alternative.
L	Ventilation software supports volume control, pressure control, pressure support modes, and advanced modes such as SIMV and PSV, along with integrated suction functionality.
M	Option for an AGM (Anaesthesia Gas Monitoring) module.
N	Includes oxygen, nitrous oxide, and air flow meters.
O	The machine should have the facility to mount at least two vaporizers, with the latest technology, key filler, and selectable type with tool-free installation and interlocking facility. Vaporizers should preferably be of the same make as the machine.
P	All necessary safety alarms should be available.
Q	Supplied with 500 per-patient consumables for each year of the warranty period.
R	Ventilator should have at least a 30-minute rechargeable battery backup.
S	The anaesthesia workstation should be USFDA, European CE, or BIS approved.
T	It should have the capability to mount one O2 and one N2O pin-indexed cylinder.
26	**MRI COMPATIBLE PATIENT MONITOR**
A	**Monitor should be MRI compatible with up to 3 Tesla scanner.**
B	Should have at least a 15-inch monitor & touch screen operation and should be mounted on a company-manufactured trolley or stand.
C	Active color LCD screen with 1024 x 768 pixels and option to change backdrop and graph colors for better visibility.
D	Should be FDA & CE approved.

E	Should have real-time magnetic field indicator.
F	It should be capable of monitoring ECG, SpO2, NIBP, EtCO2, IBP, temperature & have an option for remote monitoring.
G	The monitor should be able to monitor adult, paediatric, and neonatal patients and should be user-friendly.
H	The SpO2 & ECG sensors should be wireless.
I	It should have an internal battery that lasts for at least 6 hours.
J	Should have integrated power supply for charging the monitor, sensors, and all accessories inside the MRI Room.
K	Should have the option to upgrade to EtCO2, AGM, temperature, and additional IBP in the future.
L	Should be supplied with per-patient consumables for 100 patients.
M	The solution should be a fully non-magnetic multi-parameter portable patient monitoring system, designed to be small, easy to use, and lightweight.
N	The MRI vital sign monitor should be able to travel with the patient.
O	It should enhance staff efficiency by simplifying inter-department transfers and enabling faster emergency response with the monitor docked to the patient's bed.
P	The system should come with a wireless lightweight control room monitor and base station with a backup charging dock.
Q	Pricing for SpO2 probes and BP cuffs (adult and paediatric) should be quoted separately for further purchase if required.
R	The system should be CDSCO, European CE, USFDA, or BIS approved.
S	All probes and accessories for both adult and paediatric age groups should be provided.
27	**INTRA-OP ACCESSORIES**
A	Imaging accessories details to make system functional in all respects- specialized imaging accessories such as dedicated rf coils designed for surgical procedures, head fixation devices, patient positioning aids, and sterile covers for equipment to ensure compatibility with the sterile environment, compatible with OT table etc should be offered as standard
B	Patient transfer and positioning: Dock able table should be offered as standard
C	Compatibility of surgical instruments and implants should be assured for standard equipment's (third party)
D	Details on workflow integration and data management-enabling rapid image acquisition and reconstruction, allowing surgeons to view and assess the images promptly without causing significant interruptions to the surgical process

E	Operating room compatible patient transfer/imaging table should be offered as applicable
F	Coil accessories kit for MRI surgical suite should be offered as standard
G	Compatibility to Surgical navigation should be offered.
H	Compatibility to surgical suite transfer board should be offered.
I	Compatibility to surgical table fixed flush column should be offered.
28	The supplier acknowledges the necessity of providing all components, both explicitly listed and inherently required for the optimal functionality of the supplied system. This includes but is not limited to software, hardware, accessories, and any other components essential for the system's operation.
29	Kindly indicate any recall if happened earlier or are active for the quoted model (FDA/CE/CDSCO) and
30	System should be compatible for rt planning
31	System should be compatible for MRI HIFU (necessary hardware and software for integration should be provided as applicable)
32	System should be compatible for MR Elastography
33	System should be upgradable to future major enhancements. During the warranty and Maintenance contract period, any software updates that are launched globally should be supplied and installed.
34	System should be able to offer research applications and platforms to safely switch between clinical and research mode.
35	The system should allow high speed transmission and viewing of data with adequate security measures against viruses and unauthorized access to prevent misuse.
36	The MRI system should be regularly maintained in the latest version of computing software, including software platform upgrades released for the respective system that can prepare it for future enhancements. If a hardware upgrade is required to run the latest software version to its normal performance, the respective hardware should be upgraded at no additional costs during the complete life of the system under CMC/Warranty
37	If any software is being used for operations of this equipment, then it should be: interfaceable with the hospital EMR/HIS using HL7/ FHIR standards
38	The software should also be compliant with the requirements of the National Health stack and should have undergone ABDM sandbox testing if indicated in the NHA guidelines.
39	Material Supplied from or having a country of origin from a country which shares a land border with India are not accepted.

40	Should have import / manufacturing license from central licensing Authority or state licensing authority of CDSCO for medical devices and a copy of valid license should be submitted for the quoted model.
41	For all patient related data generated in the equipment: Guidelines given in the DPDP act to be followed.

Sl. No	**Details of Scope of work involved for Intra OP MRI SYSTEM**	**Scope of work**
1	(a) Drawing as per **IEC 60601-2-33** (Medical electrical equipment for MRI) and **ACR** (American College of Radiology) guidelines, for MRI safety and performance, 5G Magnetic Field Mapping (b)Approval of Drawing (c)Structural confirmation for MRI placement to be provided (d)Magnetic field diagram for confirmation of surrounding areas as per the vendor drawing	(a)service provider (b)client (c)client (d)client
2	**Civil works:** **Floor level:** a) Finished floor level of the Magnet area (inside RF cabin) to be at perfect level. **Permissible Tolerance in mm is to be defined as per pre installation requirement of service provider** b) The finished floor level inside the RF cabin area is to be as defined in the pre installation requirement . **For External Chiller Unit:** c) Platform of brickwork , shed with sloping roof, water supply with suitable valve near chiller unit as per defined pre installation requirement of service provider. d) Allow enough space to lay pipes from & to chiller unit and for Quench Pipe of MRI.	(a) client (b) client (c)client (d)client
3	**Transportation route:** (a)Transportation Dimensions (b)Defining The equipment transportation route	(a) service provider (b) client
4	(a) Defining Dedicated Earth requirements (b)Providing Earth pit	(a)service provider (b)client

5	**(a)RF Window & Filter Plate:** 1)RF window of 1200 mm X 800 mm mounted in a frame of 1430 mm X 1035 mm to be provided in the RF cabin wall facing the console room. 2)RF window frame to be provided at a height of 860 mm from the RF cabin floor level. **(b) The RF Shielding Installation** and Steel Shielding Installation (As applicable) for the Intraoperative MRI Suite must be carried out with consideration of the Modular OT environment, ensuring effective electromagnetic interference (EMI) mitigation and seamless integration into the overall infrastructure. **(c)The Virtual Skylights andVirtual Wall Panels** having high- definition image, MRI compatible, decorative LED panel mood lighting system with 2 x 2 LED panels measuring 1.2 x 1.2 metres to be provided. Panels to be ceiling mounted within an existing ceiling grid. The frame of skylight & supporting structure should be made from non-ferromagnetic material. **(d)Personalized Visuals:** The systems allow patients to choose what they want to watch, such as guided meditation videos or calming scenes, providing more control over their experience. **(d)RF door** (Sliding door as per site condition for Intra OP MRI)	(a)service provider (b) service provider (c)service provider (d)service provider (e)service provider
6	**Power supply:** a) Power supply: 415 V, 3 Phase, 50 Hz, Power supply has to be provided for MR unit as per pre-installation requirement **b) Mains Distribution Panel:** To be provided & installed as per Line diagram in drawing. **c) Power Cable:** The mains cable has to be terminated in a main switch at the mains panel in the MR as per pre-installation requirement. equipment room. **d) Earth Connections:** As per pre-installation requirement. **e) For Chiller unit:** 1) Electrical power 2) Electrical board with sockets 5A with switch and a bulb holder with bulb near the chiller. **(f)Power outlet & lighting circuits** within MRI room must be RF filtered to avoid RF leakage through the electrical system.	(a)client (b)client (c)client (d)client (e)client (f)Service provider
7	**LIGHTING (Rooms other than the RF cabin)** a) Uniform diffused lighting in all rooms b) 2 no. spotlights with dimmer control may be provided in the console room	(a)client (b)client
8	**LIGHTING (RF Cabin room):** a) DC Lighting or MR compatible LED inside the RF cabin room: 230 V/24 V 50 Watts as applicable, 9 nos with non-magnetic fittings to be provided in the RF cabin room b) 230 V/24 V DC power Panel for DC supply has to be installed in the Equipment room. (If required)	(a)service provider (b)service provider
9	**Concrete bed:** Concrete bed of Magnet room as per the pre-installation requirement has to be provided at the location of the Magnet.	(a)client

10	UPS, Power Panel for MR a) Supply of UPS as per pre-installation requirement b) MR Power Panel, SLD attached c) DC power supply panel for lighting (If required) d) Cables for connecting the UPS and power panel from Mains switch e) Cables from the MR Power panel to MRI unit and ancillary items in scope will be provided by SERVICE PROVIDER	(a)service provider (b) service provider (c)service provider (d)service provider (e)service provider (f)service provider
11	**False ceiling:** False ceiling to be provided in the Air-conditioned areas. (Magnet room) False ceiling height: At least 2.7 metres from the finished floor level	service provider
13	**Cupboards:** Cupboards/racks to be provided a) For keeping accessories, coils and Phantoms in the Magnet room b) For keeping the manuals and software discs and special tools (With locking facility)	service provider
14	**Change room & reception:** Preparation of change room, reception, cubicles etc.	client
15	**Painting:** Painting, tile work etc **(MRI magnet room)**	service provider
16	**A/C** (a) **Ducting and termination** 1)The HVAC ducts that enter or leave the MRI room must have waveguides or necessary filters to prevent RF interference while allowing airflow & necessary Ducting and termination inside the Magnet room as applicable. **2)Heat load as per pre-installation requirement** (b) HVAC ducts for supply & return till MRI room with necessary filters and ducting for other areas as per vendor drawing and backup split AC in technical room. (Ducts above RF should be aluminium or as required based on pre installation requirement) Temperature: **as per pre-installation requirement of service provider** Rel. Humidity: **as per pre-installation requirement of service provider**	(a)service provider (b)client
17	**Intercom and Communication System**s, Camera to view patient inside the Gantry Room (CCTV camera which are MR compatible.) ;2 Qty	service provider
18	**Cleanliness of site and dust free environment:** a) Cleaning up and Site fully ready to receive the equipment at site b) Arrival of Special tools at site for unloading	(a)client(b)service provider
19	**Equipment arrival and unloading:** a) Equipment arrival at Site b) Arrangement of Crane for unloading c) Unloading of equipment d)Platform for unloading as per vendor pre-installation requirement	(a)service provider (b) service provider (c) service provider (d)client (e)client

	e) Confirmation of structural strength for unloading platform and rigging route	
20	**Mechanical installation:** Installation of RF cabin and Positioning of Magnet	(a)service provider
21	**a) Closing of wall opened** for moving Magnet inside Premises. (Vendor Shop floor drawing should represent the wall to be kept on hold) **b) Providing cable tray inside & outside of RF cabin**	(a)client (b) service provider
22	**Functioning of A/C:** **A/C to be switched ON, DUST FREE ENVIRONMENT**, Digital Thermometer with temp and humidity display to be provided in the Magnet room and console room (To be available during commissioning of equipment also)	client
23	a) Flooring (Anti-static) to be provided in the Magnet room (after the mechanical installation of Magnet and patient table. b) Flooring (Anti-static) to be provided in the Console room.	(a) service provider (b) client
24	**Wall sockets:** a) Required no. wall sockets of 5A/15 A rating to be provided near the Console of MR unit. b) wall sockets of 5A/15A rating in Equipment room as per pre-installation requirement **Emergency Stop** c) One no. Emergency stop button (Push to Stop, Twist to release type) has to be provided in the Magnet room and wiring to be terminated near the MR RF filter panel & one no. E stop in the equipment room. **ON/OFF Push button Station:** d) One no. ON/OFF Pushbutton station has to be provided near the Control Console of MR and the wiring has to be terminated at the location of MR Electrical panel in the MR Equipment room e)MRI Gantry room O2 monitoring f)MGPS outlets& data points	(a)client (b) client (c)service provider (d)service provider (e)service provider (f)service provider
25	a) Cabling of the Magnetic cage unit as applicable b) False Ceiling and Interior finishing of RF cabin.	(a)service provider (b) service provider
26	Coordination with Modular OT vendor for OR integration as required.	service provider
27	**Power ON** UPS Engineers also to be available	service provider
28	**Shimming and tune up**	service provider
29	**Application Training & Patient trials**	service provider
30	**Handing over of the MR Unit**	service provider

Sl. No	Scope of work Matrix involved for 3Tesla MRI SYSTEM	Scope of work
1	(a) Drawing as per **IEC 60601-2-33** (Medical electrical equipment for MRI) and **ACR** (American College of Radiology) guidelines, for MRI safety and performance, 5G Magnetic Field Mapping (b)Approval of Drawing (c)Structural confirmation for MRI placement to be provided (d)Magnetic field diagram for confirmation of surrounding areas as per the vendor drawing	(a)service provider (b)client (c)client (d)client
2	**Civil works:** **Floor level:** a) Finished floor level of the Magnet area (inside RF cabin) to be at perfect level. **Permissible Tolerance in mm is to be defined as per pre installation requirement of service provider** b) The finished floor level inside the RF cabin area is to be as defined in the pre installation requirement . **For External Chiller Unit:** c) Platform of brickwork , shed with sloping roof, water supply with suitable valve near chiller unit as per defined pre installation requirement of service provider. d) Allow enough space to lay pipes from & to chiller unit and for Quench Pipe of MRI.	(a) client (b) client (c)service provider (d)client
3	**Transportation route:** (a)Transportation Dimensions (b)Defining The equipment transportation route	(a) service provider (b) client
4	(a) Defining Dedicated Earth requirements (b)Providing Earth pit	(a)service provider (b)client
5	**(a)RF Window & Filter Plate:** 1)RF window of 1200 mm X 800 mm mounted in a frame of 1430 mm X 1035 mm to be provided in the RF cabin wall facing the console room. 2)RF window frame to be provided at a height of 860 mm from the RF cabin floor level. **(b) The RF shielding and steel shielding installation** (as applicable) for the 3T MRI suite, situated on the ground floor with a simulation lab directly below and an ICU complex above, must be meticulously planned and executed with due consideration for the surrounding areas. The shielding must ensure effective electromagnetic interference (EMI) mitigation and seamless integration into the overall infrastructure, safeguarding the functionality and safety of the critical areas both above and below. **(c)The Virtual Skylights and Virtual Wall Panels** having high- definition image, MRI compatible, decorative LED panel mood lighting system with 2 x 2 LED panels measuring 1.2 x 1.2 metres to be provided. Panels to be ceiling mounted within an existing ceiling grid. The frame of skylight & supporting structure should be made from non-ferromagnetic material. **(d)Personalized Visuals:** The systems allow patients to choose what they want to watch, such as guided meditation videos or calming scenes, providing more control over their experience. **(e)RF door** (As per site condition for MRI)	(a)service provider (b) service provider (c)service provider (d)service provider (e)service provider

6	**Power supply:** a) Power supply: 415 V, 3 Phase, 50 Hz, Power supply has to be provided for MR unit as per pre-installation requirement **b) Mains Distribution Panel:** To be provided & installed as per Line diagram in drawing. **c) Power Cable:** The mains cable has to be terminated in a main switch at the mains panel in the MR as per pre-installation requirement. equipment room. **d) Earth Connections:** As per pre-installation requirement. **e) For Chiller unit:** 1) Electrical power 2) Electrical board with sockets 5A with switch and a bulb holder with bulb near the chiller. **(f)Power outlet & lighting circuits** within MRI room must be RF filtered to avoid RF leakage through the electrical system.	(a)client (b) client (c)client (d)client (e)client (f) service provider
7	**LIGHTING (Rooms other than the RF cabin)** a) Uniform diffused lighting in all rooms b) 2 no. spotlights with dimmer control may be provided in the console room	(a)client (b)client
8	**LIGHTING (RF Cabin room):** a) DC Lighting or MR compatible LED inside the RF cabin room: 230 V/24 V 50 Watts as applicable, 9 nos with non-magnetic fittings to be provided in the RF cabin room b) 230 V/24 V DC power Panel for DC supply has to be installed in the Equipment room. (If required)	(a)service provider (b)service provider
9	**Concrete bed:** Concrete bed of Magnet room as per the pre-installation requirement has to be provided at the location of the Magnet.	(a)client
10	UPS, Power Panel for MR a) Supply of UPS as per pre-installation requirement b) MR Power Panel, SLD attached c) DC power supply panel for lighting (If required) d) Cables for connecting the UPS and power panel from Mains switch e) Cables from the MR Power panel to MRI unit and ancillary items in scope will be provided by SERVICE PROVIDER	(a)service provider (b)service provider (c)service provider (d)service provider (e)service provider (f)service provider
11	**False ceiling:** False ceiling to be provided in the Air-conditioned areas. (Magnet room) False ceiling height: At least 2.7 metres from the finished floor level	service provider

12	a) Panelling to be done for the exposed sides of RF cabin (Inside and Outside preferably with soundproofing) b) False ceiling inside the RF cabin area to house the DC lamps or MR compatible LED with drivers outside c) Cabling from DC panel to DC Lamps (As applicable) d)Floor finishing with appropriate materials	(a)service provider (b)service provider (c)service provider (d)service provider (e)service provider
13	**Cupboards:** Cupboards/racks to be provided a) For keeping accessories, coils and Phantoms in the Magnet room b) For keeping the manuals and software discs and special tools (With locking facility)	(a)service provider (b)service provider
14	**Change room & reception:** Preparation of change room, reception, cubicles etc.	client
15	**Painting:** Painting, tile work etc **(MRI magnet room)**	service provider
16	**A/C** (a) **Ducting and termination** 1)The HVAC ducts that enter or leave the MRI room must have waveguides or necessary filters to prevent RF interference while allowing airflow & necessary Ducting and termination inside the Magnet room as applicable. **2)Heat load as per pre-installation requirement** (b) HVAC ducts for supply & return till MRI room with necessary filters and ducting for other areas as per vendor drawing and backup split AC in technical room. (Ducts above RF should be aluminium or as required based on pre-installation requirement) Temperature: **as per pre-installation requirement of service provider** Rel. Humidity: **as per pre-installation requirement of service provider**	(a)service provider (b)client
17	**Intercom and Communication System**s, Camera to view patient inside the Gantry Room (CCTV camera which are MR compatible.) ;2 Qty	service provider
18	**Cleanliness of site and dust free environment:** a) Cleaning up and Site fully ready to receive the equipment at site b) Arrival of Special tools at site for unloading	(a)client (b)service provider
19	**Equipment arrival and unloading:** a) Equipment arrival at Site b) Arrangement of Crane for unloading c) Unloading of equipment d)Platform for unloading as per vendor pre-installation requirement e) Confirmation of structural strength for unloading platform and rigging route	(a)service provider (b) service provider (c) service provider (d)client (e)client
20	**Mechanical installation:** Installation of RF cabin and Positioning of Magnet	(a)service provider

21	**a) Closing of wall opened** for moving Magnet inside Premises. (Vendor Shop floor drawing should represent the wall to be kept on hold) **b) Providing cable tray inside & outside of RF cabin**	(a)client (b) service provider
22	**Functioning of A/C:** **A/C to be switched ON, DUST FREE ENVIRONMENT**, Digital Thermometer with temp and humidity display to be provided in the Magnet room and console room (To be available during commissioning of equipment also)	client
23	a) Flooring (Anti-static) to be provided in the Magnet room (after the mechanical installation of Magnet and patient table. b) Flooring (Anti-static) to be provided in the Console room.	(a)service provider (b) client
24	**Wall sockets:** a) Required no. wall sockets of 5A/15 A rating to be provided near the Console of MR unit. b) wall sockets of 5A/15A rating in Equipment room as per pre-installation requirement **Emergency Stop** c) One no. Emergency stop button (Push to Stop, Twist to release type) has to be provided in the Magnet room and wiring to be terminated near the MR RF filter panel & one no. E stop in the equipment room. **ON/OFF Push button Station:** d) One no. ON/OFF Pushbutton station has to be provided near the Control Console of MR and the wiring has to be terminated at the location of MR Electrical panel in the MR Equipment room. e)MRI Gantry room O2 monitoring f)MGPS outlets& data points	(a)client (b)client (c)service provider (d)service provider (e)service provider (f)service provider
25	a) Cabling of the Magnetic cage unit as applicable. b) False Ceiling and Interior finishing of RF cabin.	(a)service provider (b) service provider
26	Coordination with Modular OT vendor for OR integration as required.	service provider
27	**Power ON** UPS Engineers also to be available	service provider
28	**Shimming and tune up**	service provider
29	**Application Training & Patient trials**	service provider
30	**Handing over of the MR Unit**	service provider