TENDER ENQUIRY DOCUMENT

FOR PURCHASE OF
MEDICAL EQUIPMENT
FOR INSTITUTIONS GETTING UPGRADED
UNDER PMSSY PHASE III

On behalf of

GOVT. OF INDIA

MINISTRY OF HEALTH & FAMILY WELFARE
HITES/PCD/PMSSY-III/04/RAD/17-18

Through

HLL INFRA TECH SERVICES LIMITED

(Subsidiary of HLL Lifecare Ltd., a Govt. of India Enterprise)
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SECTION I

NOTICE INVITING **TENDER** (NIT)

Tender Enquiry No.: HITES/PCD/PMSSY-III/04/RAD/17-18 **Dated 09.05.2017**

(1) Procurement & Consultancy Services Division of **HLL Infra Tech Services Limited (HITES), a fully owned subsidiary of HLL Lifecare Ltd. (HLL)**, for and on behalf of Govt. of India, Ministry of Health & Family Welfare, invites sealed tenders, from eligible and qualified tenderers for supply of Medical Equipment to various Medical Colleges/ Institutes mentioned in this Tender Enquiry Document which are getting upgraded to super-specialities under Pradhan Mantri Swasthya Suraksha Yojna (PMSSY) Phase III:

Sl. No.	Rfx No.	Item Description	Qty.	Tender Processing Fee (Rs.)	EMD (Rs.)
1	3000001970	1000 mA Digital X-RAY System with Digital Flat Panel Detector	20	5,750	80,00,000
2	3000001971	300 mA HF X-Ray Machine	16	3,680	2,56,000
3	3000001972	500 mA HF X-Ray Machine	16	5,750	4,80,000
4	3000001973	800mA Digital X-Ray unit with Single Detector (Floor Mounted)	13	5,750	23,40,000
5	3000001974	Bi-Plane DSA	7	5,750	105,00,000
6	3000001975	CT Scan-128 Slice	22	5,750	264,00,000
7	3000001976	CT Scan-16 Slice	2	5,750	10,00,000
8	3000001977	CT Scan-256 Slice	2	5,750	40,00,000
9	3000001978	Digital Mammography System	5	5,750	26,00,000
10	3000001979	DRF - Digital Flat Panel Fluoroscopy cum Radiography System	2	5,750	11,00,000
11	3000001980	Portable - Colour Doppler	27	5,750	10,80,000
12	3000001981	Colour Doppler - 2D	38	5,750	19,00,000
13	3000001982	Color Doppler System - (4D)	19	5,750	15,96,000
14	3000001983	Computed Radiography Unit	16	5,750	9,60,000
15	3000001984	Computed Radiography Unit Single Loader	4	2,760	96,000
16	3000001985	Mammography (Analog /Conventional)	12	5,750	12,00,000
17	3000001986	Mobile X ray machine	57	5,750	4,56,000
18	3000001987	MRI 1.5 T	8	5,750	152,00,000
19	3000001988	MRI 3 T	4	5,750	108,00,000

(2)Tender No.: HITES/PCD/PMSSY-III/04/RAD/17-18

Sl. No.	Description	Schedule
a.	Last date for receipt of Pre-bid queries	17.05.2017, 1800 hrs IST
b.	Pre-bid meeting date, time	19.05.2017, 1100 hrs IST
d.	Closing date & time for submission of online bids	15.06.2017, 1800 hrs IST

Sl. No.	Description	Schedule
c.	Closing date & time for submission of **tender processing fee and EMD in physical form***	16.06.2017, 1400 hrs IST
e.	Time and date of opening of online bids	16.06.2017, 1430 hrs IST
f.	Venue for :- • Submission of tender processing fee, EMD in physical form. • Tender Opening-Tech Bid	HLL Infra Tech Services Limited, Procurement & Consultancy Services Division, B-14 A, Sector-62, Noida-201307

* Bidders have to submit Original Bank Instruments viz. DD/BC/BG of tender processing fee and EMD within the above mentioned date and time

SPECIFIC Instructions for e-Tender Participation:-

(3) The tenders are invited through the e-tender portal of HLL/HITES (https://etender.lifecarehll.com/irj/portal) only.

(4) The prospective bidders have to register in the e-tender portal for participating in the tender. There is no registration fee. The instruction for registering in the portal along with video tutorial is available in the *Bidder Help Documents* provided in the e-tender portal login screen.

(5) Bidders should have a valid Class 3 Digital Signature Certificate with signing and encryption keys.

(6) On completion of the registration process, the bidders will be provided user ID and password within 72 hours (excepting non-working days). In order to submit the bids electronically bidders are required to have a valid Class 3 Digital Signature Certificate (**signing and encryption/ decryption certificates**).

(7) Bidders can access the portal for viewing/ downloading the tender enquiry document & uploading tender(s) after the receipt of User ID & Password.

(8) Bidders are requested to go through the *Bidder Help Documents* on e-tender portal before proceeding for bidding.

(9) The tenderers shall submit tender processing fee and EMD in physical form at the scheduled time and venue.

(10) Tenderer may download the tender enquiry documents from the web site www.hllhites.com or www.lifecarehll.com or www.eprocure.gov.in/cppp or https://etender.lifecarehll.com/irj/portal.

(11) The submission of tender online can only be done thru' https://etender.lifecarehll.com/irj/portal.

(12) All prospective tenderers may attend the Pre Tender meeting. The venue, date and time indicated above.

(13) Tenderers shall ensure that their tenders, complete in all respects, are submitted online through HLL e-portal (as described above) ONLY. No DEVIATION is acceptable.

Director & CEO
HLL Infra Tech Services Limited

SECTION - II

GENERAL INSTRUCTIONS TO TENDERERS (GIT)
CONTENTS

GENERAL INSTRUCTIONS TO TENDERERS (GIT)

A. PREAMBLE

1. Definitions and Abbreviations

1.1 The following definitions and abbreviations, which have been used in these documents shall have the meanings as indicated below:

1.2. **Definitions:**

(i) **"Purchaser"** means Ministry of Health & Family Welfare Govt. of India.

(ii) **"e-Tender"** means Bids / Quotation / Tender received from a Firm / Tenderer / Bidder online.

(iii) **"Tenderer"** means Bidder/the Individual or Firm submitting Bids/Quotation/e-Tenders.

(iv) **"Supplier"** means the individual or the firm supplying the goods and services as incorporated in the contract.

(v) **"Goods"** means the articles, material, commodities, livestock, furniture, fixtures, raw material, spares, instruments, machinery, equipment, medical equipment, industrial plant etc. which the supplier is required to supply to the purchaser under the contract.

(vi) "Services" means services allied and incidental to the supply of goods, such as transportation, installation, commissioning, provision of technical assistance, training, after sales service, maintenance service and other such obligations of the supplier covered under the contract.

(vii) "Earnest Money Deposit" (EMD) means Bid Security/ monetary or financial guarantee to be furnished by a tenderer along with its tender.

(viii) "Contract" means the written agreement entered into between the purchaser and/or consignee and the supplier, together with all the documents mentioned therein and including all attachments, annexure etc. therein.

(ix) "Performance Security" means monetary or financial guarantee to be furnished by the successful tenderer for due performance of the contract placed on it. Performance Security is also known as Security Deposit.

(x) "Consignee" means the Hospital/Institute/Medical College/ person to whom the goods are required to be delivered as specified in the Contract. If the goods are required to be delivered to a person as an interim consignee for the purpose of despatch to another person as provided in the Contract then that "another" person is the consignee, also known as ultimate consignee.

(xi) "Specification" means the document/standard that prescribes the requirement with which goods or service has to conform.

(xii) "Inspection" means activities such as measuring, examining, testing, gauging one or more characteristics of the product or service and comparing the same with the specified requirement to determine conformity.

(xiii) "Day" means calendar day.

1.3 Abbreviations:

(i) "TE Document" means Tender Enquiry Document

(ii) "NIT" means Notice Inviting Tenders.

(iii) "GIT" means General Instructions to Tenderers

(iv) "SIT" means Special Instructions to Tenderers

(v) "GCC" means General Conditions of Contract

(vi) "SCC" means Special Conditions of Contract

(vii) "DGS&D" means Directorate General of Supplies and Disposals
(viii) "NSIC" means National Small Industries Corporation
(ix) "PSU" means Public Sector Undertaking
(x) "CPSU" means Central Public Sector Undertaking
(xi) "LSI" means Large Scale Industry
(xii) "SSI" means Small Scale Industry
(xiii) "LC" means Letter of Credit
(xiv) "DP" means Delivery Period
(xv) "BG" means Bank Guarantee
(xvi) "ED" means Excise Duty
(xvii) "CD" means Custom Duty
(xviii) "VAT" means Value Added Tax
(xix) "CENVAT" means Central Value Added Tax
(xx) "CST" means Central Sales Tax
(xxi) "RR" means Railway Receipt
(xxii) "BL" means Bill of Lading
(xxiii) "FOB" means Free on Board
(xxiv) "FCA" means Free Carrier
(xxv) "FOR" means Free On Rail
(xxvi) "CIF" means Cost, Insurance and Freight
(xxvii) "CIP (Destinations)" means Carriage and Insurance Paid up to named port of destination. Additionally the Insurance (local transportation and storage) would be extended and borne by the Supplier from ware house to the consignee site for a period including 3 months beyond date of delivery.
(xxviii) "DDP" means Delivery Duty Paid named place of destination (consignee site)
(xxix) "INCOTERMS" means International Commercial Terms as on the date of Tender Opening
(xxx) "MOH&FW" means Ministry of Health & Family Welfare, Government of India
(xxxi) "Dte. GHS" means Directorate General and Health Services, MOH&FW.
(xxxii) "CMC" means Comprehensive maintenance Contract (labour, spare and preventive maintenance)
(xxxiii) "RT" means Re-Tender.

2. Introduction

2.1 The Purchaser has issued these TE documents for purchase of goods and related services as mentioned in Section – VI – "List of Requirements", which also indicates, *interalia,* the required delivery schedule, terms and place of delivery.

2.2 This section (Section II - "General Instruction Tenderers") provides the relevant information as well as instructions to assist the prospective tenderers in preparation and submission of tenders. It also includes the mode and procedure to be adopted by the purchaser for receipt and opening as well as scrutiny and evaluation of tenders and subsequent placement of contract.

2.3 The tenderers shall also read the Special Instructions to Tenderers (SIT) related to this purchase, as contained in Section III of these documents and follow the same accordingly. Whenever there is a conflict between the GIT and the SIT, the provisions contained in the SIT shall prevail over those in the GIT.

2.4 Before formulating the tender and submitting the same to the purchaser, the tenderer should read and examine all the terms, conditions, instructions, etc. contained in the TE documents. Failure to provide and/or comply with the required information, instructions etc. incorporated in these TE documents may result in rejection of its tender.

3. Availability of Funds

3.1 Expenditure to be incurred for the proposed purchase will be met from the funds available with the purchaser/consignee.

4. Language of Tender

4.1 The tender submitted by the tenderer and all subsequent correspondence and documents relating to the tender exchanged between the tenderer and the purchaser, shall be written in the English language, unless otherwise specified in the Tender Enquiry. However, the language of any printed literature furnished by the tenderer in connection with its tender may be written in any other language provided the same is accompanied by an English translation and, for purposes of interpretation of the tender, the English translation shall prevail**.**

4.2 The tender submitted by the tenderer and all subsequent correspondence and documents relating to the tender exchanged between the tenderer and the purchaser, may also be written in the Hindi language, provided that the same are accompanied by English translation, in which case, for purpose of interpretation of the tender etc., the English translations shall prevail.

5. Eligible Tenderers

5.1 This invitation for tenders is open to all suppliers who fulfil the eligibility criteria specified in these documents.

6. Eligible Goods and Services

6.1 All goods and related services to be supplied under the contract shall have their origin in India or any other country with which India has not banned trade relations. The term "origin" used in this clause means the place where the goods are mined, grown, produced, or manufactured or from where the related services are arranged and supplied.

7. Tendering Expense

7.1 The tenderer shall bear all costs and expenditure incurred and/or to be incurred by it in connection with its tender including preparation, mailing and submission of its tender and for subsequent processing the same. The purchaser will, in no case be responsible or liable for any such cost, expenditure etc. regardless of the conduct or outcome of the tendering process.

B. e-TENDER ENQUIRY DOCUMENTS

8. Content of Tender Enquiry Documents

8.1 In addition to Section I – "Notice inviting e-Tender" (NIT), the TE documents include:

Section II – General Instructions to Tenderers (GIT)
Section III – Special Instructions to Tenderers (SIT)
Section IV – General Conditions of Contract (GCC)
Section V – Special Conditions of Contract (SCC)
Section VI – List of Requirements
Section VII – Technical Specifications
Section VIII – Quality Control Requirements
Section IX – Qualification Criteria

Section X – Tender Form
Section XI – Price Schedules
Section XII – Questionnaire
Section XIII – Bank Guarantee Form for EMD
Section XIV – Manufacturer's Authorisation Form
Section XV – Bank Guarantee Form for Performance Security/CMC Security
Section XVI – Contract Forms A & B
Section XVII – Proforma of Consignee Receipt Certificate
Section XVIII – Proforma of Final Acceptance Certificate by the consignee
Section XIX – Consignee List

8.2 The relevant details of the required goods and services, the terms, conditions and procedure for tendering, tender evaluation, placement of contract, the applicable contract terms and, also, the standard formats to be used for this purpose are incorporated in the above-mentioned documents. The interested tenderers are expected to examine all such details etc. to proceed further.

9. Amendments to TE documents

9.1 At any time prior to the deadline for submission of tenders, the purchaser may, for any reason deemed fit by it, modify the TE documents by issuing suitable amendment(s) to it.

9.2 Such an amendment will be notified in writing by registered/speed post or by fax/telex/e-mail, to all prospective tenderers, who have received the TE documents and will be binding on them.

9.3 In order to provide reasonable time to the prospective tenderers to take necessary action in preparing their tenders as per the amendment, the purchaser may, at its discretion extend the deadline for the submission of tenders and other allied time frames, which are linked with that deadline.

10. Clarification of TE documents

10.1 A tenderer requiring any clarification or elucidation on any issue of the TE documents may take up the same with the purchaser in writing. in their letter head duly signed and scanned through email to pcd@hllhites.com and bmenoida@hllhites.com. The purchaser will respond to such request provided the same is received by the purchaser **within the due date mentioned in the NIT**. **Any queries/representations received later shall not be taken into cognizance.**

C. PREPARATION OF e-TENDERS

11. Documents comprising the e-Tender

11.1 The tender(s) shall only be submitted online as mentioned below:

(i) Technical Bid (Consisting of Techno-Commercial bids in excel format provided with the tender enquiry along with the supporting documents i.e. scanned copies of Tender Processing Fee, EMD, Eligibility Criteria & Technical Specifications viz. Product Specification Sheets/Brochures, OEM Certificate, etc.) has to be attached in the C-folder of e-tendering module. Bidders have to ensure that the documents uploaded in pdf format are legible.

(ii) Price Bid has to be submitted in the prescribed excel format provided with the tender enquiry.

Note:

(i) The Tender Processing Fee, in favor of HLL Infra Tech Services Ltd. and EMD are to be submitted in physical form as per Section – I, Notice Inviting Tender of this tender enquiry.

(ii) The bidders have to follow the steps listed in *Bidding Manual – Attachment Mode* available in the *Bidder Help Documents* of e-tender portal login screen for uploading the Techno-Commercial Bid.

A) <u>Details of Technical Tender (Un priced Tender)</u>

Bidders shall furnish the following information along with technical tender:.

i) Techno-Commercial Bid in excel format provided with the tender enquiry
ii) Earnest money Deposit (EMD) furnished in accordance with GIT clause 19.1 alternatively, documentary evidence as per GIT clause 19.2 for claiming exemption from payment of earnest money.
iii) Tender Form as per Section X (without indicating any prices).
iv) Documentary evidence, as necessary in terms of clauses 5 and 17 establishing that the tenderer is eligible to submit the tender and, also, qualified to perform the contract if its tender is accepted.
v) Tenderer/Agent who quotes for goods manufactured by other manufacturer shall furnish Manufacturer's Authorization **strictly as per the prescribed format (Section - XIV).**
vi) Power of Attorney issued by Competent Authority in favour of the person **who is digitally signing/ uploading the tender(s).**
vii) Documents and relevant details to establish in accordance with GIT clause 18 that the goods and the allied services to be supplied by the tenderer conform to the requirement of the TE documents.
viii) Performance Statement as per section IX along with relevant copies of orders and end users' satisfaction certificate.
ix) Price Schedule(s) as per Section XI filled up with all the details including Make, Model etc. of the goods offered with prices blank (without indicating any prices).
x) Certificate of Incorporation.
xi) Self-Attested copies of VAT registration certificate and PAN Card.
xii) Non conviction /no pending conviction certification issued by Notary on judicial stamp paper for preceding three years.
xiii) Self-Attested copies of quality certificates i.e. US FDA /CE Certificate issued by competent authority, if applicable.
xiv) Documentary evidence stating the status of bidder.
xv) List of procurement agencies of repute to which the tendered product have been supplied during last 12 months.
xvi) Self-attested copies of annual report, audited balance sheet and profit & loss account for preceding three years from the date of tender opening.
xvii) Notarized affidavit that tenderer does not have any relation with the person authorized to evaluate technically or involve in finalizing the tender or will decide the use of tendered items.
xviii) A self-declaration on Rs. 10/- non-judicial Stamp Paper that the rates quoted in the tender are the lowest and not quoted less than this to any Government Institution (State/Central/ other Institute in India).
xix) **Copies of original product catalogues / data sheet must be enclosed of all quoted items**.

B) <u>Price Bid:</u>

Prices are to be quoted in the prescribed Price Bid format in excel provided along with the tender enquiry in the e-tender portal. The price should be quoted for the accounting unit indicated in the e-tender document.

Note:

(i) The bidder has to be diligent while filling up the Techno-Commercial Bid and Price Bid provided in excel formats and must not tamper the contents of the sheets.

(ii) It is the responsibility of bidder to go through the TE document to ensure furnishing all required documents in addition to above, if any.

(iii) The bidders have to follow the steps listed in *Bidding Manual – Attachment Mode* available in the *Bidder Help Documents* of e-tender portal login screen for uploading the Price Bid.

11.2 A person signing (manually or digitally) the tender form or any documents forming part of the contract on behalf of another shall be deemed to warrant that he has authority to bind such other persons and if, on enquiry, it appears that the persons so signing had no authority to do so, the purchaser may, without prejudice to other civil and criminal remedies, cancel the contract and hold the signatory liable for all cost and damages.

11.3 A tender, which does not fulfill any of the above requirements and/or give evasive information/reply against any such requirement, shall be liable to be ignored.

11.4 Tender sent by fax/telex/cable shall be ignored.

12. Tender currencies

12.1 The tenderer supplying indigenous goods or already imported goods shall quote only in Indian Rupees (INR). A tenderer quoting imported goods located within India shall produce documentary evidence of the goods having been imported and already located within India, in case their bid is found to be the lowest one after opening of price bid.

12.2 For imported goods if supplied directly from abroad, prices shall be quoted in any freely convertible currency say US Dollar, Euro, GBP or Japanese Yen. As regards price(s) for allied services, if any required with the goods, the same shall be quoted in Indian Rupees only (INR), if such services are to be performed /undertaken in India. Commission for Indian Agent, if any and if payable shall be indicated in the space provided for in the price schedule and will be payable in Indian Rupees only.

12.3 Tenders, where prices are quoted in any other currency may not be accepted and are liable to be ignored.

13 Tender Prices

13.1 The Tenderer shall indicate on the Price Schedule provided under Section XI all the specified components of prices shown therein including the unit prices and total tender prices of the goods and services it proposes to supply against the requirement. All the columns shown in the price schedule should be filled up as required.

13.2 If there is more than one schedule in the List of Requirements, the tenderer has the option to submit its quotation for any one or more schedules. However, while quoting for a schedule, the tenderer shall quote for the complete requirement of goods and services as specified in that particular schedule.

13.3 The quoted prices for goods offered from within India and that for goods offered from abroad are to be indicated separately in the applicable Price Schedules attached under Section XI.

13.4 While filling up the columns of the Price Schedule, the following aspects should be noted for compliance:

13.4.1 For domestic goods or goods of foreign origin located within India, the prices in the corresponding price schedule shall be entered separately in the following manner:

a) The price of the goods, quoted ex-factory/ ex-showroom/ ex-warehouse/ off-the-shelf, as applicable, including all taxes and duties like sales tax, CST, VAT, CENVAT, Custom Duty, Excise Duty etc. already paid or payable on the components and raw material used in the manufacture or assembly of the goods quoted ex-factory etc. or on the previously imported goods of foreign origin quoted ex-showroom etc;
b) Any sales or other taxes and any duties including excise duty, which will be payable on the goods in India if the contract is awarded;
c) Charges towards Packing & Forwarding, Inland Transportation, Insurance (local transportation and storage), Loading & Unloading etc. would be borne by the Supplier from ware house to the consignee site for a period including 3 months beyond date of delivery, Loading/Unloading and other local costs incidental to delivery of the goods to their final destination as specified in the List of Requirements and Price Schedule;
d) The price of Incidental Services, as mentioned in List of Requirements and Price Schedule;
e) The prices of Turnkey (if any), as mentioned in List of Requirements, Technical Specification and Price Schedule.
f) The price of annual CMC, as mentioned in List of Requirements, Technical Specification and Price Schedule.

13.4.2 For goods offered from abroad, the prices in the corresponding price schedule shall be entered separately in the following manner:

a) The price of goods quoted FOB/FCA port of shipment, as indicated in the List of Requirements and Price Schedule;
b) Price of goods quoted CIP (name port of destination) in India as indicated in the List of Requirements, Price Schedule and Consignee List
c) The charges for Insurance (local transportation and storage) would be extended and borne by the Supplier from ware house to the consignee site for a period including 3 months beyond date of delivery. Other local costs and Incidental costs, as specified in the List of Requirements and Price Schedule;
d) The charges for Incidental Services, as in the List of Requirements and Price Schedule;
e) The prices of Turnkey (if any), as mentioned in List of Requirements, Technical Specification and Price Schedule; and
f) The price of annual CMC, as mentioned in List of Requirements, Technical Specification and Price Schedule.

13.5 **Additional information and instruction on Duties and Taxes:**

13.5.1 If the Tenderer desires to ask for excise duty, sales tax/VAT, Service Tax, Works Contract Tax etc. to be paid extra, the same must be specifically stated. In the absence of any such stipulation the price will be taken inclusive of such duties and taxes and no claim for the same will be entertained later.

13.5.2 **Excise Duty:**

a) If reimbursement of excise duty is intended as extra over the quoted prices, the supplier must specifically say so also indicating the rate, quantum and nature of the duty applicable. In the absence of any such stipulation it will be presumed that the prices quoted are firm and final and no claim on account of excise duty will be entertained after the opening of tenders.
b) If a Tenderer chooses to quote a price inclusive of excise duty and also desires to be reimbursed for variation, if any, in the excise duty during the time of supply, the tenderer must clearly mention the same and also indicate the rate and quantum of excise duty included in its price. Failure to indicate all such details in clear terms may result in rejection of that tender.

c) Subject to sub clauses 13.5.2 (a) & (b) above, any change in excise duty upward/downward as a result of any statutory variation in excise duty taking place within contract terms shall be allowed to the extent of actual quantum of excise duty paid by the supplier. In case of downward revision in excise duty, the actual quantum of reduction of excise duty shall be reimbursed to the purchaser by the supplier. All such adjustments shall include all reliefs, exemptions, rebates, concession etc. if any obtained by the supplier.

13.5.3 **Sales Tax:**

If a tenderer asks for sales tax/ VAT, Service Tax and Works Contract Tax to be paid extra, the rate and nature of sales tax applicable should be shown separately. The sales tax / VAT, Service Tax and Works Contract Tax will be paid as per the rate at which it is liable to be assessed or has actually been assessed provided the transaction of sale is legally liable to sales tax / VAT, Service Tax and Works Contract Tax and is payable as per the terms of the contract. If any refund of Tax is received at a later date, the Supplier must return the amount forth-with to the purchaser.

13.5.4 **Octroi Duty and Local Duties & Taxes:**

Normally, goods to be supplied to government departments against government contracts are exempted from levy of town duty, Octroi duty, terminal tax and other levies of local bodies. However, on some occasions, the local bodies (like town body, municipal body etc.) as per their regulations allow such exemptions only on production of certificate to this effect from the concerned government department. Keeping this in view, the supplier shall ensure that the stores to be supplied by the supplier against the contract placed by the purchaser are exempted from levy of any such duty or tax and, wherever necessary, obtain the exemption certificate from the purchaser. The purchaser should issue the certificate to the supplier within 21 days from the date of receipt of request from the supplier.

However, if a local body still insists upon payment of such local duties and taxes, the same should be paid by the supplier to the local body to avoid delay in supplies and possible demurrage charges and obtain a receipt for the same. The supplier should forward the receipt obtained for such payment to the purchaser to enable the purchaser reimburse the supplier and take other necessary action in the matter.

13.5.5 **Customs Duty:**

The Purchaser will pay the Customs duty wherever applicable.

13.6 For transportation of imported goods offered from abroad, relevant instructions as incorporated under GCC Clause 10 shall be followed.

13.7 For insurance of goods to be supplied, relevant instructions as provided under GCC Clause 11 shall be followed.

13.8 Unless otherwise specifically indicated in this TE document, the terms FCA, FOB, FAS, CIF, CIP, DDP etc. for imported goods offered from abroad, shall be governed by the rules & regulations prescribed in the current edition of INCOTERMS, published by the International Chamber of Commerce, Paris

13.9 The need for indication of all such price components by the tenderers, as required in this clause (viz., GIT clause 13) is for the purpose of comparison of the tenders by the purchaser and will no way restrict the purchaser's right to award the contract on the selected tenderer on any of the terms offered.

14. Indian Agent

14.1 If a foreign tenderer has engaged an agent in India in connection with its tender, the foreign tenderer, in addition to indicating Indian agent's commission, if any, in a manner described under GIT sub clause 12.2 above, shall also furnish the following information:

a) As per the Compulsory Enlistment Scheme of the Department of Expenditure, Ministry of Finance, it is compulsory for Indian agents, who desire to quote directly on behalf of their foreign principals, to get themselves enlisted with the Central Purchase Organization (eg. DGS&D).
    a) The complete name and address of the Indian Agent and its permanent income tax account number as allotted by the Indian Income Tax authority.
    b) The details of the services to be rendered by the agent for the subject requirement.
    c) Details of Service outlets in India, nearest to the consignee(s), to render services during Warranty and CMC period.
    d) A copy of agreement between the Agent & their principal detailing the terms & conditions as well as services and after sales services as above to be rendered by the agent and the precise relationship between them and their mutual interest in the business as laid out in section VII (Technical specifications).
    e) Principal's/Manufacturer's original Proforma Invoice with the price bid

15. Firm Price

15.1 Unless otherwise specified in the SIT, prices quoted by the tenderer shall remain firm and fixed during the currency of the contract and not subject to variation on any account. Bidders are requested to quote BOQ wise unit price **(uniform unit prices must be quoted for same BOQ items across India)** and total price.

16. Alternative Tenders

16.1 Alternative Tenders are not permitted.

16.2 However the Tenderers can quote alternate models meeting the tender specifications of same manufacturer with single EMD.

16.3 If an agent submits bid on behalf of the Principal/OEM, the same agent shall not submit a bid on behalf of another Principal/OEM in the same tender for the same item/product. In a tender, either the Indian Agent on behalf of the Principal/OEM or Principal/OEM itself can bid but both cannot bid simultaneously for the same item/product in the same tender.

17 Documents Establishing Tenderer's Eligibility and Qualifications

17.1 Pursuant to GIT clause 11, the tenderer shall furnish, as part of its tender, relevant details and documents establishing its eligibility to quote and its qualifications to perform the contract if its tender is accepted.

17.2 The documentary evidence needed to establish the tenderer's qualifications shall fulfil the following requirements:

a) in case the tenderer offers to supply goods, which are manufactured by some other firm, the tenderer has been duly authorised by the goods manufacturer to quote for and supply the goods to the purchaser. The tenderer shall submit the manufacturer's authorization letter to this effect as per the standard form provided under Section XIV in this document.
b) the tenderer has the required financial, technical and production capability necessary to perform the contract and, further, it meets the qualification criteria incorporated in the Section IX in these documents.
c) in case the tenderer is not doing business in India, it is duly represented by an agent stationed in India fully equipped and able to carry out the required contractual functions and duties of the supplier including after sale service, maintenance & repair etc. of the goods in question, stocking of spare parts and fast moving components and other obligations, if any, specified in the conditions of contract and/or technical specifications.

d) in case the tenderer is an Indian agent/authorized representative quoting on behalf of a foreign manufacturer for the **restricted item**, the Indian agent/authorized representative is already enlisted under the Compulsory Enlistment Scheme of Ministry of Finance, Govt. of India, operated through Directorate General of Supplies & Disposals (DGS&D), New Delhi.

18. Documents establishing good's Conformity to TE document.

18.1 The tenderer shall provide in its tender the required as well as the relevant documents like technical data, literature, drawings etc. to establish that the goods and services offered in the tender fully conform to the goods and services specified by the purchaser in the TE documents. For this purpose the tenderer shall also provide a clause-by-clause commentary on the technical specifications and other technical details incorporated by the purchaser in the TE documents to establish technical responsiveness of the goods and services offered in its tender.

18.2 In case there is any variation and/or deviation between the goods & services prescribed by the purchaser and that offered by the tenderer, the tenderer shall list out the same in a chart form without ambiguity and provide the same along with its tender.

18.3 If a tenderer furnishes wrong and/or misguiding data, statement(s) etc. about technical acceptability of the goods and services offered by it, its tender will be liable to be ignored and rejected in addition to other remedies available to the purchaser in this regard.

19. Earnest Money Deposit (EMD)

19.1 Pursuant to GIT clauses 8.1 and 11.1 A (i) the tenderer shall furnish along with its tender, earnest money for amount as shown in the List of Requirements. The earnest money is required to protect the purchaser against the risk of the tenderer's unwarranted conduct as amplified under sub-clause 19.7 below.

19.2 The tenderers who are currently registered and, also, will continue to remain registered during the tender validity period with Directorate General of Supplies & Disposals or with National Small Industries Corporation, New Delhi for the specific goods as per tender enquiry specification shall be eligible for exemption from EMD. Vague stipulations in the Registration Certificate such as "to customers' specification", etc. will not be acceptable for exemption from furnishing of earnest money. In case the tenderer falls in these categories, it should furnish copy of its valid registration details (with DGS&D or NSIC, as the case may be).

19.3 The earnest money shall be denominated in Indian Rupees or equivalent currencies as per GIT clause 12.2. The earnest money shall be furnished in one of the following forms:

i) Account Payee Demand Draft
ii) Banker's cheque and
iii) Bank Guarantee

19.4 The demand draft or banker's cheque shall be drawn on any commercial bank in India or country of the tenderer, in favour of the "**HLL Infra Tech Services Limited**" payable at New Delhi. In case of bank guarantee, the same is to be provided from any commercial bank in India or country of the tenderer as per the format specified under Section XIII in these documents.

19.5 The earnest money shall be valid for a period of forty-five (45) days beyond the validity period of the tender. As validity period of Tender as per Clause 20 of GIT is 120 days, the EMD shall be valid for 165 days from Techno – Commercial Tender opening date.

19.6 Unsuccessful tenderers' earnest money will be returned to them without any interest, after expiry of the tender validity period, but not later than thirty days after conclusion of the resultant contract. Successful tenderer's earnest money will be returned without any interest, after receipt of performance security from that tenderer.

19.7 Earnest Money is required to protect the purchaser against the risk of the Tenderer's conduct, which would warrant the forfeiture of the EMD. Earnest money of a tenderer will be forfeited, if the tenderer withdraws or amends its tender or impairs or derogates from the tender in any respect within the period of validity of its tender or if it comes to notice that the information/documents furnished in its tender is incorrect, false, misleading or forged without prejudice to other rights of the purchaser. The successful tenderer's earnest money will be forfeited without prejudice to other rights of Purchaser if it fails to furnish the required performance security within the specified period.

19.8 In the case of Bank Guarantee furnished from banks outside India (i.e. foreign Banks), it should be authenticated and countersigned by any nationalised bank in India by way of back-to-back counter guarantee and the same should be submitted along with the bid.

20. Tender Validity

20.1 If not mentioned otherwise in the SIT, the tenders shall remain valid for acceptance for a period of 120 days (One hundred and twenty days) after the date of tender opening prescribed in the TE document. Any tender valid for a shorter period shall be treated as unresponsive and rejected.

20.2 In exceptional cases, the tenderers may be requested by the purchaser to extend the validity of their tenders up to a specified period. Such request(s) and responses thereto shall be conveyed by surface mail or by fax/ telex/cable followed by surface mail. The tenderers, who agree to extend the tender validity, are to extend the same without any change or modification of their original tender and they are also to extend the validity period of the EMD accordingly. A tenderer, who may not agree to extend its tender validity after the expiry of the original validity period the EMD furnished by them shall not be forfeited.

20.3 In case the day up to which the tenders are to remain valid falls on/ subsequently declared a holiday or closed day for the purchaser, the tender validity shall automatically be extended up to the next working day.

21. Digital Signing of Tender

21.1 The tenderers shall submit their tenders as per the instructions contained in GIT Clause 11. Tenders shall be uploaded with all relevant tender documents in the prescribed format. The relevant tender documents should be uploaded by an authorised person having Class 3 digital signature certificate.

D. SUBMISSION OF TENDERS

22. Submission of Tenders

22.1 The tender shall be submitted online only.

(i) Pre-qualification and Technical compliance along with the Techno-Commercial Bid in excel format:

a) Scanned copies of tender processing fee and EMD
b) Manufacturer's authorization in case bid is submitted by an Indian agent (A declaration must be attached here in case directly quoted by a manufacturer or a document establishing the relation of the Indian office with the manufacturer in case quoted by Indian office of the manufacturer).
c) Tender Form as per Section X.
d) Compliance of all terms and conditions of TED like- warranty, CMC, delivery period, delivery terms, payment terms, Liquidated Damages Clause, Arbitration clause, etc

e) Declaration regarding Fall Clause and Deregistration, debarment from any Govt Dept/ Agencies
f) Copy of PAN.
g) Certificate of Incorporation/ or a Declaration in case the firm is being a proprietary firm.
h) Abridged Annual report of last 03 years (Balance sheet and Profit & Loss Account) completed till December 2016, in pdf format.
i) Name, address and details of account with respect to bidder and/or beneficiary of L/C.
j) Quality Control Requirements as per Section VIII
k) Performance statement along with required PO copies and its corresponding end user's satisfactory performance certificate as per section IX.
l) Technical Bid along with clause-by-clause technical compliance statement for the quoted goods vis-à-vis the Technical specifications along with product catalogue and data sheet in the tender enquiry.
m) The bidder should submit blank proforma invoice from the foreign manufacturer along with his technical bid, duly mentioning the specifications and code number of the parts quoted.
n) The original proforma invoices from the foreign principal will be applicable in case of 100% subsidiary companies incorporated in India also.
o) In case the bidder quotes an equipment of a foreign manufacturer and submits the documents as per Clause 22.1 (i) l & m from the subsidiary company of the foreign Original Equipment Manufacturer in India, the bidder must submit the Power of Attorney given to the subsidiary company by the foreign Original Equipment Manufacturer, authorizing it to do business and perform all obligations for and on behalf of the foreign manufacturer company, in India.

(ii) <u>PRICE BID (ONLY ONLINE):</u>

a) The tenderers must ensure that they submit the Price Bid in prescribed format uploaded along with the tender enquiry. It is the responsibility of the bidder to ensure that the contents of the format are not tampered.
b) The tenderers must ensure that they submit the on-line tenders not later than the closing time and date specified for submission of tenders.
c) Along with price bid recent purchase order copies for the same model and technical configuration issued by institute of National importance and/or reputed central/state government hospitals should be uploaded in pdf form for reasonability of the offered price.
d) The bidder should submit the copy of original proforma invoice from the foreign manufacturer along with the price bid.
e) The supplier shall justify the present quotes based on previous purchase orders for similar project executed either in India or Globally. If they quote any new model or upgraded version of earlier model, they may mention the same in their tender.

22.2 The tenderers must ensure that they submit the on-line tenders within the scheduled closing date & time. They shall also ensure to submit the original Tender Processing Fee and EMD within its scheduled date & time.

23. Late Tender:

23.1 There is NO PROVISION of uploading late tender beyond stipulated date & time in the e-tendering system. However, if the necessary Tender Processing Fee and EMD in original are not submitted within the scheduled time, the tender shall be declared as late tender and online tender shall not be opened and shall be ignored.

24. Alteration and Withdrawal of Tender

24.1 The tenderer, is permitted to change, edit or withdraw its bid on or before the end date &time.

E. TENDER OPENING

25. Opening of Tenders

25.1 The purchaser will open the e-tenders at the specified date and time and at the specified place as indicated in the NIT.

In case the specified date of tender opening falls on / is subsequently declared a holiday or closed day for the purchaser, the tenders will be opened at the appointed time and place on the next working day.

25.2 Authorized representatives of the tenderers, who have submitted tenders on time may attend the tender opening provided they bring with them letters of authority from the corresponding tenderers.

The tender opening official(s) will prepare a list of the representatives attending the tender opening. The list will contain the representatives' names & signatures and corresponding tenderers' names and addresses.

25.3 This being a Two - Tender system, the **Techno - Commercial Tenders** are to be opened in the first instance, at the prescribed time and date as indicated in NIT. These Tenders shall be scrutinized and evaluated by the competent committee/ authority with reference to parameters prescribed in the TE document. During the Techno - Commercial Tender opening, the tender opening official(s) will read the salient features of the tenders like brief description of the goods offered, delivery period, Earnest Money Deposit and any other special features of the tenders, as deemed fit by the tender opening official(s). Thereafter, in the second stage, the Price Tenders of only the Techno - Commercially acceptable offers (as decided in the first stage) shall be opened for further scrutiny and evaluation on a date notified after the evaluation of the Techno-Commercial tender.

F. SCRUTINY AND EVALUATION OF TENDERS

26. Basic Principle

26.1 Tenders will be evaluated on the basis of the terms & conditions already incorporated in the TE document, based on which tenders have been received and the terms, conditions etc. mentioned by the tenderers in their tenders. No new condition will be brought in while scrutinizing and evaluating the tenders.

27. Scrutiny of Tenders

27.1 The Purchaser will examine the Tenders to determine whether they are complete, whether any computational errors have been made, whether required sureties have been furnished and, whether the documents uploaded are in legible form.

27.2 The Purchaser's determination of a Tender's responsiveness is to be based on the contents of the tender itself without recourse to extrinsic evidence

27.3 Deleted

27.4 The tenders will be scrutinized to determine whether they are complete and meet the essential and important requirements, conditions etc. as prescribed in the TE document. The tenders, which do not meet the basic requirements, are liable to be treated as non-responsive and will be summarily ignored.

27.5 The following are some of the important aspects, for which a tender shall be declared non-responsive during the evaluation and will be ignored;

(i) Tender validity is shorter than the required period.

(ii) Required EMD or its exemption documents have not been provided.
(iii) Tenderer has not agreed to give the required performance security of required amount in an acceptable form in terms of GCC clause 5, read with modification, if any, in Section - V – "Special Conditions of Contract", for due performance of the contract.
(iv) Poor/ unsatisfactory past performance.
(v) Tenderers who stand deregistered/banned/blacklisted by any Govt. Authorities.
(vi) Tenderer is not eligible as per GIT Clauses 5.1 & 17.1.
(vii) Tenderer has not quoted for the entire quantity as specified in the List of Requirements/ BOQ for the quoted schedule.
(viii) Tenderer has not agreed to other essential condition(s) specially incorporated in the tender enquiry, like delivery terms, delivery schedule, terms of payment, liquidated damages clause, warranty clause, dispute resolution mechanism applicable law.

28. Minor Informality/Irregularity/Non-Conformity

If during the preliminary examination, the purchaser find any minor informality and/or irregularity and/or non-conformity in a tender, the purchaser may waive the same provided it does not constitute any material deviation and financial impact and, also, does not prejudice or affect the ranking order of the tenders. Wherever necessary, the purchaser will convey its observation on such 'minor' issues to the tenderer by registered/speed post etc. asking the tenderer to respond by a specified date. If the tenderer does not reply by the specified date or gives evasive reply without clarifying the point at issue in clear terms, that tender will be liable to be ignored.

29 Discrepancies in Prices

29.1 If, in the price structure quoted by a tenderer, there is discrepancy between the unit price and the total price (which is obtained by multiplying the unit price by the quantity), the unit price shall prevail and the total price corrected accordingly, unless the purchaser feels that the tenderer has made a mistake in placing the decimal point in the unit price, in which case the total price as quoted shall prevail over the unit price and the unit price corrected accordingly.

29.2 If there is an error in a total price, which has been worked out through addition and/or subtraction of subtotals, the subtotals shall prevail and the total corrected; and

29.3 If there is a discrepancy between the amount expressed in words and figures, the amount in words shall prevail, subject to sub clause 29.1 and 29.2 above.

29.4 If, as per the judgement of the purchaser, there is any such arithmetical discrepancy in a tender, the same will be suitably conveyed to the tenderer by registered / speed post. If the tenderer does not agree to the observation of the purchaser, the tender is liable to be ignored.

30. Discrepancy between original and copies of Tender

Not applicable being e-Tender.

31. Qualification Criteria

31.1 Tenders of the tenderers, which do not meet the required Qualification Criteria prescribed in Section IX, will be treated as non - responsive and will not be considered further.

31.2 The Purchaser reserves the right to relax the Norms on Prior Experience for Start-ups and Micro & Small Enterprises in Public Procurement.

The Start-ups are defined in Annexure-A of the "Action Plan for Start-ups in India". The same is available on the website of Department of Industrial policy and Promotion (DIPP), Ministry of Commerce & Industry.

The Notification is available in the below link:

http://www.finmin.nic.in/the_ministry/dept_expenditure/ppcell/RelaxNorms_StarupMedEnterprise25072016.pdf

The FAQs are available in the below link:

http://dipp.nic.in/English/Investor/startupindia/FAQs_StartupIndia_30March2016.pdf

Note:- Definition of Startup (only for the purpose of Government schemes)

(Ref: Ministry of Finance Office Memorandum No. F.20/2/2014-PPD(Pt.) dated 25th July 2016.)

Start-up means an entity, incorporated or registered in India not prior to five years, with annual turnover not exceeding INR 25 crore in any preceding financial year, working towards innovation, development, deployment or commercialization of new products, processes or services driven by technology or intellectual property.

Provided that such entity is not formed by splitting up, or reconstruction, of a business already in existence.

Provided also that an entity shall cease to be a Start-up if its turnover for the previous financial years has exceeded INR 25 crore or it has completed 5 years from the date of incorporation/ registration.

Provided further that a Start-up shall be eligible for tax benefits only after it has obtained certification from the Inter-Ministerial Board, setup for such purpose.

32. Conversion of tender currencies to Indian Rupees

32.1 In case the TE document permits the tenderers to quote their prices in different currencies, all such quoted prices of the responsive tenderers will be converted to a single currency viz., Indian Rupees for the purpose of equitable comparison and evaluation, as per the exchange rates established by the Reserve Bank of India for similar transactions, as on the date of 'Price Tender' opening.

33. Schedule-wise Evaluation

33.1 In case the List of Requirements contains more than one schedule, the responsive tenders will be evaluated and compared separately for each schedule. The tender for a schedule will not be considered if the complete requirements prescribed in that schedule are not included in the tender.

34. Comparison of Tenders

34.1 Unless mentioned otherwise in Section – III – Special Instructions to Tenderers and Section – VI –at List of Requirements, the comparison of the responsive tenders shall be carried out on Delivery Duty Paid (DDP) consignee site basis. The quoted turnkey prices and Comprehensive Annual Maintenance charges (CMC) prices will also be added for comparison/ranking purpose for evaluation. **"Net Present value (NPV) of the actual CMC price quoted for the required CMC period after the warranty period shall be considered for bid comparison and the NPV will be calculated after discounting the quoted CMC price by a discounting factor of 10% per annum."**

35. Additional Factors and Parameters for Evaluation and Ranking of Responsive Tenders

35.1 Further to GIT Clause 34 above, the purchaser's evaluation of a tender will include and take into account the following:

i) In the case of goods manufactured in India or goods of foreign origin already located in India, sales tax & other similar taxes and excise duty & other similar duties, Service Tax, Works Contract Tax etc which will be contractually payable (to the tenderer), on the goods if a contract is awarded on the tenderer; and

ii) in the case of goods of foreign origin offered from abroad, customs duty and other similar import duties/taxes, which will be contractually payable (to the tenderer) on the goods if the contract is awarded on the tenderer.

35.2 The purchaser's evaluation of tender will also take into account the additional factors, if any, incorporated in SIT in the manner and to the extent indicated therein.

35.3 The Purchaser reserves the right to give the price preference to small-scale sectors etc. and purchase preference to central public sector undertakings as per the instruction in vogue while evaluating, comparing and ranking the responsive tenders.

i. In exercise of powers conferred in Section 11 of the Micro, Small and Medium Enterprises Development (MSMED) Act 2006, the Government has notified a new Public Procurement Policy for Micro & Small Enterprises effective from 1st April 2012. The policy mandates that 20% of procurement of annual requirement of goods and services by all Central Ministries / Public Sector Undertakings will be from the micro and small enterprises. The Government has also earmarked a sub-target of 4% procurement of goods & services from MSEs owned by SC/ST entrepreneurs out of above said 20% quantity.

ii. In accordance with the above said notification, the participating Micro and Small Enterprises (MSEs) in a tender, quoting price within the band of L 1+15% would also be allowed to supply a portion of the requirement by bringing down their price to the L 1 price, in a situation where L 1 price is from someone other than an MSE. Such MSEs would be allowed to supply up to 20% of the total tendered value. In case there are more than one such eligible MSE, the 20% supply will be shared equally. Out of 20% of the quantity earmarked for supply from MSEs, 4% quantity is earmarked for procurement from MSEs owned by SC/ST entrepreneurs. However, in the event of failure of such MSEs to participate in the tender process or meet the tender requirements and the L 1 price, the 4% quantity earmarked for MSEs owned by SC/ST entrepreneurs will be met from other participating MSEs.

iii. The MSEs fulfilling the prescribed eligibility criteria and participating in the tender shall enclose with their tender a copy of their valid registration certificate with District Industries Centres or Khadi and Village Industries Commission or Khadi and Village Industries Board or Coir Board or National Small Industries Corporation or any other body specified by Ministry of Micro and Small enterprises in support of their being an MSE, failing which their tender will be liable to be ignored.

iv. The Purchaser reserves the right to relax the Norms on Prior Experience for Startups and Micro & Small Enterprises in Public Procurement.

The Startups are defined in Annexure-A of the "Action Plan for Startups in India". The same is available on the website of Department of Industrial policy and Promotion (DIPP), Ministry of Commerce & Industry.

The Notification is available in the below link:

http://www.finmin.nic.in/the_ministry/dept_expenditure/ppcell/RelaxNorms_StarupMedEnterprise25072016.pdf

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Startup means an entity, incorporated or registered in India not prior to five years, with annual turnover not exceeding INR 25 crore in any preceding financial year, working towards innovation, development, deployment or commercialization of new products, processes or services driven by technology or intellectual property.

Provided that such entity is not formed by splitting up, or reconstruction, of a business already in existence.

Provided also that an entity shall cease to be a Startup if its turnover for the previous financial years has exceeded INR 25 crore or it has completed 5 years from the date of incorporation/ registration.

Provided further that a Startup shall be eligible for tax benefits only after it has obtained certification from the Inter-Ministerial Board, setup for such purpose.

36. Tenderer's capability to perform the contract

36.1 The purchaser, through the above process of tender scrutiny and tender evaluation will determine to its satisfaction whether the tenderer, whose tender has been determined as the lowest evaluated responsive tender is eligible, qualified and capable in all respects to perform the contract satisfactorily. If, there is more than one schedule in the List of Requirements, then, such determination will be made separately for each schedule.

36.2 The above-mentioned determination will, interalia, take into account the tenderer's financial, technical and production capabilities for satisfying all the requirements of the purchaser as incorporated in the TE document. Such determination will be based upon scrutiny and examination of all relevant data and details submitted by the tenderer in its tender as well as such other allied information as deemed appropriate by the purchaser.

37. Contacting the Purchaser

37.1 From the time of submission of tender to the time of awarding the contract, if a tenderer needs to contact the purchaser for any reason relating to this tender enquiry and / or its tender, it should do so only in writing.

37.2 In case a tenderer attempts to influence the purchaser in the purchaser's decision on scrutiny, comparison & evaluation of tenders and awarding the contract, the tender of the tenderer shall be liable for rejection in addition to appropriate administrative actions being taken against that tenderer, as deemed fit by the purchaser.

G. AWARD OF CONTRACT

38. Purchaser's Right to accept any tender and to reject any or all tenders

38.1 The purchaser reserves the right to accept in part or in full any tender or reject any or more tender(s) without assigning any reason or to cancel the tendering process and reject all tenders at any time prior to award of contract, without incurring any liability, whatsoever to the affected tenderer or tenderers.

39. Award Criteria

39.1 Subject to GIT clause 38 above, the contract will be awarded to the lowest evaluated responsive tenderer decided by the purchaser in terms of GIT Clause 36.

40. Variation of Quantities at the Time of Award/ Currency of Contract

40.1 At the time of awarding the contract, the purchaser reserves the right to increase or decrease by up to twenty five (25) per cent, the quantity of goods and services mentioned in the schedule (s) in the "List of Requirements" (rounded off to next whole number) without any change in the unit price and other terms & conditions quoted by the tenderer.

40.2 If the quantity has not been increased to the maximum of 25% of the tendered quantity at the time of awarding the contract, the purchaser reserves the right to increase the quantity further by up to the balance available twenty five (25) per cent of the tendered quantity of goods and services (rounded off to next whole number) without any change in the unit price and other terms & conditions mentioned in the contract during the currency of the contract.

41. Notification of Award

41.1 Before expiry of the tender validity period, the purchaser will notify the successful tenderer(s) in writing, by registered / speed post or by email (to be confirmed by registered / speed post) that its tender for goods & services, which have been selected by the purchaser, has been accepted, also briefly indicating therein the essential details like description, specification and quantity of the goods & services and corresponding prices accepted. The successful tenderer must furnish to the purchaser the required performance security within thirty days from the date of dispatch of this notification, failing which the EMD will forfeited and the award will be cancelled. Relevant details about the performance security have been provided under GCC Clause 5 under Section IV.

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

42. Issue of Contract

42.1 Promptly after notification of award, the Purchaser/Consignee will mail the contract form (as per Section XVI) duly completed and signed, in duplicate, to the successful tenderer by registered / speed post.

42.2 Within twenty one days from the date of the contract, the successful tenderer shall return the original copy of the contract, duly signed and dated, to the Purchaser/Consignee by registered / speed post. The successful tenderer should also submit Proforma Invoice from the foreign principal (if applicable as per contractual price) within 21 days from the date of NOA.

42.3 The Purchaser/Consignee reserve the right to issue the Notifications of Award consignee wise.

43. Non-receipt of Performance Security, Proforma Invoice and Contract by the Purchaser/ Consignee

43.1 Failure of the successful tenderer in providing performance security, Proforma Invoice and / or returning contract copy duly signed in terms of GIT clauses 41 and 42 above shall make the tenderer liable for forfeiture of its EMD and, also, for further actions by the Purchaser/Consignee against it as per the clause 24 of GCC – Termination of default.

44. Return of E M D

44.1 The earnest money of the successful tenderer and the unsuccessful tenderers will be returned to them without any interest, whatsoever, in terms of GIT Clause 19.6.

45. Publication of Tender Result

45.1 The name and address of the successful tenderer(s) receiving the contract(s) will be mentioned in the notice board/bulletin/web site of the purchaser.

46. Corrupt or Fraudulent Practices

46.1 It is required by all concerned namely the Consignee/Tenderers/Suppliers etc to observe the highest standard of ethics during the procurement and execution of such contracts. In pursuance of this policy, the Purchaser: -

(a) defines, for the purposes of this provision, the terms set forth below as follows:

(i) "corrupt practice" means the offering, giving, receiving or soliciting of any thing of value to influence the action of a public official in the procurement process or in contract execution; and

(ii) "fraudulent practice" means a misrepresentation of facts in order to influence a procurement process or the execution of a contract to the detriment of the Purchaser, and includes collusive practice among Tenderers (prior to or after Tender submission) designed to establish Tender prices at artificial non-competitive levels and to deprive the Purchaser of the benefits of free and open competition;

(b) will reject a proposal for award if it determines that the Tenderer recommended for award has engaged in corrupt or fraudulent practices in competing for the contract in question;

(c) will declare a firm ineligible, either indefinitely or for a stated period of time, to be awarded a contract by the purchaser if it at any time determines that the firm has engaged in corrupt or fraudulent practices in competing for, or in executing the contract.

SECTION - III
SPECIAL INSTRUCTIONS TO TENDERERS
(SIT)

Sl. No.	GIT Clause No.	Topic	SIT Provision	Page No.
A	1 to 7	Preamble	No Change	
B	8 to 10	TE documents	No Change	
C	11 to 21	Preparation of Tenders	Change	
D	22 to24	Submission of Tenders	Change	
E	25	Tender Opening	No Change	
F	26 to 37	Scrutiny and Evaluation of Tenders	No Change	
G	38 to 45	Award of Contract	No Change	

The following Special Instructions to Tenderers will apply for this purchase. These special instructions will modify/substitute/supplement the corresponding General Instructions to Tenderers (GIT) incorporated in Section II. The corresponding GIT clause numbers have also been indicated in the text below:
In case of any conflict between the provision in the GIT and that in the SIT, the provision contained in the SIT shall prevail.

SUBMISSION OF e-TENDERS

(i) All the necessary documents as prescribed in the NIT shall be prepared and scanned in different files (in PDF format as prescribed) and uploaded for on-line submission of Proposal.

(ii) Except Tender Processing Fee and EMD, all document(s)/ information(s) including the Financial Proposal (i.e. FORMAT FOR SUBMISSION OF FINANCIAL PROPOSAL) should be uploaded **online only** in the prescribed format given in the website. No other mode of submission shall be acceptable.

i) The prospective bidders may **scan the documents in low resolution (75 to 100 DPI)** instead of 200 DPI. The documents may be scanned for further lower resolution (if possible). This would reduce the size of the Cover and would be uploaded faster.

ii) The Individual file size of uploading is restricted up to 5 MB. Bidders may upload multiple files (Not exceeding 5 MB individually) & give relevant file name indicating the contents.

iii) The file name of price bid should match the file of the price bid format uploaded by the purchaser in the portal. This can be downloaded from the **Notes & Attachment** under **Details** of item when the event is in **Display Mode**.

SECTION - IV

GENERAL CONDITIONS OF CONTRACT (GCC)
TABLE OF CLAUSES

GENERAL CONDITIONS OF CONTRACT (GCC)

1. Application

1.1 The General Conditions of Contract incorporated in this section shall be applicable for this purchase to the extent the same are not superseded by the Special Conditions of Contract prescribed under Section V, List of requirements under Section VI and Technical Specification under Section VII of this document.

2. Use of contract documents and information

2.1 The supplier shall not, without the purchaser's prior written consent, disclose the contract or any provision thereof including any specification, drawing, sample or any information furnished by or on behalf of the purchaser in connection therewith, to any person other than the person(s) employed by the supplier in the performance of the contract emanating from this TE document. Further, any such disclosure to any such employed person shall be made in confidence and only so far as necessary for the purposes of such performance for this contract.

2.2 Further, the supplier shall not, without the purchaser's prior written consent, make use of any document or information mentioned in GCC sub-clause 2.1 above except for the sole purpose of performing this contract.

2.3 Except the contract issued to the supplier, each and every other document mentioned in GCC sub-clause 2.1 above shall remain the property of the purchaser and, if advised by the purchaser, all copies of all such documents shall be returned to the purchaser on completion of the supplier's performance and obligations under this contract.

3. Patent Rights

3.1 The supplier shall, at all times, indemnify and keep indemnified the purchaser, free of cost, against all claims which may arise in respect of goods & services to be provided by the supplier under the contract for infringement of any intellectual property rights or any other right protected by patent, registration of designs or trademarks. In the event of any such claim in respect of alleged breach of patent, registered designs, trademarks etc. being made against the purchaser, the purchaser shall notify the supplier of the same and the supplier shall, at his own expenses take care of the same for settlement without any liability to the purchaser.

4. Country of Origin

4.1 All goods and services to be supplied and provided for the contract shall have the origin in India or in the countries with which the Government of India has trade relations.

4.2 The word "origin" incorporated in this clause means the place from where the goods are mined, cultivated, grown, manufactured, produced or processed or from where the services are arranged.

4.3 The country of origin may be specified in the Price Schedule

5. Performance Security

5.1 Within twenty one (1) days from date of the issue of notification of award by the Purchaser/Consignee, the supplier, shall furnish performance security to the Purchaser/Consignee for an amount equal to ten percent (10%) of the total value of the contract, valid up to sixty (60) days after the date of completion of all contractual obligations by the supplier, including the warranty obligations, initially valid for a period of minimum six months plus number of months under warranty from the date of Notification of Award

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

It shall be in any one of the forms namely Account Payee Demand Draft or Fixed Deposit Receipt drawn from any Scheduled bank in India or Bank Guarantee issued by a Scheduled bank in India, in the prescribed form as provided in section XV of this document in favour of the Purchaser/Consignee. The validity of the Fixed Deposit receipt or Bank Guarantee will be for a period up to sixty (60) days beyond Warranty Period.

5.3 In the event of any failure /default of the supplier with or without any quantifiable loss to the government including furnishing of consignee wise Bank Guarantee for CMC security as per Proforma in Section XV, the amount of the performance security is liable to be forfeited. The Administration Department may do the needful to cover any failure/default of the supplier with or without any quantifiable loss to the Government.

5.4 In the event of any amendment issued to the contract, the supplier shall, within fifteen (15) days of issue of the amendment, furnish the corresponding amendment to the Performance Security (as necessary), rendering the same valid in all respects in terms of the contract, as amended.

5.5 The supplier shall enter into Annual Comprehensive Maintenance Contract as per the 'Contract Form – B' in Section XVI with respective consignees, 3 (three) months prior to the completion of Warranty Period. The CMC will commence from the date of expiry of the Warranty Period.

5.6 Subject to GCC sub – clause 5.3 above, the Purchaser/Consignee will release the Performance Security without any interest to the supplier on completion of the supplier's all contractual obligations including the warranty obligations & after receipt of Consignee wise bank guarantee for CMC security in favour of Head of the Hospital/ Institute/ Medical College of the consignee as per the format in Section XV.

6. Technical Specifications and Standards

6.1 The Goods & Services to be provided by the supplier under this contract shall conform to the technical specifications and quality control parameters mentioned in 'Technical Specification' and 'Quality Control Requirements' under Sections VII and VIII of this document.

7. Packing and Marking

7.1 The packing for the goods to be provided by the supplier should be strong and durable enough to withstand, without limitation, the entire journey during transit including transhipment (if any), rough handling, open storage etc. without any damage, deterioration etc. As and if necessary, the size, weights and volumes of the packing cases shall also take into consideration, the remoteness of the final destination of the goods and availability or otherwise of transport and handling facilities at all points during transit up to final destination as per the contract.

7.2 The quality of packing, the manner of marking within & outside the packages and provision of accompanying documentation shall strictly comply with the requirements as provided in Technical Specifications and Quality Control Requirements under Sections VII and VIII and in SCC under Section V. In case the packing requirements are amended due to issue of any amendment to the contract, the same shall also be taken care of by the supplier accordingly.

7.3 Packing instructions:

Unless otherwise mentioned in the Technical Specification and Quality Control Requirements under Sections VII and VIII and in SCC under Section V, the supplier shall make separate packages for each consignee (in case there is more than one consignee mentioned in the contract) and mark each package on three sides with the following with indelible paint of proper quality:

a. contract number and date
b. brief description of goods including quantity
c. packing list reference number
d. country of origin of goods
e. consignee's name and full address and

f. supplier's name and address

8. Inspection, Testing and Quality Control

8.1 The purchaser and/or its nominated representative(s) will, without any extra cost to the purchaser, inspect and/or test the ordered goods and the related services to confirm their conformity to the contract specifications and other quality control details incorporated in the contract. The purchaser shall inform the supplier in advance, in writing, the purchaser's programme for such inspection and, also the identity of the officials to be deputed for this purpose. "The cost towards the transportation, boarding and lodging will be borne by the purchaser and/or its nominated representative(s) for the first visit. In case the goods are rejected in the first instance and the supplier requests for re-inspection, and if same is accepted by purchaser/consignee/PSA/PA, all subsequent inspections shall be at the cost of the supplier. The expense will be to and fro Economy Airfare, Local Conveyance, Boarding and Lodging of the inspection team for the inspection period."

8.2 The Technical Specification and Quality Control Requirements incorporated in the contract shall specify what inspections and tests are to be carried out and, also, where and how they are to be conducted. If such inspections and tests are conducted in the premises of the supplier or its subcontractor(s), all reasonable facilities and assistance, including access to relevant drawings, design details and production data, shall be furnished by the supplier to the purchaser's inspector at no charge to the purchaser.

8.3 If during such inspections and tests the contracted goods fail to conform to the required specifications and standards, the purchaser's inspector may reject them and the supplier shall either replace the rejected goods or make all alterations necessary to meet the specifications and standards, as required, free of cost to the purchaser and resubmit the same to the purchaser's inspector for conducting the inspections and tests again.

8.4 In case the contract stipulates pre-despatch inspection of the ordered goods at supplier's premises, the supplier shall put up the goods for such inspection to the purchaser's inspector well ahead of the contractual delivery period, so that the purchaser's inspector is able to complete the inspection within the contractual delivery period.

8.5 If the supplier tenders the goods to the purchaser's inspector for inspection at the last moment without providing reasonable time to the inspector for completing the inspection within the contractual delivery period, the inspector may carry out the inspection and complete the formality beyond the contractual delivery period at the risk and expense of the supplier. The fact that the goods have been inspected after the contractual delivery period will not have the effect of keeping the contract alive and this will be without any prejudice to the legal rights and remedies available to the purchaser under the terms & conditions of the contract.

8.6 The purchaser's/consignee's contractual right to inspect, test and, if necessary, reject the goods after the goods' arrival at the final destination shall have no bearing of the fact that the goods have previously been inspected and cleared by purchaser's inspector during pre-despatch inspection mentioned above.

"On rejection, the supplier shall remove such stores within 14 days of the date of intimation of such rejection from the consignee's premises. If such goods are not removed by the supplier within the period mentioned above, the purchaser/consignee may remove the rejected stores and either return the same to the supplier at his risk and cost by such mode of transport as purchaser/consignee may decide or dispose of such goods at the suppliers risk to recover any expense incurred in connection with such disposals and also the cost of the rejected stores if already paid for."

8.7 Goods accepted by the purchaser/consignee and/or its inspector at initial inspection and in final inspection in terms of the contract shall in no way dilute purchaser's/consignee's right to reject the

same later, if found deficient in terms of the warranty clause of the contract, as incorporated under GCC Clause 15.

8.8 Principal/ Foreign supplier shall also have the equipment inspected by recognised/ reputed agency like SGS, Lloyd, Bureau Veritas, TUV prior to despatch at the supplier's cost and furnish necessary certificate from the said agency in support of their claim.

8.9 **Followed by delivery of the items, a joint inspection by HITES and respective Medical College/ Institution at site will be carried out to verify the quantity and quality of goods.**

9. Terms of Delivery

9.1 Goods shall be delivered by the supplier in accordance with the terms of delivery and as per the delivery period specified in the schedule of requirement. Please note that the time shall be the essence of the contract.

10. Transportation of Goods

10.1 Instructions for transportation of imported goods offered from abroad:

The supplier shall not arrange part-shipments and/or transhipment without the express/prior written consent of the purchaser. The supplier is required under the contract to deliver the goods under CIP (Named port of destination) terms; the shipment shall be made by Indian flag vessel or by vessels belonging to the conference lines in which India is a member country through India's forwarding agents/coordinators. In case the forwarding agent/coordinators are unable to provide timely adequate space in Indian flag vessel or by vessels belonging to the conference lines, the supplier shall arrange shipment through any available vessel to adhere to the delivery schedule given in the contract.

In case of airlifting of imported goods offered from abroad, the same will be done only through the National Carrier i.e. Air India wherever applicable. In case the National Carrier is not available, any other airlines available for early delivery may be arranged.

10.2 Instructions for transportation of domestic goods including goods already imported by the supplier under its own arrangement:

In case no instruction is provided in this regard in the SCC, the supplier will arrange transportation of the ordered goods as per its own procedure.

11. Insurance:

11.1 Unless otherwise instructed in the SCC, the supplier shall make arrangements for insuring the goods against loss or damage incidental to manufacture or acquisition, transportation, storage and delivery in the following manner:

i) in case of supply of domestic goods on Consignee site basis, the supplier shall be responsible till the entire stores contracted for arrival in good condition at destination. The transit risk in this respect shall be covered by the Supplier by getting the stores duly insured for an amount equal to 110% of the value of the goods from ware house to ware house (consignee site) on all risk basis . The insurance cover shall be obtained by the Supplier and should be valid till 3 months after the receipt of goods by the Consignee.

ii) in case of supply of the imported goods on CIP Named port of Destination Basis, the additional extended Insurance (local transportation and storage) would be borne by the Supplier from the port of entry to the consignee site for a period including 3 months beyond date of delivery for an amount equal to 110% of the overall expenditure to be incurred by the purchaser from ware house to ware house (consignee site) on all risk basis.

If the equipment is not commissioned and handed over to the consignee within 3 months, the insurance will have to be extended by the supplier at their cost till the successful installation, testing, commissioning and handing over of the goods to the consignee. In case the delay in the installation and commissioning is due to handing over of the site to the supplier by the consignee, such extensions of the insurance will still be done by the supplier, but the insurance extension charges at actuals will be reimbursed.

12. Spare parts

12.1 I**f** specified in the List of Requirements and in the resultant contract, the supplier shall supply/provide any or all of the following materials, information etc. pertaining to spare parts manufactured and/or supplied by the supplier:

a) The spare parts as selected by the Purchaser/Consignee to be purchased from the supplier, subject to the condition that such purchase of the spare parts shall not relieve the supplier of any contractual obligation including warranty obligations; and

b) In case the production of the spare parts is discontinued:

i) Sufficient advance notice to the Purchaser/Consignee before such discontinuation to provide adequate time to the purchaser to purchase the required spare parts etc., and

ii) The supplier shall be responsible for undertaking the supply of any such spare part for the proper up keeping of equipment for a period of 10 years including the warranty and CMC periods.

12.2 Supplier shall carry sufficient inventories to assure ex-stock supply of consumables and spares for the goods so that the same are used during warranty and CMC period.

13. Incidental services

13.1 Subject to the stipulation, if any, in the SCC (Section – V), List of Requirements (Section – VI) and the Technical Specification (Section – VII), the supplier shall be required to perform the following services.

a. Installation & commissioning, Supervision and Demonstration of the goods

b. Providing required jigs and tools for assembly, minor civil works required for the completion of the installation.

c. Training of Consignee's Doctors, Staff, operators etc. for operating and maintaining the goods

d. Supplying required number of operation & maintenance manual for the goods

14. <u>DISTRIBUTION OF DISPATCH DOCUMENTS FOR CLEARANCE/RECEIPT OF GOODS</u>

The supplier shall send all the relevant despatch documents well in time to the Purchaser/Consignee to enable the Purchaser/Consignee clear or receive (as the case may be) the goods in terms of the contract.
Unless otherwise specified in the SCC, the usual documents involved and the drill to be followed in general for this purpose are as follows.

A) For Domestic Goods, including goods already imported by the supplier under its own arrangement

Within 24 hours of despatch, the supplier shall notify the purchaser, consignee, and others concerned if mentioned in the contract, the complete details of despatch and also supply the following documents to them by registered post / speed post / courier (or as instructed in the contract):

(i) Four copies of supplier's invoice showing contract number, goods description, quantity, unit price and total amount;
(ii) Two copies of packing list identifying contents of each package;
(iii) Certificate of origin;
(iv) Insurance Certificate as per GCC Clause 11.
(v) Manufacturers/Supplier's warranty certificate & In-house inspection certificate.

B) For goods imported from abroad

Within 24 hours of despatch, the supplier shall notify the purchaser, consignee, and others concerned if mentioned in the contract, the complete details of despatch and also supply the following documents to them by registered post / speed post (or as instructed in the contract). Any delay or demurrage occurred during the customs clearance on account of the non-availability of technical support/ clarifications /documents from the supplier shall be borne by the supplier:

(i) Four copies of supplier's invoice showing contract number, goods description, quantity, unit price and total amount;
(ii) Original and four copies of the negotiable clean, on-board Bill of Lading/Airway bill, marked freight pre paid and four copies of non-negotiable Bill of Lading/Airway bill;
(iii) Four Copies of packing list identifying contents of each package;
(iv) Manufacturer's/Supplier's warranty certificate;
(vi) Inspection Certificate for the despatched equipments issued by recognized/ reputed agency like SGS, Lloyd, BUREAU VERITAS, TUV prior to despatch
(vii) Manufacturer's own factory inspection report;
(viii) Certificate of origin
(ix) Port of Loading;
(x) Port of Discharge and
(xi) Expected date of arrival.

15. Warranty:

- The supplier warrants comprehensively that the goods supplied under the contract is new, unused and incorporate all recent improvements in design and materials unless prescribed otherwise by the purchaser in the contract. The supplier further warrants that the goods supplied under the contract shall have no defect arising from design, materials (except when the design adopted and/or the material used are as per the Purchaser's/Consignee's specifications) or workmanship or from any act or omission of the supplier, that may develop under normal use of the supplied goods under the conditions prevailing in India.
- The warranty shall remain valid for 60 months from the date of installation & commissioning with a regular up gradation of newer technology as and when evolved followed by a CMC for a period of 5 (Five) Years for all the equipments after the goods or any portion thereof as the case may be, have been delivered to the final destination and installed and commissioned at the final destination and accepted by the purchaser/ consignee in terms of the contract, unless specified otherwise in the SCC.
- No conditional warranty will be acceptable.
- Warranty as well as Comprehensive Maintenance contract will be inclusive of all accessories

and Turnkey work and it will also cover the following wherever applicable:-

- Any kind of motor.
- Plastic & Glass Parts against any manufacturing defects.
- All kind of sensors.
- All kind of coils, probes and transducers.
- Printers and imagers including laser and thermal printers with all parts.
- UPS including the replacement of batteries.
- Air-conditioners

a. Replacement and repair will be under taken for the defective goods.
   - All kinds of painting, civil, HVAC and electrical work

b. Proper marking has to be made for all spares for identification like printing of installation and repair dates.

15.3 In case of any claim arising out of this warranty, the Purchaser/Consignee shall promptly notify the same in writing to the supplier. The period of the warranty will be as per G.C.C clause number 15.2 above irrespective of any other period mentioned elsewhere in the bidding documents.

15.4 Upon receipt of such notice, the supplier shall, within 8 hours on a 24(hrs) X 7 (days) X 365 (days) basis respond to take action to repair or replace the defective goods or parts thereof, free of cost, at the ultimate destination. The supplier shall take over the replaced parts/goods after providing their replacements and no claim, whatsoever shall lie on the purchaser for such replaced parts/goods thereafter. The penalty clause for non-rectification will be applicable as per tender conditions

15.5 In the event of any rectification of a defect or replacement of any defective goods during the warranty period, the warranty for the rectified/replaced goods shall be extended till the completion of the original warranty period of the main equipment.

15.6 If the supplier, having been notified, fails to respond to take action to repair or replace the defect(s) within 8 hours on a 24(hrs) X 7 (days) X 365 (days) basis, the purchaser may proceed to take such remedial action(s) as deemed fit by the purchaser, at the risk and expense of the supplier and without prejudice to other contractual rights and remedies, which the purchaser may have against the supplier.

15.7 During Warranty period, the supplier is required to visit at each consignee's site at least once in 6 months commencing from the date of the installation for preventive maintenance of the goods

15.8 The Purchaser/Consignee reserve the rights to enter into Annual Comprehensive Maintenance Contract between Consignee and the Supplier for the period as mentioned in Section VII, Technical Specifications after the completion of warranty period.

15.9 The supplier along with its Indian Agent and the CMC provider shall ensure continued supply of the spare parts for the machines and equipments supplied by them to the purchaser for 10 years from the date of installation and handing over.

15.10 The Supplier along with its Indian Agent and the CMC Provider shall always accord most favoured client status to the Purchaser vis-à-vis its other Clients/Purchasers of its equipments/machines/goods etc. and shall always give the most competitive price for its machines/equipments supplied to the Purchaser/Consignee.

16. ASSIGNMENT

16.1 The Supplier shall not assign, either in whole or in part, its contractual duties, responsibilities and obligations to perform the contract, except with the Purchaser's prior written permission.

17. SUB CONTRACTS

17.1 The Supplier shall notify the Purchaser in writing of all sub contracts awarded under the contract if not already specified in its tender. Such notification, in its original tender or later, shall not

relieve the Supplier from any of its liability or obligation under the terms and conditions of the contract.

17.2 Sub contract shall be only for bought out items and sub-assemblies.

17.3 Sub contracts shall also comply with the provisions of GCC Clause 4 ("Country of Origin").

18. MODIFICATION OF CONTRACT

18.1 If necessary, the purchaser may, by a written order given to the supplier at any time during the currency of the contract, amend the contract by making alterations and modifications within the general scope of contract in any one or more of the following:

a) Specifications, drawings, designs etc. where goods to be supplied under the contract are to be specially manufactured for the purchaser,
b) Mode of packing,
c) Incidental services to be provided by the supplier
d) Mode of despatch,
e) Place of delivery, and
f) Any other area(s) of the contract, as felt necessary by the purchaser depending on the merits of the case.

18.2 In the event of any such modification/alteration causing increase or decrease in the cost of goods and services to be supplied and provided, or in the time required by the supplier to perform any obligation under the contract, an equitable adjustment shall be made in the contract price and/or contract delivery schedule, as the case may be, and the contract amended accordingly. If the supplier doesn't agree to the adjustment made by the Purchaser/Consignee, the supplier shall convey its views to the Purchaser/Consignee within twenty-one days from the date of the supplier's receipt of the Purchaser's/Consignee's amendment / modification of the contract.

19. Prices

19.1 Prices to be charged by the supplier for supply of goods and provision of services in terms of the contract shall not vary from the corresponding prices quoted by the supplier in its tender and incorporated in the contract except for any price adjustment authorised in the SCC.

20. Taxes and Duties

20.1 Supplier shall be entirely responsible for all taxes, duties, fees, levies etc. incurred until delivery of the contracted goods to the purchaser.

20.2 Further instruction, if any, shall be as provided in the SCC.

21. Terms and mode of payment

21.1 Payment Terms

Payment shall be made subject to recoveries, if any, by way of liquidated damages or any other charges as per terms & conditions of contract in the following manner.

TERMS AND MODE OF PAYMENT

A) Payment for Domestic Goods Or Foreign Origin Located Within India.

Payment shall be made in Indian Rupees as specified in the contract in the following manner:

a) On delivery:

Seventy Five percent (75%) payment of the contract price shall be paid on receipt of goods in good condition and upon the submission of the following documents subject to recovery of LD, if any:

(i) Four copies of supplier's invoice showing contract number, goods description, quantity, unit price and total amount
(ii) Two copies of packing list identifying contents of each package
(iii) Inspection certificate issued by the nominated Inspection agency, if any
(iv) Insurance Certificate as per GCC Clause 11
(v) Certificate of origin in case of imported goods
(vi) Consignee Receipt Certificate as per Section XVII in original issued by the authorized representative of the consignee

b) On Acceptance:

Balance Twenty Five percent (25%) payment would be made against 'Final Acceptance Certificate' as per Section XVIII of goods to be issued by the consignees subject to recoveries, if any, either on account of non-rectification of defects/deficiencies not attended by the Supplier or otherwise. FAC needs to be issued by the designated consignee after installation, commissioning, testing and one to two weeks of successful trail run of the equipment.

B) PAYMENT FOR IMPORTED GOODS:

Payment for foreign currency portion shall be made in the currency as specified in the contract in the following manner:

a) On Shipment:

Seventy Five percent (75%) of the net CIP price (CIP price less Indian Agency commission) of the goods shipped shall be paid through irrevocable, non-transferable Letter of Credit (LC) opened in favour of the supplier in a bank in his country and upon submission of documents specified hereunder:

(i) Four copies of supplier's invoice showing contract number, goods description, quantity, unit price and total amount;
(ii) Original and four copies of the negotiable clean, on-board Bill of Lading/ Airway bill, marked freight pre paid and four copies of non-negotiable Bill of Lading/Airway bill;
(iii) Four Copies of packing list identifying contents of each package;
(iv) Insurance Certificate as per GCC Clause 11 and documents also to be submitted for payment of LC confirming that dispatch documents has already been sent to all concerned as per the contract within 24 hours;
(v) Manufacturer's/Supplier's warranty certificate;
(vi) Manufacturer's own factory inspection report and
(vii) Certificate of origin by the chamber of commerce of the concerned country;
(viii) Inspection Certificate for the despatched equipment issued by recognized/ reputed agency like SGS, Lloyd, BEAURU VARITUS and TUV prior to despatch.

b) On Acceptance:

Balance payment of Twenty Five percent (25%) of net CIP price of goods would be made against 'Final Acceptance Certificate' as per Section XVIII to be issued by the consignees through irrevocable, non-transferable Letter of Credit (LC) opened in favour of the Foreign

Principal in a bank in his country, subject to recoveries, if any. FAC need to be issued by the designated consignee after installation, commissioning, testing and one to two weeks of successful trail run of the equipment.

c) Payment of Incidental Costs till consignee site & Incidental Services (including Installation & Commissioning, Supervision, Demonstration and Training) will be paid in Indian Rupees to the Indian Agent on proof of final installation, commission and acceptance of equipment by the consignee.

d) Payment of Indian Agency Commission:

Indian Agency commission will be paid to the manufacturer's agent in the local currency for an amount in Indian rupees indicated in the relevant Price Schedule (as per prevailing rate of exchange ruling on the date of Contract) and shall not be subject to further escalation / exchange variation. This is payable against submission of a certificate from the principal supplier that they have realised full and final settlement against their supply.

C) Payment of Turnkey, if any:

Turnkey payment will be made to the bidder/ manufacturer's agent ot its Indian Office in Indian rupees as indicated in the relevant Price Schedule (as per prevailing rate of exchange ruling on the date of Contract) and shall not be subject to further escalation / exchange variation. This will be paid on proof of final installation, commission and acceptance of equipment by the consignee

D) Payment for Annual Comprehensive Maintenance Contract Charges:

The consignee will enter into CMC with the supplier at the rates as stipulated in the contract. The payment of CMC will be made on six monthly basis after satisfactory completion of said period, duly certified by the consignee on receipt of bank guarantee for an amount equivalent to 2.5 % of the cost of the equipment as per contract in the prescribed format given in Section XV valid till 2 months after expiry of entire CMC period.

21.2 The supplier shall not claim any interest on payments under the contract.

21.3 Where there is a statutory requirement for tax deduction at source, such deduction towards income tax and other tax as applicable will be made from the bills payable to the Supplier at rates as notified from time to time.

21.4 Irrevocable & non – transferable LC shall be opened by the Purchaser. However, if the supplier requests specifically to open confirmed LC, the extra charges would be borne by the supplier. If LC is required to be extended and/or amended for reasons not attributable to the purchaser/consignee, the charges thereof shall be borne by the supplier.

21.5 The payment shall be made in the currency / currencies authorised in the contract.

21.6 The supplier shall send its claim for payment in writing, when contractually due, along with relevant documents etc., duly signed with date, to respective consignees.

21.7 While claiming payment, the supplier is also to certify in the bill that the payment being claimed is strictly in terms of the contract and all the obligations on the part of the supplier for claiming that payment has been fulfilled as required under the contract.

21.8 While claiming reimbursement of duties, taxes etc. (like sales tax, excise duty, custom duty) from the Purchaser/Consignee, as and if permitted under the contract, the supplier shall also certify that, in case it gets any refund out of such taxes and duties from the concerned authorities at a later date, it (the supplier) shall refund to the Purchaser/Consignee forthwith.

21.9 In case where the supplier is not in a position to submit its bill for the balance payment for want of receipted copies of Inspection Note from the consignee and the consignee has not complained about the non-receipt, shortage, or defects in the supplies made, balance amount will be paid by the paying authority without consignee's receipt certificate after three months from the date of the preceding part payment for the goods in question, subject to the following conditions:

(a) The supplier will make good any defect or deficiency that the consignee (s) may report within six months from the date of despatch of goods.
(b) Delay in supplies, if any, has been regularized.
(c) The contract price where it is subject to variation has been finalized.
(d) The supplier furnishes the following undertakings:

"I/We, _____ certify that I/We have not received back the Inspection Note duly receipted by the consignee or any communication from the purchaser or the consignee about non-receipt, shortage or defects in the goods supplied. I/We _____ agree to make good any defect or deficiency that the consignee may report within three months from the date of receipt of this balance payment.

22. Delivery

22.1 The supplier shall deliver the goods and perform the services under the contract within the time schedule specified by the Purchaser/Consignee in the List of Requirements and as incorporated in the contract. The time for and the date of delivery of the goods stipulated in the schedule shall be deemed to be of the essence of the contract and the delivery must be completed not later than the date (s) as specified in the contract.

22.2 Subject to the provision under GCC clause 26, any unexcused delay by the supplier in maintaining its contractual obligations towards delivery of goods and performance of services shall render the supplier liable to any or all of the following sanctions:

(i) imposition of liquidated damages,
(ii) forfeiture of its performance security and
(iii) termination of the contract for default.

22.3 If at any time during the currency of the contract, the supplier encounters conditions hindering timely delivery of the goods and performance of services, the supplier shall promptly inform the Purchaser/Consignee in writing about the same and its likely duration and make a request to the Purchaser/Consignee for extension of the delivery schedule accordingly. On receiving the supplier's communication, the Purchaser/Consignee shall examine the situation as soon as possible and, at its discretion, may agree to extend the delivery schedule, with or without liquidated damages for completion of supplier's contractual obligations by issuing an amendment to the contract.

22.4 When the period of delivery is extended due to unexcused delay by the supplier, the amendment letter extending the delivery period shall, interalia contain the following conditions:

(a) The Purchaser/Consignee shall recover from the supplier, under the provisions of the clause 23 of the General Conditions of Contract, liquidated damages on the goods and services, which the Supplier has failed to deliver within the delivery period stipulated in the contract.
(b) That no increase in price on account of any ground, whatsoever, including any stipulation in the contract for increase in price on any other ground and, also including statutory increase in or fresh imposition of customs duty, excise duty, sales tax/ VAT, Service Tax and Works Contract Tax or on account of any other tax or duty which may be levied in respect of the goods and services specified in the contract, which takes place after the date of delivery stipulated in the contract shall be admissible on such of the said goods and services as are delivered and performed after the date of the delivery stipulated in the contract.
(c) But nevertheless, the Purchaser/Consignee shall be entitled to the benefit of any decrease in price on account of reduction in or remission of customs duty, excise duty, sales tax/ VAT, Service Tax and Works Contract Tax or any other duty or tax or levy or on account of any other grounds, which takes place after the expiry of the date of delivery stipulated in the contract.

22.5 The supplier shall not dispatch the goods after expiry of the delivery period. The supplier is required to apply to the Purchaser/Consignee for extension of delivery period and obtain the same before despatch. In case the supplier dispatches the goods without obtaining an extension, it would be doing so at its own risk and no claim for payment for such supply and / or any other expense related to such supply shall lie against the purchaser.

22.6.1 Passing of Property:

22.6.2 The property in the goods shall not pass to the purchaser unless and until the goods have been delivered to the consignee in accordance with the conditions of the contract.

22.6.3 Where there is a contract for sale of specific goods and the supplier is bound to do something to the goods for the purpose of putting them into a deliverable state the property does not pass until such thing is done.

22.6.4 Unless otherwise agreed, the goods remain at the supplier's risk until the property therein is transferred to the purchaser.

23. Liquidated damages

23.1 Subject to GCC clause 26, if the supplier fails to deliver or install /commission any or all of the goods or fails to perform the services within the time frame(s) incorporated in the contract including opening of office in India as per the undertaking given in the qualification criteria, the Purchaser/Consignee shall, without prejudice to other rights and remedies available to the Purchaser/Consignee under the contract, deduct from the contract price, as liquidated damages, a sum equivalent to 0.5% per week of delay or part thereof on delayed supply of goods, installation, commissioning and/or services until actual delivery or performance subject to a maximum of 10% of the contract price. Once the maximum is reached Purchaser/Consignee may consider termination of the contract as per GCC 24. ***Since the Liquidated damages are in virtue of non-performance of services, it will attract Service Tax also which in turn shall be deducted from the bidder.***

During the above-mentioned delayed period of supply and / or performance, the conditions incorporated under GCC sub-clause 22.4 above shall also apply.

24. Termination for default

24.1 The Purchaser/Consignee, without prejudice to any other contractual rights and remedies available to it (the Purchaser/Consignee), may, by written notice of default sent to the supplier, terminate the contract in whole or in part, if the supplier fails to deliver any or all of the goods or fails to perform any other contractual obligation(s) within the time period specified in the contract, or within any extension thereof granted by the Purchaser/Consignee pursuant to GCC sub-clauses 22.3 and 22.4.

24.2 In the event of the Purchaser/Consignee terminates the contract in whole or in part, pursuant to GCC sub-clause 24.1 above, the Purchaser/Consignee may procure goods and/or services similar to those cancelled, with such terms and conditions and in such manner as it deems fit and the supplier shall be liable to the Purchaser/Consignee for the extra expenditure, if any, incurred by the Purchaser/Consignee for arranging such procurement.

24.3 Unless otherwise instructed by the Purchaser/Consignee, the supplier shall continue to perform the contract to the extent not terminated.

25. Termination for insolvency

25.1 If the supplier becomes bankrupt or otherwise insolvent, the purchaser reserves the right to terminate the contract at any time, by serving written notice to the supplier without any

compensation, whatsoever, to the supplier, subject to further condition that such termination will not prejudice or affect the rights and remedies which have accrued and / or will accrue thereafter to the Purchaser/Consignee.

26. Force Majeure

26.1 Notwithstanding the provisions contained in GCC clauses 22, 23 and 24, the supplier shall not be liable for imposition of any such sanction so long the delay and/or failure of the supplier in fulfilling its obligations under the contract is the result of an event of Force Majeure.

26.2 For purposes of this clause, Force Majeure means an event beyond the control of the supplier and not involving the supplier's fault or negligence and which is not foreseeable and not brought about at the instance of , the party claiming to be affected by such event and which has caused the non – performance or delay in performance. Such events may include, but are not restricted to, wars or revolutions, hostility, acts of public enemy, civil commotion, sabotage, fires, floods, explosions, epidemics, quarantine restrictions, strikes excluding by its employees , lockouts excluding by its management, and freight embargoes.

26.3 If a Force Majeure situation arises, the supplier shall promptly notify the Purchaser/Consignee in writing of such conditions and the cause thereof within twenty one days of occurrence of such event. Unless otherwise directed by the Purchaser/Consignee in writing, the supplier shall continue to perform its obligations under the contract as far as reasonably practical, and shall seek all reasonable alternative means for performance not prevented by the Force Majeure event.

26.4 If the performance in whole or in part or any obligation under this contract is prevented or delayed by any reason of Force Majeure for a period exceeding sixty days, either party may at its option terminate the contract without any financial repercussion on either side.

26.5 In case due to a Force Majeure event the Purchaser/Consignee is unable to fulfil its contractual commitment and responsibility, the Purchaser/Consignee will notify the supplier accordingly and subsequent actions taken on similar lines described in above sub-paragraphs.

27. Termination for convenience

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

27.2 The goods and services which are complete and ready in terms of the contract for delivery and performance within thirty days after the supplier's receipt of the notice of termination shall be accepted by the Purchaser/Consignee following the contract terms, conditions and prices. For the remaining goods and services, the Purchaser/Consignee may decide:

a) To get any portion of the balance completed and delivered at the contract terms, conditions and prices; and / or

b) To cancel the remaining portion of the goods and services and compensate the supplier by paying an agreed amount for the cost incurred by the supplier towards the remaining portion of the goods and services.

28. Governing language

28.1 The contract shall be written in English language following the provision as contained in GIT clause 4. All correspondence and other documents pertaining to the contract, which the parties exchange, shall also be written accordingly in that language.

29. Notices

29.1 Notice, if any, relating to the contract given by one party to the other, shall be sent in writing or by cable or telex or facsimile and confirmed in writing. The procedure will also provide the sender of the notice, the proof of receipt of the notice by the receiver. The addresses of the parties for exchanging such notices will be the addresses as incorporated in the contract.

29.2 The effective date of a notice shall be either the date when delivered to the recipient or the effective date specifically mentioned in the notice, whichever is later.

30. Resolution of disputes

30.1 If dispute or difference of any kind shall arise between the Purchaser/Consignee and the supplier in connection with or relating to the contract, the parties shall make every effort to resolve the same amicably by mutual consultations.

30.2 If the parties fail to resolve their dispute or difference by such mutual consultation within twenty-one days of its occurrence, then, unless otherwise provided in the SCC, either the Purchaser/Consignee or the supplier may give notice to the other party of its intention to commence arbitration, as hereinafter provided the applicable arbitration procedure will be as per the Arbitration and Conciliation Act, 1996 of India or amendments thereof. In the case of a dispute or difference arising between the Purchaser/Consignee and a domestic Supplier relating to any matter arising out of or connected with the contract, such dispute or difference shall be referred to the sole arbitration of an officer in the Ministry of Law and Justice, appointed to be the arbitrator by the Director General (Health Services). The award of the arbitrator shall be final and binding on the parties to the contract subject to the provision that the Arbitrator shall give reasoned award in case the value of claim in reference exceeds Rupees One lakhs (Rs. 1,00,000/-)

30.3 Venue of Arbitration: The venue of arbitration shall be the place from where the contract has been issued, i.e., New Delhi, India.

30.4 Jurisdiction of the court will be from the place where the tender enquiry document has been issued, i.e., New Delhi, India

31. Applicable Law

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

32 <u>Withholding and Lien in respect of sums claimed</u>

Whenever any claim for payment arises under the contract against the supplier the purchaser shall be entitled to withhold and also have a lien to retain such sum from the security deposit or sum of money arising out of under any other contract made by the supplier with the purchaser, pending finalization or adjudication of any such claim. It is an agreed term of the contract that the sum of money so withheld or retained under the lien referred to above, by the purchaser, will be kept withheld or retained till the claim arising about of or under the contract is determined by the Arbitrator or by the competent court as the case may be ,and the supplier will have no claim for interest or damages whatsoever on any account in respect of such withholding or retention.

33. General/ Miscellaneous Clauses

33.1 Nothing contained in this Contract shall be constructed as establishing or creating between the parties, i.e. the Supplier/its Indian Agent/CMC Provider on the one side and the Purchaser on the other side, a relationship of master and servant or principal and agent.

33.2 Any failure on the part of any Party to exercise right or power under this Contract shall not operate as waiver thereof.

33.3 The Supplier shall notify the Purchaser/Consignee /the Government of India of any material change would impact on performance of its obligations under this Contract.

33.4 Each member/constituent of the Supplier/its Indian Agent/CMC Provider, in case of consortium shall be **jointly and severally liable** to and responsible for all obligations towards the Purchaser/Consignee/Government for performance of contract/services including that of its Associates/Sub Contractors under the Contract.

33.5 The Supplier/its Indian Agent/CMC Provider shall at all times, indemnify and keep indemnified the Purchaser/Government of India against all claims/damages etc. for any infringement of any Intellectual Property Rights (IPR) while providing its services under CMC or the Contract.

33.6 The Supplier/its Agent/CMC Provider shall, at all times, indemnify and keep indemnified the Purchaser/Consignee/Government of India against any claims in respect of any damages or compensation payable in consequences of any accident or injury sustained or suffered by its employees or agents or by any other third party resulting from or by any action, omission or operation conducted by or on behalf of the supplier/its associate/affiliate etc.

33.7 All claims regarding indemnity shall survive the termination or expiry of the contract.

33.8 If any provisions of this tender enquiry or a contact formed on the basis of this tender enquiry are invalid or void under any of the existing provisions of Indian law, then such provisions will not affect other provisions of this tender enquiry/ contract.

SECTION – V

SPECIAL CONDITIONS OF CONTRACT (SCC)

The following Special Conditions of Contract (SCC) will apply for this purchase. The corresponding clauses of General Conditions of Contract (GCC) relating to the SCC stipulations have also been incorporated below.

These Special Conditions will modify/substitute/supplement the corresponding (GCC) clauses.
Whenever there is any conflict between the provision in the GCC and that in the SCC, the provision contained in the SCC shall prevail.

The warranty conditions will be as mentioned in the list of requirement as per section VI of the tender enquiry.

SECTION - VI
LIST OF REQUIREMENTS

Part I

Sl. No.	Rfx No.	Item Description	Qty.	Warranty in years	CMC in years
1	3000001970	1000 mA Digital X-RAY System with Digital Flat Panel Detector	20	5	5
2	3000001971	300 mA HF X-Ray Machine	16	5	5
3	3000001972	500 mA HF X-Ray Machine	16	5	5
4	3000001973	800mA Digital X-Ray unit with Single Detector (Floor Mounted)	13	5	5
5	3000001974	Bi-Plane DSA	7	5	5
6	3000001975	CT Scan-128 Slice	22	5	5
7	3000001976	CT Scan-16 Slice	2	5	5
8	3000001977	CT Scan-256 Slice	2	5	5
9	3000001978	Digital Mammography System	5	5	5
10	3000001979	DRF - Digital Flat Panel Fluoroscopy cum Radiography System	2	5	5
11	3000001980	Portable - Colour Doppler	27	5	5
12	3000001981	Colour Doppler - 2D	38	5	5
13	3000001982	Color Doppler System - (4D)	19	5	5
14	3000001983	Computed Radiography Unit	16	5	5
15	3000001984	Computed Radiography Unit Single Loader	4	5	5
16	3000001985	Mammography (Analog /Conventional)	12	5	5
17	3000001986	Mobile X ray machine	57	5	5
18	3000001987	MRI 1.5 T	8	5	5
19	3000001988	MRI 3 T	4	5	5

Part II: Required Delivery Schedule:

a) For Indigenous goods or for imported goods if supplied from India:

75 days from date of Notification of Award to delivery at consignee site. The date of delivery will be the date of delivery at consignee site. Tenderers may quote earliest delivery period.

Installation and commissioning shall be done within 45 days of receipt of the stores/ goods at site or within 45 days of handing over the site for installation, whichever is later.

b) For Imported goods directly from foreign:

90 days from the date of opening of L/C. The date of delivery will be the date when the consignment reaches the port of destination. (Tenderers may quote the earliest delivery period).
Delivery of indigenous goods contracted along with the direct imported items shall be within the scheduled delivery period for imported goods.
Installation and commissioning shall be done within 45 days of receipt of the stores/ goods at site or within 45 days of handing over the site for installation, whichever is later.

For delayed delivery and/ or installation and commissioning liquidated damages will get applied as per GCC clause 23.

Note:

i) The delivery schedule for different sites may be staggered based on the site readiness.
ii) Supplier has to submit clear documents for opening of LC to HITES within 21 days of placement of order. Any delay will be treated as non-performance and Liquidated Damages shall be levied.
iii) In case of multiple LC are opened in favour of multiple manufacturers, the delivery period for all the items under the contract shall be counted from the date of opening of the first LC only.
iv) Indigenous goods or imported goods if supplied from India (offered in INR) which are linked with supply of directly imported goods, are to be supplied within the contractual delivery period as stated in para b) above.

Part III: Scope of Incidental Services:

Installation & Commissioning, Supervision, Demonstration, Trial run and Training etc. as specified in GCC Clause 13

Part IV:

Turnkey (if any) as per details in Technical Specification.

Part V:

Warranty period as per details in general technical specification and as specified in Part I above. Warranty period will be 60 months from the date of installation, commissioning and acceptance or 66 months from the date of delivery, whichever is earlier.

Comprehensive Maintenance Contract (CMC) as per details in Technical Specification as specified in part I above

Part VI:

Required Terms of Delivery and Destination.

a) For Indigenous goods or for imported goods if supplied from India:

At Consignee Site(s)

b) For Imported goods directly from abroad:

The foreign tenderers are required to quote their rates on CIP Named Port of Destination Basis giving breakup of the price as per the Proforma prescribed in the Price Schedule. Purchaser will place the order on CIP Named Port of Destination basis.

Insurance (local transportation and storage) would be extended and borne by the Supplier from ware house to the consignee site for a period including 3 months beyond date of delivery.

Destination/Consignee details are given in Section XXI

Section – VII
Technical Specifications

Schedule: 1

Item Sl. No. 01
1000 mA Digital X-RAY System with Digital Flat Panel Detector

	High Frequency X-Ray Unit for general radiography with digital flat panel technology. The system should be capable of both erect and supine radiological examinations. The unit should be completely integrated with the following specifications. All software updates should be provided in warranty & CMC period.
	Any two components out of three (X-Ray tube, X-ray Generator and Flat panel detectors) should be from the same manufacturer of the main (Complete) system.
1	**The unit should comprise of the following:**
	a. Two no.s Flat Panel Detectors(Built-in), one for Bucky Table and one for Vertical stand
	b. Generator
	c. X-Ray Tube and Collimator
	d. Ceiling suspended 3D Column Stand
2	**Flat Panel Detector:**
	a. Flat Panel Detector size of at least 40 x 40 cm or more
	b. Detector Panel should be made of amorphous Silicon with CsI
	c. Image matrix size at least 2000 x 2000 or more
	d. Minimum pixel should be 200 micron or less
	e. Grey scale of 12 bit.
	f. A/D of 14 bit or better.
	g. Tube assembly movement to be automatically synchronized with the detector movement.
	h. Preview time after exposure 7 sec or less
	i. Image processing time should not be more than 9 sec.
	j. DQE at 0lp/mm should be at least 65% or more.
3	**Generator**
	a. X-ray generator should be of microprocessor controlled high frequency (mention the frequency) type with latest technology having constant output with low ripple frequency.
	b. Output 80 KW or more.
	c. KVP range 40 kV - 150 kV with 1 kV steps.
	d. Output 1000mA or more at 80 KV or better.
	e. KV/MA output specifications.
	1000 mA at 80 kv.
	800 mA at 100 kv.
	f. Minimum exposure time should be 1 ms or less.
	g. It should have automatic exposure control (AEC) device
	h. It should have digital display of KVP and mAs.
	i. Anatomical programming radiography should be possible
	j. It should have over loading protection

4	**X-Ray Tube**
	a. The X-Ray Tube should be rotating anode high speed (8000 rpm or more) compatible with the generator and must have dual focus.
	b. Focal spots of the following sizes:
	Large Focus: 1.2mm or less
	Small Focus: 0.6mm or less
	c. X-ray tube loading should be at least 30KW for small focus and at least 80KW for large focus.
	d. X-ray Tube with Anode heat storage capacity of 300kHU or more
	e. Tube protection against overload
	f. Target angle should be at least 12 deg
	g. A high speed rotor accelerator (starter).
	h. Please specify tube rotation at vertical axis and horizontal axis.
5	**Ceiling suspension**
	a. Ceiling suspended 3D Column stand with facility of automatic positioning and Synchronization
	b. Movement in all direction should be easily possible
	c. It should have auto-tracking and auto-positions functions
	d. Monitoring of all the position data on colour touch screen for system control (kV, mAs, SID, tube angle, column angle)
	e. SID (Source to Image Distance) in vertical positions150 cm or more, in horizontal position 180 cm or more.
6	**X-Ray Table**
	a. Free floating Carbon fibre or equivalent table top table with low attenuation.
	b. Anti collision control system.
	c. Table should support patient weight of 200 kg. or more.
	d. Auto-tracking capability without mechanical link.
7	**Vertical Bucky stand (wall Stand)**
	a. Motorized, counter balanced adjustable height vertical Bucky for the digital flat panel detector
	b. Detector movement should be synchronized (auto-tracking) with movement of X-Ray Tube
	c. Bucky should have a grid ratio 10:1 or more.
8	**Filter & Collimator**
	a. Inherent filtration of at least 1.00mm Al.
	b. Square collimation: manual 85 motorized, should be controllable by organ programming.
	c. Full field light localizer:
	d. Rotation of +/- 45 deg or more.
	e. Display of collimation, filter 86 SID.
9	**Operating (Acquisition) Station**

	a. Should have a high resolution TFT / LCD Monitor of minimum 17 inch size or more fully flat with minimum 1024 x 1024 or more display matrix and anti reflective front screen
	b. Please specify Image matrix size.
	c. Operating console should have a facility for patient identity entry, viewing and processing images, documentation etc.
	d. Preview image should be ready in minimum time.
	e. System should have auto protocol select
	f. System should have latest processor with 4GB or more RAM and 2TB or more storage capacity
10	**Image viewing, post processing, reporting and documentation station**
	a. It should have latest operating system.
	b. 19" or more LCD/LED high quality reputed international make medical grade monitor of minimum 2MP resolution must be provided.
	c. Image display should be of high resolution.
	d. High luminance display for diagnostic image viewing.
	e. Post-acquisition image processing, viewing, reprocessing, hard copy documentation and onwards transmission should be possible.
	f. Image processing functions like rotate, mirroring, zoom, move, windowing filter should be possible.
	g. Should be connected to Dry chemistry camera for documentation. Multi format printing should be possible with user selectable options.
	h. It should have CD /DVD writing facility.
11	**Image storage and Transmission**
	a. Hard disk storage capacity should be of 10,000 or more
	b. The system should support storage of images on compact discs/DVD
	c. The system should be DICOM 3.0 (or higher version) ready (like send, receive, print, record on CD/ DVD, acknowledge etc) for connectivity to any network computed/PG-etc in DICOM format.
	d. Easy integration and networking should be possible with any other existing future networking including other modalities HIS, RIS & PACS at no extra cost.
12	DAP: Automatic collimator must be mounted on X-ray tube and collimator must have an integrated dose area product (DAP) meter. Output of DAP meter should be visible in console.
13	**Accessories**
	a. Dry Chemistry Camera. Should have 500 DPI and should print at least 3 sizes of films: 8x10, 14x17, 10x12 or 11x14 inches. 200 films of each size to be supplied.
	b. Online UPS along with batteries of appropriate rating to give 30min. back up to operate the complete system including X-Ray machine and Imager.
	c. Zero lead aprons(0.25mm Lead equivalent) with hangers- 4 Nos.
	d. Stand for lead aprons-1
14	**Approvals**
	The equipment should have US FDA or European CE with four digit notified body number certificate and certificate to be submitted.

	The system should be AERB type approved and the copy of E-LORA Listing should be submitted along with bid.
	Regular QA according to AERB norms will be responsibility of bidder during warranty and CMC period.
	The Turnkey Scope of Work – DR
	1. The Supplier should inspect the proposed site offered by the Consignee Institute in which the DR system has to be installed and they are required to submit the plan for the complete DR Centre on a turnkey basis. The scope of work includes complete Civil work, Electrical, Plumbing, Furnishing, Air-conditioning and Fire fighting for the construction of DR Centre.
	2. While preparing the plan, the following aspects have to be addressed.
	a. Care should be taken to provide easy negotiation of the patient stretchers/ trolleys through corridors and doors.
	b. Radiation shielding for doors, walls, windows etc.
	c. Furniture like desk, chairs, shelves etc.
	d. Patient stretcher and other furniture/ accessory to make the DR centre functional.
	3. The cost of Turnkey for the area of **1000sq.ft** and Air-conditioning of Tonnage 12 TR will be considered for Ranking / Evaluation purpose.
	4. Moreover Bidders will have to quote the Unit Rates of the following components of turnkey work.
	a)Civil works
	b)Electrical work
	c)Public health (plumbing and sanitary fittings).
	d)Air Conditioning (HVAC)
	e)Interior Furnishing & Furniture
	f)Miscellaneous
	Scope of work for turnkey DR system:
	The supplier should inspect the proposed site and submit all the detailed structural and architectural drawings and BOQ for the proposed DR Centres along with technical bid of the tender.
	The DR CENTRE shall consist of the following rooms:
	a) DR Room
	b) Console room
	c) Equipment room
	d) Patient preparation room
	e) Patient waiting area
	The actual area of turnkey works done will be considered for payment, based on the unit rates and site measurements
1	**1. Civil work**
	i. Civil construction work including construction of brick wall if any, plastering, flooring as per the approved plan and equipment layout plan.
	ii. Concrete bed at DR equipment area.
	iii. Platform for unloading and shifting the DR should be provided if necessary.
	iv. Cable tray, trench & channel – necessary trenches, cable tray and channels at required location would be provided.
	v. All the construction work to be done as per the final plan approved by the Consignee.

	a. Flooring
	i. 600 x 600 mm vitrified tiles with 100mm tile skirting to match in console room, lobby and patient preparation areas, Radiologist room etc.
	ii. 50 mm thick cement concrete flooring with Vinyl flooring in DR equipment / UPS room.
	b. Painting
	Two coats Plastic Emulsion Paint over 2 coats of wall putty including primer in patient preparation area, Lobby area, console room, DR room & Equipment room etc.
	c. False Ceiling
	Acoustical tile for ceiling with light weight insulating material of high quality supported on grid or finished seamless with support above ceiling. Finished with white paint or powder coated with white paint, if metallic. Ceiling height to suit the equipment mount and clearances.
2	**Plumbing work**
	All water pipes and fittings shall be of high density polythene of approved and standard make. The gratings shall be brass chrome plated. All plumbing accessories should be of standard make.
3	**Electrical work**
	a. The supplier shall be required to specify the total load requirements for the DR centre including the load of air conditioning , room lighting and for the accessories if any.
	b. The supply line will be provided by the Institute up to one point within the DR centre . The distribution panel shall be provided by the vendor. Few lights in each room shall be connected to the UPS to provide emergency lighting.
	c. The electrical work shall include the following:
	i. Wiring – All interior electrical wiring- with main distribution panel board, necessary MCBs, DB, joint box, switch box etc. the wires shall be of copper of different capacity as per the load and should be renowned make as listed below.
	ii. Switches light and power points should be of modular type and of standard make as listed below.
	iii.General lights – LED light fitting with 500 Lux Illumination
4	**AIR CONDITIONING:**
	a. Package air conditioners units and split AC units may be used according to room requirement and suitability. Humidity control should be effective to eliminate moisture condensation on equipment surface. . The Air conditioning should be designed with standby provision to function 24 hours a day.
	b. The outdoor units of AC should have grill coverings to prevent theft and damage.
	c. Ventilation is required in toilet.
5	**Environment specifications:**
	Relative Humidity range: To be maintained between 60% and 80% in all areas except equipment room which shall be as per requirement of the equipment.
	Temperature ranges: 22 ± 2° C in all areas except equipment room which shall be as per requirement of the equipment.

	Air conditioning load: The heat load calculations and maintaining the desired temperature and humidity shall be the responsibility of the bidder.
6	**Furniture:**
	a. Revolving chairs height adjustable, medium-back with hand-rest in the Control room, Radiologist room and viewing area. – 4 NO.S
	b. Chairs for patient waiting area – Three seater (chrome plated). - 10 NO.S
	c. Cupboard with laminate door shutters for storage of spare parts and accessories and records as per requirement. – 3 NO.S
	d. Drug trolleys for patient preparation area. – 1 No.
	e. Patient trolley with rubber foam mattress to be kept in the patient preparation room.
	f. Name boards for all rooms
	g. Tables for Workstation - 1 NO.
	h. Changing rooms should have change lockers and dressing table.
	i. Dustbins – 10 No's.
	j. Any other essential furniture item as per requirement.
	All furniture items should be of standard make as mentioned in the table below.
7	**Miscellaneous:**
	a. LED X-ray Film viewer with adjustable brightness; capable of holding 3 films of 14"x17" size. – 3 no.s
	b. Cabling of Network (LAN) connectivity for camera system, console system, workstation and computers etc.
	c. Fire extinguisher Dry CO2 type as required for the building safety.
	LIST OF ITEMS AND SUGGESTED MANUFACTURERS.
	ITEMS **PREFERRED MAKES**
A	**FLOORING VITRIFIED TILES** - Somany, Kajaria , H&R Johnson, RAK india
B	**PAINT** - Dulux, Asian Paints , Nerolac
C	**PLUMBING** - Kohler, Jaguar , Grohe , Roca
D	**SANITARY ITEMS** - CERA, Hindware, Parryware
E	**ELECTRICAL**
1	**CABLES** - Finolex, Havells ,V-Guard
2	**SWITCHES** - Legrand, L&T, Crabtree , Roma
3	**DISTRIBUTION BOX , MCB** - Legrand, L&T, Siemens, Havels
4	**LIGHT FITTINGS** - Philips / Crompton / Wipro/ Syska
F	**AIR CONDINTIONING** - Daikin, Hitachi, Blue Star, Voltas,
G	**FURNITURE** - Hermen Miller , Godrej , Featherlite,Geeken

	BOQ Digital Radiography System 1000mA (Per Unit)	
SL. No	**Item Description**	**Quantity**
1	1000 mA X-Ray System with digital flat panel detector as per the Tender Specification (Point 1 to 12)	1 Nos
2	Point 13: Accessories	
3	a. Dry Chemistry Camera as per specification	1 Nos
4	b. Online UPS as per specification	1 Nos

5	c. Zero lead aprons with hanger	4 Nos
6	d. Stand for lead aprons	1 Nos
	Turnkey Work (1000 sq ft) as per specification	
1	Civil works	1000 sq ft
2	Electrical work	1000 sq ft
3	Public health (plumbing and sanitary fittings).	1000 sq ft
4	Air Conditioning	12 TR
5	Interior Furnishing & Furniture	1000 sq ft
6	Miscellaneous	1 Lum sum
	Furniture:	
1	Revolving chairs height adjustable, medium-back with hand-rest.	4 NO.S
2	Chairs for patient waiting area – Three seater (chrome plated). -	10 NO.S
3	Cupboard with laminate door shutters	3 NO.S
4	Drug trolleys for patient preparation area.	1 NO
5	Patient trolley with rubber foam mattress	2 NO.s
6	Tables for Workstation and Radiologist .	2 NO.S
7	Changing rooms (with change lockers and dressing table).	1 set
8	Dustbins	10 NO.S
9	Room Signage	as required
10	Venetian Blinds	as required
	Miscellaneous:	
1	LED X-ray Film viewer	2 NO.s
2	Cabling of Network (LAN) connectivity for camera system, console system, workstation and computers etc	as required
3	Dry chemical power type fire extinguisher of 5kgs capacity	3 NO.s

Item Sl. No. 02
300 mA HF X-Ray Machine

	High Frequency X-Ray machine suitable for General Radiography.
1	**X-ray generator**
i	High Frequency X-Ray generator having Frequency of 40 KHz or more suitable for Radiography should be provided.
ii	Power output of generator should be 30 KW or more.
iii	Radiography KV range should be 40 to 110 KV or more.
iv	Exposure time should be in range of 1 ms to 2 sec.
v	With maximum numbers of steps.
2	**Control:**
i	Control panel can be supplied in floor or wall mount with Spill Proof design.
ii	Following features should be available on the control panel.
iii	Machine ON/OFF switch ,Digital Display of KV & mAs., K V & control switches,AEC.
iv	Tube focal spot selection switch, Ready and x-ray on switch with indicators.
v	Bucky Selection switch.
vi	Self-diagnostic Programme with Indicators for KV error, filament error & Tube's Thermal Overload.
3	**X-ray tube**

i	One No. Dual focus Rotating Anode X-ray tube thermally protected having focal spot:1.2 mm or less for small focus, 2mm or less for Large Focus.
ii	Anode heat storage capacity of tube should be more than 140 KHU.
iii	Manual collimator with aluminium filter & for adjustment of exposure area.
4	**Column Stand:**
i	It should have floor to ceiling stand with vertical counter balanced travel.
ii	The column stand should move in full circle.
5	It should be provided with one chest stand.
6	**Table.**
i	Five position motoroised tilt table having Bucky grid ration of 8:1 with 85 lines per inches should be provided.
ii	The Bucky tray should accept cassette of 8”x10”, 10”x12” and 14”x17” size.
iii	Suitable Lead-protected Three-fold screen with Lead Glass window.
7	**ACCESSORIES, SPARE PARTS, CONSUMABLES**
i	2 No.Zero lead apron(0.25mm Lead equivalent) with thyroid shield, gonad shield and all protection attachments.
ii	Lead Apron Stand with hanger
iii	Cassette of 8”x10”, 10”x12” and 14”x17” size. **(Optional)**
8	**CERTIFICATIONS :**
i	System be AERB type approved.
ii	The Bidder should assist the institution for e-LORA registration formalities.
iii	Regular QA according to AERB norms will be responsibility of bidder during warranty and CMC period.
9	**TRAINING AND INSTALLATION**
i	Training of users on operation and basic maintenance;
ii	Advanced maintenance tasks required shall be documented
10	**Turnkey Work:**
	The department would provide standard room with only three phase power supply in the room. The rest of the work will be done by the supplier on “turnkey basis” including girders for ceiling suspension etc., The installation of X- Ray machine include all the associated work like suitable AC (min 5TR), suitable flooring, cabling. Earthing, Lead lining etc. Should be done by the vendor. The Turnkey should be as per AERB guidelines.

	BOQ		
Sl.No	**Item Description**	**Quantity**	**Unit**
1	300 mA X-Ray System with accessories as per the Tender Specification	1	Nos
2	Turnkey Work for 200 Sq.ft. except Air Conditioning	1	Lump sum
3	Air Conditioning	5	TR
4	lead aprons with thyroid shield, gonad shield and all protection attachments.	2 nos each	Lump sum
5	Lead Apron Stand (1 No.) with hanger (2 Nos.)	1	
6	Cassette of 8”x10”, 10”x12” and 14”x17” size. **(Optional)**	1 Each	

Item Sl. No. 03
500 mA HF X-Ray Machine

	High frequency X-Ray machine suitable for General Radiography
1	**X-RAY GENERATOR:**
i	High Frequency X-Ray Generator having frequency of 50KHz or more should be provided.
ii	Power output of generator should be 50KW.
iii	Radiographic KV Range should be 40 to 150KV.
iv	mA Range (Rad.): 500mA or more.
v	Exposure time (Rad.): 1ms to 3Sec.
vi	mAs Range (Rad.): 1 to 200mAs.
2	**Control:**
	A very compact, Control Panel having following functions & indications should be provided. The panel can be supplied in Floor or Wall mount with Spill Proof design.
	Following features should be available on the control panel.
i	Machine ON/OFF Switch.
ii	Digital Display of KV & mAs.
iii	KV & mAs Control with AEC Mode
iv	Tube focal spot selection Switch.
v	Ready and X-Ray-ON switch with Indicators.
vi	Bucky Selection Switch.
vii	Self diagnostic Programme with Indicators for Earth fault error, KV error, Filament error & X-Ray Tube Thermal Overload.
viii	Anatomical Programming Radiography (i.e. APR) should have reprogrammed parameters of human anatomy Upto 100 programs which helps the user to select exposure parameters based on body part, examination view and size of the patient.
ix	A dual action hand Exposure switch with retractable cord.
x	Auto shut-off of system, in case of idling.
3	**X-RAY TUBE:**
i	Two Nos. Dual focus Rotating Anode X-Ray tube thermally protected
ii	Anode heat storage capacity of tube should be more than 140KHU.
iii	Two Nos. Collimator with Light auto shut-off.
4	**TUBE STAND:**
	Floor to Ceiling Stand with Counter Balanced Tube Head (Rotatable ± 180 Degree), 360 Degree Rotatable; mounted on Floor & Ceiling Rails for convenient movements.
5	**TABLE:**
i	Motorized table should have motorized Bucky consisting of Bucky grid with ratio 8:1 or more, 80 lines/inch.
6	**VERTICAL BUCKY STAND:**

	Vertical Bucky Stand with oscillating Grid of Ratio 8:1 or more, 80 lines/inch is provided.
	The Bucky moves up & down with counter balance & is equipped with a stainless steel cassette Holder
7	**Tray.**
	The stand is Floor-mounted type & can accommodate cassettes up to 14" X 17".
	The Bucky is tilted in 6 steps of 15 degree Angle each for various Radiographs.
	Suitable Lead-protected Three-fold screen with Lead Glass window.
8	**3. ACCESSORIES, SPARE PARTS, CONSUMABLES**
	2 No. lead aprons with thyroid shield, gonad shield and all protection attachments.
9	**STANDARDS AND SAFETY**
i	AERB type approved
ii	The Bidder should assist the institution for e-LORA registration formalities.
iii	Regular QA according to AERB norms will be responsibility of bidder during warranty and CMC period.
10	**TRAINING AND INSTALLATION**
	1) Training of users on operation and basic maintenance;
	2) Advanced maintenance tasks required shall be documented
	Turnkey Work:
	The department would provide standard room with only three phase power supply in the room. The rest of the work will be done by the supplier on "turnkey basis" including girders for ceiling suspension etc., The installation of X- Ray machine include all the associated work like suitable AC (min 6TR), suitable flooring, cabling. Earthing, Lead lining etc. Should be done by the vendor. The Turnkey should be as per AERB guidelines.

	BOQ		
Sl.No	**Item Description**	**Quantity**	**Unit**
1	500 mA X-Ray System with accessories as per the Tender Specification	1	Nos
2	Turnkey Work for 200 Sq.ft except Air conditioning	1	LS
3	Air Conditioning	6	TR
4	Lead aprons with thyroid shield, gonad shield and all protection attachments.	2 Each	
5	Lead Apron Stand (1 No.) with hanger (2 Nos.)	1	
6	Cassette of 8"x10", 10"x12" and 14"x17" size. **(Optional)**	1 Each	

Item Sl. No. 04

800mA Digital X-Ray unit with Single Detector (Floor Mounted)

	Unit should be high frequency digital radiography system with rotating anode X-Ray tube fitted on a versatile U/C-arm along with single flat panel detector, table generator and operator console.
1	**High frequency Generator:**

	a. Generator should be of latest technology with high frequency X-ray generator
	b. Constant power output of 80 KW or more
	c. X-ray : KV range should be 40 to 150KV in 1KV increments.
	d. X-ray current: mA 800 or more.
	e. mAs range should be 10 to 800mAs or more.
	f. It should have automatic exposure control device.
2	**X Ray Tube**
	a. A dual focus rotating anode x-ray tube. Anode rotational speed must be 8000rpm or more. The tube rotation of 90 degree should be available.
	b. Small focus 0.6mm Sq.
	c. Large focus 1.2mm Sq.
	d. Anode heat storage capacity 300KHU or more.
	e. Automatic multileaf collimator having bright light source and auto shut-off provision of the light.
	f. Automatic collimator must be mounted on X-ray tube and collimator must have an integrated dose area product (DAP) meter. Output of DAP meter should be visible in console
	g. Display of SID and other parameters like tube angle with touch screen control.
3	**Digital Detector**
	a. The detector should be of solid state flat detector of latest technology. The material of detector should be amorphous silicon with Cesium Iodide as scintillator.
	b. The size of detector should be 40cmx40cm or more
	c. The pixel size should be 200 microns or less.
	d. Active matrix should be 2k x 2k or more
	e. The resolution should be minimum of 3.5lp/mm up to 5lp/mm.
	f. Image depth should be 12 bit or more.
	g. DQE 65% or more at 0LP/mm.
4	**Radiographic table**
	a. Mobile table with height adjustment to be provided with brakes.
	b. Table must be of following dimension:
	§ Length 1800mm or more.
	§ Width 600mm or more.
	§ Height 650mm or more.
	c. Locks should be available for safety purpose.
	d. Maximum weight carrying capacity for the table should be more than 150Kg.
	e. Table top should be of Carbon Fibre or equivalent Radiolucent material.
5	**U/C Arm Positioner with control unit**
	a. Counter balanced U/C Arm stand should be provided.
	b. U/C arm must facilitate a rotation of at least through 120 degree or more
	c. Range of detector rotation should be +/- 90degree or more.
	d. U/C arm must have facility to mount a focused stationary grid.
	e. Dosimetry kV, mA, tube angle position display should be available at X-ray tube side as well console.
	f. Source to Image distance must be 1000mm to 1800mm to cover full range of radiographic application.
6	**Image acquisition and Processing work station**
	The system should haveconsole for image acquisition, image processing, patient demography, and study data entry as well as for generator parameters and exposure details.
	Microphone and speaker for communicating with patient

	The console must provide full amount of post processing features like geometric corrections window/level, algorithm, annotations such as markers, predefined text, drawing line and Geometric shape, measurement of distance and angles, histogram, zoom, gray scale reversal.
	It should be fully DICOM 3.0 compliant.
	It should get DICOM work list from HIS/RIS, storage images through PACS network system and should support DICOM image print and DICOM MPPS.
	Application related software like paediatric; black border/black masking should be available.
	The system should have software and hardware to perform full Leg-Full spine/long body imaging/image stitching.
	Image storage capacity of 10,000 images or more.
	All software updates should be provided in warranty & CMC period.
7	**Stand Alone Review Station :** Latest PC based workstation for management of images and studies. PC Specs: Processor Core i5, 8GB RAM, 2TB HDD, DVDRW, KeyBoard, Mouse, etc with 19"Medical Grade Monitor of 2MP resolution.
	The review station must provide full amount of post processing features like geometric corrections window/level, algorithm, annotations such as markers, predefined text, drawing line and Geometric shape, measurement of distance and angles, histogram, zoom, gray scale reversal.
	Multi format Filming function should be available with review station & console
8	**Dry Imager (for film printing)**
	a. The system must be a Dry imager
	b. The system must be DICOM 3.0 ready.
	c. The system must be able to process up to 75films/hour (minimum) depending on the size.
	d. The system must deliver its first film within 80 seconds from requested.
	e. The system should have 500 DPI and should print at least 3 sizes of films: 8x10, 14x17 , 10x12 or 11x14 inches. 200 films of each size to be supplied.
	f. The system must have contrast resolution of 12bits/pixel or more.
9	**Accessories**
	a. Suitable Online UPS with 30minutes back up for the console , review station and Imager should be provided.
	b. Suitable voltage stabilizer servo controlled for the entire system
	c. Light weight zero lead radiation protection apron with hanger (4 Nos)
	d. Footsteps for the table (01 no)
	e. Lead glass min (1.7mm Lead Equivalent) for Console 90 x 90 cm or more
	f. Gonadal Shield (02 Nos)
	g. Thyroid shield (02 Nos)
10	**Approvals:**
i	The system should have USFDA or European CE with four digit notified body number certificate and certificate to be submitted.
ii	Regular QA according to AERB norms will be responsibility of bidder during warranty and CMC period.
iii	The system should be AERB type approved and the copy of ELORA Listing should be submitted along with bid.
	The Turnkey Scope of Work – DR
	Turnkey will be site specific.

	1. The Supplier should inspect the proposed site offered by the Consignee Institute in which the DR system has to be installed and they are required to submit the plan for the complete DR Centre on a turnkey basis. The scope of work includes complete Civil work, Electrical, Plumbing, Furnishing, Air-conditioning and Fire fighting for the construction of DR Centre.
	2. While preparing the plan, the following aspects have to be addressed.
	a. Care should be taken to provide easy negotiation of the patient stretchers/ trolleys through corridors and doors.
	b. Radiation shielding for doors, walls, windows etc.
	c. Furniture like desk, chairs, shelves etc.
	d. Patient stretcher and other furniture/ accessory to make the DR centre functional.
	3. The cost of Turnkey for the area of 1000sq.ft and Air-conditioning of Tonnage 12 TR will be considered for Ranking / Evaluation purpose.
	4. Moreover Bidders will have to quote the Unit Rates of the following components of turnkey work.
	Civil works
	Electrical work
	Public health (plumbing and sanitary fittings).
	Air Conditioning (HVAC)
	Interior Furnishing & Furniture
	Miscellaneous
	Scope of work for turnkey DR system:
	The supplier should inspect the proposed site and submit all the detailed structural and architectural drawings and BOQ for the proposed DR Centre along with technical bid of the tender.
	The DR CENTRE shall consist of the following rooms:
	DR Room
	Console room & review
	Equipment room
	Patient preparation/change room
	Patient waiting area
	The actual area of turnkey works done will be considered for payment, based on the unit rates and site measurements
	1. Civil work
	i. Civil construction work including construction of brick wall if any, plastering, flooring as per the approved plan and equipment layout plan.
	ii. Concrete bed at DR equipment area.
	iii. Platform for unloading and shifting the DR should be provided if necessary.
	iv. Cable tray, trench & channel – necessary trenches, cable tray and channels at required location would be provided.
	v. All the construction work to be done as per the final plan approved by the Consignee.
	a. Flooring
	i. 600 x 600 mm vitrified tiles with 100mm tile skirting.
	ii. 50 mm thick cement concrete flooring with Vinyl flooring in DR equipment / UPS room.
	b. Painting

	Two coats Plastic Emulsion Paint over 2 coats of wall putty including primer in patient preparation area, Lobby area, console room, DR room & Equipment room etc.
	c. False Ceiling
	Acoustical tile for ceiling with light weight insulating material of high quality supported on grid or finished seamless with support above ceiling. Finished with white paint or powder coated with white paint, if metallic. Ceiling height to suit the equipment mount and clearances.
	2. Plumbing work
	All water pipes and fittings shall be of high density polythene of approved and standard make. The gratings shall be brass chrome plated. All plumbing accessories should be of standard make.
	3. Electrical work
	a. The supplier shall be required to specify the total load requirements for the DR centre including the load of air conditioning , room lighting and for the accessories if any.
	b. The supply line will be provided by the Institute up to one point within the DR centre . The distribution panel shall be provided by the vendor. Few lights in each room shall be connected to the UPS to provide emergency lighting.
	c. The electrical work shall include the following:
	i. Wiring – All interior electrical wiring- with main distribution panel board, necessary MCBs, DB, joint box, switch box etc. the wires shall be of copper of different capacity as per the load and should be renowned make as listed below.
	ii. Switches light and power points should be of modular type and of standard make as listed below.
	iii. General lights – LED light fitting with 500 Lux Illumination
	4. AIR CONDITIONING:
	a. Package air conditioners units and split AC units may be used according to room requirement and suitability. Humidity control should be effective to eliminate moisture condensation on equipment surface. . The Air conditioning should be designed with standby provision to function 24 hours a day.
	b. The outdoor units of AC should have grill coverings to prevent theft and damage.
	c. Ventilation is required in toilet.
	5. Environment specifications:
	Humidity range: Relative humidity 60% and 80% in all areas except equipment room which shall be as per requirement of the equipment.
	Temperature ranges: 22 ± 2° C in all areas except equipment room which shall be as per requirement of the equipment.
	Air conditioning load: The heat load calculations and maintaining the desired temperature and humidity shall be the responsibility of the bidder.
	6. Furniture:
	a. Revolving chairs height adjustable, medium-back with hand-rest in the Control room, Radiologist room and viewing area. – 4 NO.S
	b. Chairs for patient waiting area – Three seater (chrome plated). - 10 NO.S
	c. Cupboard with laminate door shutters for storage of spare parts and accessories and records as per requirement. – 3 NO.S
	d. Drug trolleys for patient preparation area. – 1 No.
	e. Patient trolley with rubber foam mattress to be kept in the patient preparation room.

	f. Name boards for all rooms
	g. Tables for console & review station - 2 NO.
	h. Changing rooms should have change lockers and dressing table.
	i. Dustbins – 10 No's.
	j. Any other essential furniture item as per requirement.
	All furniture items should be of standard make as mentioned in the table below.
	7. Miscellaneous:
	a. LED X-ray Film viewer with adjustable brightness; capable of holding 3 films of 14"x17" size. – 3 no.s
	b. Cabling of Network (LAN) connectivity for camera system, console system, workstation and computers etc.
	c. Fire extinguisher Dry CO2 type as required for the building safety.
	LIST OF ITEMS AND SUGGESTED MANUFACTURERS.
	ITEMS PREFERRED MAKES
A	**FLOORING VITRIFIED TILES** - Somany, Kajaria , H&R Johnson, RAK india
B	**PAINT** - Dulux, Asian Paints , Nerolac
C	**PLUMBING** - Kohler, Jaguar , Grohe , Roca
D	**SANITARY ITEMS** - CERA, Hindware, Parryware
E	**ELECTRICAL**
1	**CABLES** - Finolex, Havells ,V-Guard
2	**SWITCHES** - Legrand, L&T, Crabtree , Roma
3	**DISTRIBUTION BOX , MCB** - Legrand, L&T, Siemens, Havels
4	**LIGHT FITTINGS** - Philips / Crompton / Wipro/Syska
F	**AIR CONDINTIONING** - Daikin, Hitachi, Blue Star, Voltas,
G	**FURNITURE** - Hermen Miller , Godrej, Featherlite,Geeken

	BOQ	**Quantity**
Sl No	**Item Description**	
1	800mA X-Ray unit with Single Detector as per the Tender Specification (Point 1 to 6)	1 No.
2	Point 7: Dry Imager (for film printing) with 200 films of each size.	1 No.
3	Stand Alone Review Station	1 No.
4	Point 8: Accessories	
	a. Online UPS as per specification	1 No.
	b. Suitable voltage stabilizer servo controlled for the entire system	1 No.
	c. Light weight zero lead radiation protection apron with hanger.	4 Nos
	d. Footsteps for the table	1 Nos
	e. Lead glass 90 x 90 cm	1 Nos
	g. Gonadal Shield	2 Nos
	h. Thyroid shield	2 Nos
	Turnkey Work (1000 sq ft) as per specification	
1	Civil works	1000 sq ft
2	Electrical work	1000 sq ft
3	Public health (plumbing and sanitary fittings).	1000 sq

		ft
4	Air Conditioning	12 TR
5	Interior Furnishing & Furniture	1000 sq ft
6	Miscellaneous	1 Lum sum
	Furniture:	
1	Revolving chairs height adjustable, medium-back with hand-rest.	4 NO.S
2	Chairs for patient waiting area – Three seater (chrome plated). -	10 NO.S
3	Cupboard with laminate door shutters	3 NO.S
4	Drug trolleys for patient preparation area.	1 NO
5	Patient trolley with rubber foam mattress	2 NO.s
6	Tables for console & review station	2 NO.S
7	Changing rooms (with change lockers and dressing table).	1 set
8	Dustbins	10 NO.S
9	Room Signage	as required
10	Venetian Blinds	as required
	Miscellaneous:	
1	LED X-ray Film viewer	2 NO.s
2	Cabling of Network (LAN) connectivity for camera system, console system, workstation and computers etc	as required
3	Dry chemical power type fire extinguisher of 5kgs capacity	3 NO.s

Item Sl. No. 05
Bi-Plane DSA

A	**Gantry:**
1	The system should have two gantries: one floor mounted and one ceiling suspended providing full body coverage. The lateral plane should have motorized longitudinal C-arm movement.
2	It should be possible to pre-program the gantries for multiple examination positions.
3	All movements of the gantries should be controlled from the controller on the table side as well as from the control.
4	The system should have adequate collision protection for the safety of the patient.
5	Both gantries should have fast speed for angulations and positioning. The frontal system should have a speed of at least 15 degree/sec. for all positions and lateral plane should have a speed of at least 8 degree/sec.
6	Gantry angulations in both planes frontal and lateral should be freely user selectable to satisfy clinical imaging needs.
7	Both the gantries should have an automatic positioning capability dependent on the reference image being selected and possibility to select reference image depending on the gantry position.
B	**Patient Table:**
1	The table should have motorized longitudinal, horizontal and vertical travel.
2	It should have the facility for automatic bolus chase for peripheral angiography.
3	The table with trendelenberg tilt facility .
4	It should be possible to swivel the table in case of emergencies.
5	it should have patient load capacity of 200Kg or more
C	**X-Ray Generator:**

1	Generator should be multi-pulse/high frequency for constant output.
2	Output should be 100 KW or more.
3	Radiography KVP range should be 50 KV – 125 KV or more.
4	Output at 100 KV should be 1000 MA or more.
5	It should have automatic exposure control device for radiographic fluoroscopy and angio mode.
6	It should have digital display or KVP & MAs.
7	Anatomical programming radiography should be possible.
8	It should have over loading protection.
9	It should have the facility for pulsed fluoroscopy at variable rates for reducing the x-ray dose to the patient during intervention procedure.
D	**X-Ray Tubes:**
1	Both planes should be provided with rotating anode high speed tubes.
	The focal spot should have the following sizes:
i	1.0 mm or less with load 80 KW or more in minimum one plane.
ii	0.5 mm or less with load 15 KW or more in minimum one plane.
2	Anode heat storage capacity should be 1.7 MHU or more having liquid bearing technology or metal lubricant. (Price to be quoted separately)
3	The system should have adequate cooling facility for the x-ray tubes for uninterrupted performance during procedure.
E	**Collimator:**
1	One collimator for each plane is to be provided.
2	The collimator should have facility for automatic copper pre-filtration for reducing the x-ray dose.
3	The collimator leaf should have IRIS/rectangular type arrangement.
4	The collimator should have the facility for the dose measurement chamber in order to display the skin dose on the monitors in the lab.
F	**Biplane Digital System:**
1	Dynamic flat detector system with high spatial and 14 bit contrast resolution.
2	Size of frontal plane should be at least 40 cm diagonal.
3	Size of lateral plane should be at least 40 cm diagonal
4	It should provide multiple formats/fields at least of 4 sizes.
5	Spatial resolution should be at least 3.0 LP/mm in frontal plane and 2.5 LP/mm in the lateral plane.
	Examination Room Monitor
6	Medical grade large high definition display (minimum 55 inches) to display live, reference, 3D,CT like image, Hemodynamic and EP waveforms with layout selection from integrated tableside control in exam room.
7	**Console Room Monitors**
	Control room shall have at least 2 no.s of widescreen Medical grademonitors for display of live ,playback , reference images of each plane.
	Separate Monitor for patient data registration.
	Integrated Two-Way communication system with integrated mic & speaker to allow duplex communication between Console & Exam room.
G	**Digital Imaging System and essential softwares:**
1	Road mapping facility (Real time 2D & 3D) should be available with possibility of superimposing of fluoro image on reference image. Facilities for unlimited subtracted high resolution fluoroscopy should be available.

2	It should have the capability to acquire images in 1024 x 1024 matrix with a maximum speed of 6 frames or more per second on-line subtraction. Specify the maximum image acquisition rate without subtraction.
3	Post processing software facilities with real time edge enhancement, positive/negative image display windowing, electronic shuttering, roaming, image reversal, zooming and magnifying with text and annotation junctions.
4a	Rotational angiography facility (2D & 3D) at a speed of at least 30 degree/sec. with acquisition frame rate of at least 25 frames/sec. in 1k matrix with facility for online display of subtracted images should be available. Specify if the rotational angiography is with on-line subtraction in 1024 matrix.
4b	Rotational data acquisition with an output of cross sectional CT like images should be possible.
5	Last image hold or reference image toggling with fluoro should be available.
6	It should have minimum image storage capacity of 1,00,000 images in the 1024 x 1024/12 bit.
7	Digital subtraction angiography software of automatic pixel shift enhancement for iodine and CO2 contrast should be possible.
8	**A separate workstation** for 3D reconstruction of the rotational angiography images should be provided. The 3D image measurement and slicing should be possible. Facility to display reconstructed images in the procedure room should be provided.
9	The complete digital system along with workstation should be networked and connected to a DICOM compatible laser camera.
10	The digital system should have software for vascular analysis and quantification including stenosis %. All measurement should be possible from the patient table side.
11	Archiving on a CD/DVD recorder should be provided. 500 DVD should be supplied with the unit.
12	**An additional workstation** for processing of the DSA images and their documentation should be provided in addition to 3D workstation. This workstation should have the facility to reconstruct the long leg view for peripheral images.
13	The system should be able to receive/display on reference monitor,DICOM format images from other modalities like CT & MR. DICOM print facility should be available. Also compliant with HIS/RIS/PACS
14	Bolus chase software should be provided.
15	It should have facility to measure dose during the procedures.
16	All software updates should be provided in warranty & CMC period.
H	**Essential accessories:**
	The following essential accessories to be provided with the unit:-
1	Complete hemodynamic Recorder with IBP module, Pulse oximeter module, ECG module,EtCO2 Module, SpO2 module: capable of : 12 channel ECG , 4 No.s Invasive Pressure transducers . SPO2 with Plethysmogram , Temperature- 2no.s, dp/dt 1 channel. Full EP recording and analysis. Full hemodynamic analysis.
2	Invasive Pressure transducers :4 no.s
3	SPO2 Probe : 2 no.s
4	Temperature Probe - 2no.s,
5	dp/dt 1 channel : 2 no.s
6	ECG cable : 2no.s
7	On line UPS for the complete system with 30 min. back up.
8	Pressure injector of reputed make should be coupled with DSA system. 200 Nos. disposable syringes sets to be supplied as per institute requirement.
9	Dry Chemistry Laser Imager with resolution of 500 DPI or more. DICOM ready and online for film size of 14x17 with 500 Nos of films

10	Ceiling suspended radiation protection system and table side protection system.
11	Focused ceiling mounted light with a handle for positioning the light.
12	Ultra light weight ,double sided Lead Gown with lead equivalent of 0.5 mm. 8 Nos.
13	ACT machine and cartridges / tubes
14	Thyroid Guard – 8 Nos.
15	Lead spectacles – 8 Nos.
16	Foot switch for fluoro/acquisition control.
17	Lead protected viewing glass as per AERB norms (Size: 150cm X 90cm)
18	Bi Phasic Defibrillator
	The Turnkey Scope of Work - Biplane D.S.A
1	The Supplier should inspect the proposed site offered by the Consignee Institute in which the DR system has to be installed and they are required to submit the plan for the complete DR Centre on a turnkey basis. The scope of work includes complete Civil work, Electrical, Plumbing, Furnishing, Air-conditioning and Fire fighting for the construction of DR Centre.
2	While preparing the plan, the following aspects have to be addressed:
a)	Care should be taken to provide easy negotiation of the patient stretchers/ trolleys through corridors and doors.
b)	Radiation shielding for doors, walls, windows etc.
c)	Furniture like desk, chairs, shelves etc.
d)	Patient stretcher and other furniture/ accessory to make the DR centre functional.
3	**The cost of Turnkey for the area of 1500sq.ft and Air-conditioning of Tonnage 20 TR will be considered for Ranking / Evaluation purpose.**
4	Moreover Bidders will have to quote the Unit Rates of the following components of turnkey work.
a)	Civil works
b)	Electrical work
c)	Public health (plumbing and sanitary fittings).
d)	Air Conditioning (HVAC)
e)	Interior Furnishing & Furniture
f)	Miscellaneous like scrub, catheter wash station, etc
	Scope of work for turnkey Biplane D.S.A system :
	The supplier should inspect the proposed site and submit all the detailed structural and architectural drawings and BOQ for the proposed DR Centres along with technical bid of the tender.
	The Biplane D.S.A site shall consist of the following rooms:
a	Biplane D.S.A Room
b	Console room
c	Equipment room
d	Patient preparation room
e	Change room
f	Scrub area, catheter wash area
g	Patient waiting area
h	Radiologist room
	The actual area of turnkey works done will be considered for payment, based on the unit rates and site measurements
	Civil work
a)	Civil construction work including construction of brick wall if any, plastering, flooring as per the approved plan and equipment layout plan.

b)	Concrete bed at Biplane DSA equipment area.
c)	Platform for unloading and shifting the Biplane DSA should be provided if necessary.
d)	Cable tray, trench & channel – necessary trenches, cable tray and channels at required location would be provided.
e)	All the construction work to be done as per the final plan approved by the Consignee.
a)	**Flooring**
1	600 x 600 mm vitrified tiles with 100mm tile skirting to match in console room, lobby and patient preparation areas, Radiologist room etc.
2	50 mm thick cement concrete flooring with Vinyl flooring in Biplane DSA equipment / UPS room.
b)	**Painting**
1	Two coats Plastic Emulsion Paint over 2 coats of wall putty including primer in patient preparation area, Lobby area, console room, Biplane DSA room & Equipment room etc.
c)	**False Ceiling**
1	Acoustical tile for ceiling with light weight insulating material of high quality supported on grid or finished seamless with support above ceiling. Finished with white paint or powder coated with white paint, if metallic. Ceiling height to suit the equipment mount and clearances.
	Plumbing work
3	All water pipes and fittings shall be of high density polythene of approved and standard make. The gratings shall be brass chrome plated. All plumbing accessories should be of standard make.
	Electrical work
4	The supplier shall be required to specify the total load requirements for the Biplane DSA centre including the load of air conditioning , room lighting and for the accessories if any. The supply line will be provided by the Institute up to one point within the Biplane DSA centre . The distribution panel shall be provided by the vendor. Few lights in each room shall be connected to the UPS to provide emergency lighting.
5	The electrical work shall include the following:
a)	Wiring – All interior electrical wiring- with main distribution panel board, necessary MCBs, DB, joint box, switch box etc. the wires shall be of copper of different capacity as per the load and should be renowned make as listed below.
b)	Switches light and power points should be of modular type and of standard make as listed below.
c)	General lights – LED light fitting with 500 Lux Illumination
	AIR CONDITIONING:
	Ductable package air conditioners and split AC units may be used according to room requirement and suitability. Humidity control should be effective to eliminate moisture condensation on equipment surface. . The Air conditioning should be designed with standby provision to function 24 hours a day.
	The outdoor units of AC should have grill coverings to prevent theft and damage.
	Ventilation is required in toilet.
2	**Environment specifications:**
a)	Relative Humidity range: To be maintained between 60% and 80% in all areas except equipment room which shall be as per requirement of the equipment.
b)	Temperature ranges: 22 ± 2° C in all areas except equipment room which shall be as per requirement of the equipment.
c)	Air conditioning load: The heat load calculations and maintaining the desired temperature and humidity shall be the responsibility of the bidder.
	Furniture:

a)	Revolving chairs height adjustable, medium-back with hand-rest in the Control room, Radiologist room and viewing area. – 4 NO.S
b)	Chairs for patient waiting area – Three seater (chrome plated). - 10 NO.S
c)	Wall mounted shelves for catheter and other procedural hardware – 4 Nos.
d)	Cupboard with laminate door shutters for storage of spare parts and accessories and records as per requirement. – 3 NO.S
e)	Drug trolleys 1 numbers for patient preparation area.
f)	Patient trolley with rubber foam mattress to be kept in the patient preparation room.
g)	Name boards for all rooms
h)	Tables for Workstation and Radiologist in reporting room.- 2 NO.S
i)	Changing rooms should have change lockers and dressing table.
j)	Dustbins (plastic with lid) to be provided as required.
k)	Any other furniture item as per requirement.
	All furniture items should be of standard make as mentioned in the table below.
	Miscellaneous:
i	Knee controlled hand free two station scrub unit with disinfectant/ soap dispenser.
ii	Reporting room should have LED X-ray Film viewer with adjustable brightness; capable of holding 3 films of 14”x17” size. – **2 no.s**
iii	Cabling of Network (LAN) connectivity for camera system, console system, workstation and computers etc
iv	Broadband connection: for REMOTE SERVICE of Biplane DSA system.
v	Lead Glass of 90 x 90 cm.
vi	Fire extinguisher Dry CO2 type as required for the building safety.

	LIST OF ITEMS AND SUGGESTED MANUFACTURERS.	
SL NO	**ITEMS**	**PREFERRED MAKES**
A	**FLOORING VITRIFIED TILES**	-Somany, Kajaria , H&R Johnson, RAK india
B	**PAINT**	- Dulux, Asian Paints , Nerolac
C	**PLUMBING**	- Kohler, Jaguar , Grohe , Roca
D	**SANITARY ITEMS**	- CERA, Hindware, Parryware
E	**ELECTRICAL**	
1	**CABLES**	- Finolex, Havells ,V-Guard
2	**SWITCHES**	- Legrand, L&T, Crabtree , Roma
3	**DISTRIBUTION BOX , MCB**	- Legrand, L&T, Siemens, Havels
4	**LIGHT FITTINGS**	- Philips / Crompton / Wipro/Syska
F	**AIR CONDINTIONING**	- Daikin, Hitachi, Blue Star, Voltas,
G	**FURNITURE**	- Hermen Miller , Godrej , Featherlite,Geeken

Sl No	**BOQ**	**QTY**
1	BIPLANE DSA SYSTEM , as specified.	1 no.
2	Workstation for 3D reconstruction of the rotational angiography images	1 no.
3	Workstation for processing of the DSA images and their documentation	1 no.
4	Complete hemodynamic Recorder with IBP module, Pulse oximeter module, ECG module, SpO2 module: capable of : 12 channel ECG , 4 No.s Invasive Pressure transducers . SPO2 with Plethysmogram , Temperature- 2no.s, dp/dt 1 channel. Full EP recording and analysis. Full hemodynamic analysis.	1 no.
5	Invasive Pressure transducers	4 no.s

6	SPO2 with Plethysmogram	2 no.s
7	Temperature- 2no.s, dp/dt 1 channel :	2 no.s
8	ECG cable	2no.s
9	On line UPS with batteries	1 no.
10	Pressure injector of reputed make along with 500 disposable syringes sets.	1 no.
11	Dry Chemistry Laser Imager with resolution of 500 DPI or more with 500Nos of films	1 no.
12	Ceiling suspended radiation protection system and table side protection system.	1 no.
13	Focused ceiling mounted light with a handle for positioning the light.	1 no.
14	Ultra light weight ,double sided Lead Gown with lead equivalent of 0.5 mm.	8 Nos.
15	ACT machine with cartridges / tubes	1 no.
16	Thyroid Guard	6 Nos
17	Lead spectacles	6 Nos.
18	Foot switch for fluoro/acquisition control.	2 sets
19	Lead protected viewing glass (Size: 150cm X 90cm)	1
20	Bi Phasic Defibrillator	1
21	Blank DVD-R	500
22	ULTRA LIGHT WEIGHT lead aprons	4 Nos.
23	Lead Apron Hanger	4 Nos.
24	Lead apron stand	1 no.
25	Thyroid Shields	2 Nos.
26	Gonadal Shields	2 Nos.
	Components of Turnkey Work:	
1	Civil works	1500 ft^2
2	Electrical work	1500 ft^2
3	Public health (plumbing and sanitary fittings).	1500 ft^2
4	Air Conditioning	20 TR
5	Interior Furnishing & Furniture	1500 ft^2
6	Miscellaneous items	1 set
	Furniture:	
1	Revolving chairs height adjustable, medium-back with hand-rest.	4 NO.S
2	Chairs for patient waiting area – Three seater (chrome plated). -	10 NO.S
3	Cupboard with laminate door shutters	3 NO.S
4	Drug trolleys for patient preparation area.	1 NO
5	Patient trolley with rubber foam mattress	2 NO.s
6	Tables for Workstation and Radiologist .	2 NO.S
7	Changing rooms (with change lockers and dressing table).	1 set
8	Dustbins	10 NO.S
9	Room Signage	as required
10	Venetian Blinds	as required
	Miscellaneous:	
1	Lead Glass of 150 x 90 cm.	1 no.
2	LED X-ray Film viewer	2 NO.s
3	Cabling of Network (LAN) connectivity for camera system, console system, workstation and computers etc	as required
4	Dry chemical power type fire extinguisher of 5kgs capacity	3 NO.s

Item Sl. No. 06
CT Scan-128 Slice

	The system should be latest state of art, independent 64 or more rows of detectors with capable of generating at least 128 slices per rotation. The system should be capable of integrating with any PACS/HIS system. The system should be DICOM - ready with true isotropic volume acquisition and sub millimeter resolution. The model quoted should be, AERB Type approved and should have US FDA or European CE with four digit notified body number certificate and copy of such certificate to be submitted.
	The essential requirements of the system are as follows:-
1)	**Gantry:**
a	Aperture: 70 cms or more
b	FOV: 50 cms or more
c	3-D laser lights for positioning.
2)	**X-Ray Generator:**
	High Frequency type.
	Power output : **70 kW** or higher. The generator with the higher power output would be preferred. Also the bidder should mention whether the system would be capable of tackling the dual energy applications if there is an upgrade.
	mA Range: 20-600 mA (With incremental steps of 10 mA)
	KV Range: 80-130KV or more
3)	**X-Ray Tube:**
	a. Tube Voltage: 80-130 kV or more
	b. Anode Heat Storage Capacity of at least 7.0 MHU or direct cooling tube
4)	**Patient Table:**
	a. Load carrying capacity at least of 140 Kg with positional accuracy of 1 mm or less b. Metal free scan-able range of 150 cm or more c. Floating table top with foot pedal/hand control for positioning.
5)	**Spiral Acquisition:**
	a. Scan Time should be 0.4 sec or less for full 360 degree rotation.
	b. Minimum slice thickness should be 0.625 mm or less.
	c. Pitch Factor (volume pitch): freely selectable in auto mode and also manually variable between 0.5 to 1.5 or more. Specify all possible pitch selections.
	d. Bolus Triggered or bolus chase spiral acquisition should be available.
	e. Real time x-ray dose reduction which combines both Z axis and angular tube current modulation to adjust the dose to the size and shape of individual.
	f. Radiation dose reduction technique i.e. mA modulation in X, Y & Z axis, etc.
	g. it should have iterative image reconstruction capabilities.
6)	**Image Resolution:**
	a. High contrast resolution should be at least 15 lp/cm for axial and spiral scan at 0% MTF with full FOV.
	b. Low contrast resolution – 5mm or less at 3.0 HU using 20 cm CATPHAN phantom on 10 mm slice thickness.
7)	**Data Acquisition System:**
	a. Detector- Capable of acquiring 64 slices per 360 degree of rotation.

	b. At least 64 rows of independent detectors with generation of at least 128 slices per rotation with maximum Z-axis coverage
	c. Solid state or rare earth detectors of latest technology free from repeated calibration.
8)	**Image Reconstruction:**
	a. High speed real time reconstruction with display matrix of 1024x1024 or more.
	Reconstructed slice thickness should be sub-millimeter to 10mm freely selectable
9)	**Operator Console:**
	a. High resolution medical grade LCD/TFT color monitors.
	b. Should perform Registration, scheduling, protocol selection, Volume rendering, volume measurements, Multi-planar Reconstruction, and standard evaluation application and all available post processing functions without the help of the satellite workstation.
	c. Image storing capacity of 2,50,000 or more.
	d. Auto-voice capability with custom designed key board and mouse.
	e. Archiving options: CD-R, DVD, should be available. 500 DVDs should be provided.
10	**Workstations & Server:** A multimodality client server architecture based solution with minimum concurrent 24000 slices rendering capacity, with 64GB RAM with storage of minimum 2TB and Additional storage of 10 TB on the server.**Client hardware specification**- 2 no.s Workstations with licence: dual quad core processor, 16 GB RAM, 1TB hard drive, DVD Writing with medical grade monitor of minimum 3 MP resolution & 3 button mouse.
	MPR
	Minimum and maximum intensity projection.
	3D volume rendering.
	3D SSD (Shaded Surface Display).
	Advanced vessel analysis.
	Auto bone removal.
	Virtual endoscopy.
	Dedicated colonoscopy.
	Time point comparison.
	Whole organ (brain & body) perfusion CT.
	Coronary tree analysis: automated 3D processing of coronary arteries, calcium scoring, stent analysis, LV analysis.
	Neuro DSA with automated bone removal.
	Fusion CT: fusion of morphological data of CT & MRI.
	Application:
a	a. The system should have standard software like 3D Volume rendering , MIP,CT angio, color angio Display, CT Perfusion , should be available as standard on the system
b	The following soft ware should be offered as standard (MPR , ROI , VOLUME CALCULATION , CT NUMBER DISPLAY , WINDOW WIDTH , WINDOW LEVEL , TOPOGRAM DISPLAY , CINE DISPLAY , HRCT LUNG, DYNAMIC SCAN)
c	Cardiac Scan Attachment with ECG Gated Segmented Recon , Calcium score , Vessel Flythrough of the Coronaries should be available with software package.
d	Automatic display of MPR Images after scan will be preferred.
e	Bolus triggered Brain Perfusion CT study (at least 3-level) with automatic CBF, CBV, MTT, TTP maps, ROI placing, comparing ROI, saving maps
f	Neuro DSA with automatic bone removal software
h	Fusion CT: fusion of morphological data obtained on CT, MR or DSA.

11	**Patient communication system:**
	An integrated intercom and Automated Patient Instruction System (API) should be provided.
12	**Accessories: (Make and Model of all the quoted accessories should be specified)**
a)	Dry chemistry camera of DPI 500 or more of any reputed make.
b)	Lead Glass(As per AERB Norm) of size : 120 x 90 cm or more
c)	UPS with Maintenance free batteries capable of 30 minutes back up to run the entire CT, Computers, Dry chemistry camera, Work Stations etc.
d)	Dual Head Pressure Injector of reputed make with 50 sets of Syringes & 200 sets of tubings. Specify the make of Injector.
e)	Multi Para monitor 10 inch monitor , ECG , SPO2 , NIBP module of a reputed make for monitoring vitals.
g)	LIGHT WEIGHT lead aprons(0.25mm lead equivalent) with hangers - 4 Nos.
h)	Lead apron stand — 1 No.
j)	Thyroid Shields – 2 nos.
k)	Gonadal Shields – 2 nos.
13	Training for a period of Two Weeks.
14	**Certifications:**
I	Offered model should be **European CE or US FDA** approved. Copy of certifications should be submitted with bid
	The system should be AERB type approved and the copy of E-LORA Listing should be submitted along with bid.
	Regular QA according to AERB norms will be responsibility of bidder during warranty and CMC period.
	The Turnkey Scope of Work - CT
1	The Supplier should inspect the proposed site offered by the Consignee Institute in which the CT system has to be installed and they are required to submit the plan for the complete CT Scan Centre on a turnkey basis. The scope of work includes complete Civil work, Electrical, Plumbing, Furnishing, Air-conditioning and Fire fighting for the construction of CT Scan Centre.
2	While preparing the plan, the following aspects have to be addressed.
a)	Care should be taken to provide easy negotiation of the patient stretchers/ trolleys through corridors and doors.
b)	Radiation shielding for doors, walls, windows etc.
c)	Furniture like desk, chairs, shelves etc.
d)	Patient stretcher and other furniture/ accessory to make the scan centre functional.
3	**The cost of Turnkey for the area of 1200 sq.ft and Air-conditioning of Tonnage 15 TR will be considered for Ranking / Evaluation purpose.**
4	Moreover Bidders will have to quote the Unit Rates of the following components of turnkey work.
a)	Civil works
b)	Electrical work
c)	Public health (plumbing and sanitary fittings).
d)	Air Conditioning (HVAC)
e)	Interior Furnishing & Furniture
f)	Miscellaneous
	Scope of work for turnkey CT unit works:-

	The supplier should inspect the proposed site and submit all the detailed structural and architectural drawings and BOQ for the proposed CT Scan Centres along with technical bid of the tender.
	The CT SCAN CENTRE shall consist of the following rooms:
a.	CT Gantry Room
b.	Console room
c.	Equipment room
d.	Patient preparation room
f.	Patient waiting area
g.	Radiologist room
	The actual area of turnkey works done will be considered for payment, based on the unit rates and site measurements
	Civil work
a)	Civil construction work including construction of brick wall if any, plastering, flooring as per the approved plan and equipment layout plan.
b)	Concrete bed at CT equipment area.
c)	Platform for unloading and shifting the CT should be provided if necessary.
d)	Cable tray, trench & channel – necessary trenches, cable tray and channels at required location would be provided.
e)	All the construction work to be done as per the final plan approved by the Consignee.
f)	Active and passive room shielding for magnetic, fringe field should be provided as per the requirement of the equipment.
a)	**Flooring**
1	600 x 600 mm vitrified tiles with 100mm tile skirting to match in console room, lobby and patient preparation areas, Radiologist room etc.
2	50 mm thick cement concrete flooring with Vinyl flooring in CT equipment / UPS room.
b)	**Painting**
1	Two coats Plastic Emulsion Paint over 2 coats of wall putty including primer in patient preparation area, Lobby area, console room, CT Gantry & Equipment room etc.
c)	False Ceiling
1	Acoustical tile for ceiling with light weight insulating material of high quality supported on grid or finished seamless with support above ceiling. Finished with white paint or powder coated with white paint, if metallic. Ceiling height to suit the equipment mount and clearances.
	Plumbing work
1	All water pipes and fittings shall be of high density polythene of approved and standard make. The gratings shall be brass chrome plated. All plumbing accessories should be of standard make.
2	Hot water service to be provided if required.
	Electrical work
1	The supplier shall be required to specify the total load requirements for the CT scan centre including the load of air conditioning , room lighting and for the accessories if any. The supply line will be provided by the Institute up to one point within the CT Scan centre area. The distribution panel shall be provided by the vendor. Few lights in each room shall be connected to the UPS to provide emergency lighting.
2	The electrical work shall include the following:

a.	Wiring – All interior electrical wiring- with main distribution panel board, necessary MCBs, DB, joint box, switch box etc. the wires shall be of copper of different capacity as per the load and should be renowned make as listed below.
b.	Switches light and power points should be of modular type and of standard make as listed below.
c.	General lights –LED light fittings with 500 Lux Illumination
3	**AIR CONDITIONING:**
	Ductable package air conditioners and split AC units may be used according to room requirement and suitability. Humidity control should be effective to eliminate moisture condensation on equipment surface. The Air conditioning should be designed with standby provision to function 24 hours a day.
	The outdoor units of AC should have grill coverings to prevent theft and damage.
	Ventilation is required in toilet.
2	**Environment specifications:**
a)	Relative Humidity range: To be maintained between 60% and 80% in all areas except equipment room which shall be as per requirement of the equipment.
b)	Temperature ranges: 22± 2° C in all areas except equipment room which shall be as per requirement of the equipment.
c)	Air conditioning load: The heat load calculations and maintaining the desired temperature and humidity shall be the responsibility of the bidder.
	Furniture:
a)	Revolving chairs height adjustable, medium-back with hand-rest in the Control room, Radiologist room and viewing area. – 4 NO.S
b)	Chairs for patient waiting area – Three seater (chrome plated). - 10 NO.S
c)	Cupboard with laminate door shutters for storage of spare parts and accessories and records as per requirement. – 3 NO.S
d)	Drug trolleys 1 numbers for patient preparation area.
e)	Patient trolley with rubber foam mattress to be kept in the patient preparation room.
f)	Name boards for all rooms
g)	Tables for Workstation and Radiologist - 2 NO.S
h)	Changing rooms should have change lockers and dressing table.
i)	Dustbins: 10 no.s
j)	Any other furniture item as per requirement.
	All furniture items should be of standard make as mentioned in the table below.
	Miscellaneous:
1	LED X-ray Film viewer with adjustable brightness ; capable of holding 3 films of 14”x17” size. – 2 no.s
2	Cabling of Network (LAN) connectivity for camera system, console system, workstation and computers etc.
3	Broadband connection: for REMOTE SERVICE of CT system.
4	Fire extinguisher Dry CO2 type as required for the building safety.
	LIST OF ITEMS AND SUGGESTED MANUFACTURERS.
SL NO	**ITEMS** **PREFERRED MAKES**
A	**FLOORING VITRIFIED TILES** -Somany, Kajaria , H&R Johnson, RAK india
B	**PAINT** - Dulux, Asian Paints , Nerolac
C	**PLUMBING** - Kohler, Jaguar , Grohe , Roca
D	**SANITARY ITEMS** - CERA, Hindware, Parryware

E	**ELECTRICAL**	
1	**CABLES**	- Finolex, Havells ,V-Guard
2	**SWITCHES**	- Legrand, L&T, Crabtree , Roma
3	**DISTRIBUTION BOX , MCB**	- Legrand, L&T, Siemens, Havels
4	**LIGHT FITTINGS**	- Philips / Crompton / Wipro/Syska
F	**AIR CONDINTIONING**	- Daikin, Hitachi, Blue Star, Voltas,
G	**FURNITURE**	- Hermen Miller , Godrej , Featherlite,Geeken

Sl No	**BOQ**	**Qty**
1	CT Scanner 128 SLICE CT ,as specified	1 no.
2	Cardiac package (including Hardware & Software)	1 no.
3	Servers: as specified	1no.s
4	Workstation Nodes: as specified	2 No.s
5	Dry Chemistry camera : as specified	1 no.
6	Lead Glass of 150 x 90 cm.	1 no.
7	UPS with Maintenance free batteries	1 set
8	Dual Head Pressure Injector	1 no.
9	Pressure Injector Syringes	50 no.s
10	Tubings for Pressure Injector	200 sets
11	Multi Para monitor: as specified	1 no.
12	ULTRA LIGHT WEIGHT lead aprons	4 Nos.
13	Lead Apron Hanger	4 Nos.
14	Lead apron stand	1 no.
15	Thyroid Shields	2 Nos.
16	Gonadal Shields	2 Nos.
	Components of Turnkey Work:	
1	Civil works	1200 ft^2
2	Electrical work	1200 ft^2
3	Public health (plumbing and sanitary fittings).	1200 ft^2
4	Air Conditioning	15 TR
5	Interior Furnishing & Furniture	1200 ft^2
6	Miscellaneous items	1 set
	Furniture:	
1	Revolving chairs height adjustable, medium-back with hand-rest	4 NO.S
2	Chairs for patient waiting area – Three seater (chrome plated). -	10 NO.S
3	Cupboard with laminate door shutters	3 NO.S
4	Drug trolleys for patient preparation area.	1 NO
5	Patient trolley with rubber foam mattress	2 NO.s
6	Tables for Workstation and Radiologist .	2 NO.S
7	Changing rooms (with change lockers and dressing table).	1 set
8	Dustbins	10 NO.S
9	Room Signage	as required
10	Venetian Blinds	as required
	Miscellaneous:	
1	LED X-ray Film viewer	2 NO.s

2	Cabling of Network (LAN) connectivity for camera system, console system, workstation and computers etc	as required
3	Dry chemical power type fire extinguisher of 5kgs capacity	3 NO.s

Item Sl. No. 07
CT SCANNER -16 Slice

	The Model offered should be AERB APPROVED; the latest High end model under current production.
	The Offer should meet the Specifications as follows
1	**Gantry :**
i	The CT Scanner should have low Voltage Slip Rings incorporated in the Gantry
ii	Scan time for a 360 Degree rotation : 0.8 Seconds or less
iii	Minimum tilt of 25 degrees on either side and remote tilt should be available as standard.
iv	The gantry should be provided with User control panels on either side for easy positioning
v	Slice thickness: 0.75 mm or less (for 16 Independent Rows of acquisition)
vi	The Gantry should have 3D Positioning Laser lights.
vii	The Scan field of view (FOV) in acquisition mode should range from 200mm to 500 mm with intermediate Steps for scanning different anatomies.
viii	Gantry Aperture: minimum 70 cm diameter.
2	**X ray Section :**
i	The X ray Generator should be compact and inbuilt in the Gantry.
ii	X ray Generator power should be 40 kw and above
iii	kV range : 80-130 KVP or more ; Patient Scanning should be possible at 80 & 100 KV (pediatric scanning)
iv	The MA range available should be between 10 to 300 MA or more with increments in steps of not more than 10 ma .
v	The X ray Tube should be essentially Dual Focus with capacity of at least 3.5 MHU.
vi	The X ray tube should have a cooling rate of not less than 500 KHU per min
3	**Data Acquisition System:**
i	Detector- Capable of acquiring16 slices per 360 degree of rotation.
ii	Detector- minimum axial slice thickness acquisition of 0.75mm.
iii	At least 16 rows of independent detectors with acquisition of at least 16 slices per rotation with maximum Z-axis coverage
4	**Patient Couch :**
i	The patient table offered should have a minimum load bearing capacity of at least 150kg.
ii	The Minimum table top height should not be more than 65 cms from the floor level for easy transport of trauma patients
iii	The range of metal free scan should be atleast 165 cms.
iv	Remote control : UP/DOWN , FWD/BWD of the Patient Couch should be standard
5	**Spiral / Helical Section :**
i	The system offered should have Spiral Capability of at least 100 seconds & above.

ii	The System should be able to perform at least 60 Seconds of Continuous Helical / Spiral Scan @120 KV / 200 MA without Drop in MA to maintain the Low Contrast Resolution.
iii	The range of Spiral facility in Axial Direction should be more than 100 cms.
iv	The Reconstruction Time in Spiral scan should not be more than 130 Milliseconds. (At least 8 Images / second)
v	The system should have the Smart Prep or equivalent facility & ability to track Contrast medium to trigger scan should be included in the scope of Supply. More than 2 No:s ROI is required for such Contrast Chase & Exposure Trigger facility.
vi	Radiation dose reduction technique i.e. mA modulation in X, Y & Z axis, etc.
vii	it should have iterative image reconstruction capabilities.
6	**Operator Console:**
i	High resolution medical grade LCD/TFT color monitors.
ii	Should perform Registration, scheduling, protocol selection, Volume rendering, volume measurements, Multi-planar Reconstruction, and standard evaluation application and all available post processing functions without the help of the satellite workstation.
iii	Auto-voice capability with custom designed key board and mouse.
iv	Archiving : CD/ DVD should be available. 500 DVDs should be provided.
v	It should have facility to store at least 100,000 Images in the system HDD.
vi	The system should be supported with archiving facility of DVD & CD DICOM facility to send , store , print , receive, Query / Retreive , MWM , MPPS etc should be standard .Remote Diagnosis & Fault detection should be standard.
vii	PC Based connectivity should be standard for easy transfer of Images & Report.
viii	An Advanced Work station with at least 4 GB RAM , Archival on DVD / CD with CT Angiography , Colonoscopy , 3D VRT , SSD , CT / MRI Fusion as well as DICOM Print should be included in the Scope of Supply. DVD / CD Archival is Required.
7	**Image Processing section :**
	The Main Console should have standard software like 3D Volume rendering, MIP , CT Angio, .Color Angio Display, 3D Artefact Suppressions , Pre set 3D Reconstruction & Display Protocols, Auto Bone Removals , CT Based DSA .
	The following software should be offered as standard (MPR , ROI , VOLUME CALCULATION , CT NUMBER measurement of between –10, 000 to + 25,000 , WINDOW WIDTH , WINDOW LEVEL , TOPOGRAM DISPLAY , CINE DISPLAY , HRCT LUNG, DYNAMIC SCAN)
8	**Workstation**

	One independent post processing workstation with all the software as in the main console should be available. It should be a high speed (minimum post-processing frame rate of 16 frames/sec) CPU with a speed of 3.0 GHz or better and with an independent image storage capacity of atleast 10 tera byte storage capacity with expansion slot of additional tera bytes memory. 19 inches or more high resolution medical grade colour LCD monitors . The necessary connectivity etc. for proper functioning should be provided by the vendor . All software as above and Specialized Software such as Virtual Endoscopy, Colonoscopy, CT Perfusion , CT DSA , CT Angiography , Bone Removals , CT / MRI Fusion should be available on the Work Station . All post processing facility and data archiving should be available in the workstation. The workstation shall be capable of simultaneously viewing and performing all post processing functions and filming independently without the help of main console. Memory of the workstation should be independent of the console. Two way data transfer between the operator console & the workstation should be automatic and standard.
9	**Resolution :**
	The System Spatial Resolution should be mentioned with parameters.
	The low contrast resolution should not be more than 4 mm at 0.3 %. Shoulder ,Pelvis Streak Artefact suppression Software should be standard.
	Noise Suppression protocols to maintain LCR at low dose should be standard.
	Special Software (Like MA Modulation in Routine) to ensure Dose efficiency should be standard.
10	Specify the CT Dose Index
11	**Accessories: (Make and Model of all the quoted accessories should be specified)**
a)	Dry chemistry camera of DPI 500 or more of any reputed make.
b)	Lead Glass as per AERB norms of size : 120 x 90 cm or more
c)	UPS with Maintenance free batteries capable of 30 minutes back up to run the entire CT, Computers, Dry chemistry camera, Work Stations etc.
d)	Dual Head Pressure Injector of reputed make with 50 sets of Syringes & 200 sets of tubings. Specify the make of Injector.
e)	Multi Para monitor 10 inch monitor , ECG , SPO2 , NIBP module of a reputed make for monitoring vitals.
g)	LIGHT WEIGHT lead aprons(0.25 Lead equivalent) with hangers - 4 Nos.
h)	Lead apron stand — 1 No.
j)	Thyroid Shields – 2 nos.
k)	Gonadal Shields – 2 nos.
12	Training for a period of Two Weeks.
14	**Certifications:**
I	Offered model should be **European CE or US FDA** approved. Copy of certifications should be submitted with bid
	The system should be AERB type approved and the copy of E-LORA Listing should be submitted along with bid.

	Regular QA according to AERB norms will be responsibility of bidder during warranty and CMC period.
	The Turnkey Scope of Work - CT
1	The Supplier should inspect the proposed site offered by the Consignee Institute in which the CT system has to be installed and they are required to submit the plan for the complete CT Scan Centre on a turnkey basis. The scope of work includes complete Civil work, Electrical, Plumbing, Furnishing, Air-conditioning and Fire fighting for the construction of CT Scan Centre.
2	While preparing the plan, the following aspects have to be addressed.
a)	Care should be taken to provide easy negotiation of the patient stretchers/ trolleys through corridors and doors.
b)	Radiation shielding for doors, walls, windows etc.
c)	Furniture like desk, chairs, shelves etc.
d)	Patient stretcher and other furniture/ accessory to make the scan centre functional.
3	**The cost of Turnkey for the area of 1200 sq.ft and Air-conditioning of Tonnage 15 TR will be considered for Ranking / Evaluation purpose.**
4	Moreover Bidders will have to quote the Unit Rates of the following components of turnkey work.
a)	Civil works
b)	Electrical work
c)	Public health (plumbing and sanitary fittings).
d)	Air Conditioning (HVAC)
e)	Interior Furnishing & Furniture
f)	Miscellaneous
	Scope of work for turnkey CT unit works:-
	The supplier should inspect the proposed site and submit all the detailed structural and architectural drawings and BOQ for the proposed CT Scan Centres along with technical bid of the tender.
	The CT SCAN CENTRE shall consist of the following rooms:
a.	CT Gantry Room
b.	Console room
c.	Equipment room
d.	Patient preparation room
f.	Patient waiting area
g.	Radiologist room
	The actual area of turnkey works done will be considered for payment, based on the unit rates and site measurements
	Civil work
a)	Civil construction work including construction of brick wall if any, plastering, flooring as per the approved plan and equipment layout plan.
b)	Concrete bed at CT equipment area.
c)	Platform for unloading and shifting the CT should be provided if necessary.
d)	Cable tray, trench & channel – necessary trenches, cable tray and channels at required location would be provided.
e)	All the construction work to be done as per the final plan approved by the Consignee.

f)	Active and passive room shielding for magnetic, fringe field should be provided as per the requirement of the equipment.
a)	**Flooring**
1	600 x 600 mm vitrified tiles with 100mm tile skirting to match in console room, lobby and patient preparation areas, Radiologist room etc.
2	50 mm thick cement concrete flooring with Vinyl flooring in CT equipment / UPS room.
b)	**Painting**
1	Two coats Plastic Emulsion Paint over 2 coats of wall putty including primer in patient preparation area, Lobby area, console room, CT Gantry & Equipment room etc.
c)	False Ceiling
1	Acoustical tile for ceiling with light weight insulating material of high quality supported on grid or finished seamless with support above ceiling. Finished with white paint or powder coated with white paint, if metallic. Ceiling height to suit the equipment mount and clearances.
	Plumbing work
1	All water pipes and fittings shall be of high density polythene of approved and standard make. The gratings shall be brass chrome plated. All plumbing accessories should be of standard make.
2	Hot water service to be provided if required.
	Electrical work
1	The supplier shall be required to specify the total load requirements for the CT scan centre including the load of air conditioning , room lighting and for the accessories if any. The supply line will be provided by the Institute up to one point within the CT Scan centre area. The distribution panel shall be provided by the vendor. Few lights in each room shall be connected to the UPS to provide emergency lighting.
2	The electrical work shall include the following:
a.	Wiring – All interior electrical wiring- with main distribution panel board, necessary MCBs, DB, joint box, switch box etc. the wires shall be of copper of different capacity as per the load and should be renowned make as listed below.
b.	Switches light and power points should be of modular type and of standard make as listed below.
c.	General lights – LED light fitting with 500 Lux Illumination
3	**AIR CONDITIONING:**
	Ductable package air conditioners and split AC units may be used according to room requirement and suitability. Humidity control should be effective to eliminate moisture condensation on equipment surface. The Air conditioning should be designed with standby provision to function 24 hours a day.
	The outdoor units of AC should have grill coverings to prevent theft and damage.
	Ventilation is required in toilet.
2	**Environment specifications:**
a)	Relative Humidity range: To be maintained between 60% and 80% in all areas except equipment room which shall be as per requirement of the equipment.
b)	Temperature ranges: 22± 2° C in all areas except equipment room which shall be as per requirement of the equipment.

c)	Air conditioning load: The heat load calculations and maintaining the desired temperature and humidity shall be the responsibility of the bidder.
	Furniture:
a)	Revolving chairs height adjustable, medium-back with hand-rest in the Control room, Radiologist room and viewing area. – 4 NO.S
b)	Chairs for patient waiting area – Three seater (chrome plated). - 10 NO.S
c)	Cupboard with laminate door shutters for storage of spare parts and accessories and records as per requirement. – 3 NO.S
d)	Drug trolleys 1 numbers for patient preparation area.
e)	Patient trolley with rubber foam mattress to be kept in the patient preparation room.
f)	Name boards for all rooms
g)	Tables for Workstation and Radiologist - 2 NO.S
h)	Changing rooms should have change lockers and dressing table.
i)	Dustbins: 10 no.s
j)	Any other furniture item as per requirement.
	All furniture items should be of standard make as mentioned in the table below.
	Miscellaneous:
1	LED X-ray Film viewer with adjustable brightness ; capable of holding 3 films of 14”x17” size. – 2 no.s
2	Cabling of Network (LAN) connectivity for camera system, console system, workstation and computers etc.
3	Broadband connection: for REMOTE SERVICE of CT system.
4	Fire extinguisher Dry CO2 type as required for the building safety.

	LIST OF ITEMS AND SUGGESTED MANUFACTURERS.	
SL NO	**ITEMS**	**PREFERRED MAKES**
A	**FLOORING VITRIFIED TILES**	-Somany, Kajaria , H&R Johnson, RAK india
B	**PAINT**	- Dulux, Asian Paints , Nerolac
C	**PLUMBING**	- Kohler, Jaguar , Grohe , Roca
D	**SANITARY ITEMS**	- CERA, Hindware, Parryware
E	**ELECTRICAL**	
1	**CABLES**	- Finolex, Havells ,V-Guard
2	**SWITCHES**	- Legrand, L&T, Crabtree , Roma
3	**DISTRIBUTION BOX , MCB**	- Legrand, L&T, Siemens, Havels
4	**LIGHT FITTINGS**	- Philips / Crompton / Wipro/Syska
F	**AIR CONDINTIONING**	- Daikin, Hitachi, Blue Star, Voltas,
G	**FURNITURE**	- Hermen Miller , Godrej , Featherlite,Geeken

Sl.No	**BOQ**	**Qty**
1	CT Scanner 16 SLICE CT ,as specified	1 no.
2	Workstation Nodes: as specified	1 No.
3	Dry Chemistry camera : as specified	1 no.
4	Lead Glass of 120 x 90 cm.	1 no.

5	UPS with Maintenance free batteries	1 set
6	Dual Head Pressure Injector	1 no.
7	Pressure Injector Syringes	50 no.s
8	Tubings for Pressure Injector	200 sets
9	Multi Para monitor: as specified	1 no.
10	ULTRA LIGHT WEIGHT lead aprons	4 Nos.
11	Lead Apron Hanger	4 Nos.
12	Lead apron stand	1 no.
13	Thyroid Shields	2 Nos.
14	Gonadal Shields	2 Nos.
	Components of Turnkey Work:	
1	Civil works	1200 ft^2
2	Electrical work	1200 ft^2
3	Public health (plumbing and sanitary fittings).	1200 ft^2
4	Air Conditioning	15 TR
5	Interior Furnishing & Furniture	1200 ft^2
6	Miscellaneous items	1 set
	Furniture:	
1	Revolving chairs height adjustable, medium-back with hand-rest in the Control room, Radiologist room and viewing area	4 NO.S
2	Chairs for patient waiting area – Three seater (chrome plated). -	10 NO.S
3	Cupboard with laminate door shutters for storage of spare parts and accessories and records as per requirement.	3 NO.S
4	Drug trolleys for patient preparation area.	1 NO
5	Patient trolley with rubber foam mattress to be kept in the patient preparation room.	2 NO.s
6	Tables for Workstation and Radiologist .	2 NO.S
7	Changing rooms (with change lockers and dressing table).	1 set
8	Dustbins	10 NO.S
9	Room Signage	as required
10	Venetian Blinds	as required
	Miscellaneous:	
1	LED X-ray Film viewer	2 NO.s
2	Cabling of Network (LAN) connectivity for camera system, console system, workstation and computers etc	as required
3	Dry chemical power type fire extinguisher of 5kgs capacity	3 NO.s

Item Sl. No. 08
CT Scanner System 256 Slice

	The system quoted should be latest state of art top of the line .The system should have 128 or more physical rows of detectors capable of Dual Energy applications. The scanner should be capable of comprehensive whole body imaging including cardiac, abdomen, neuro and vascular imaging applications, true isotropic volume acquisition. It should also be capable of 3-D reconstructions at fast speeds, quantitative calcium scoring in the vessels using all documented quantification algorithms, 3-D image display during acquisition on-line as well as real time, 3-D vessel imaging with feasibility for volume rendering.
	The AERB compliance for the equipment and its installation would be the responsibility of the supplier.
	The offer should meet the specifications as followed:
1	**Gantry:**
a	The CT Scanner should have low Voltage Slip Rings incorporated in the Gantry
b	The Minimum scan time for a 360 Degree rotation should be less than or equal to 0.35 seconds.
c	The gantry should be provided with User control panels on either side for easy positioning.
d	The sub millimetre Slice @ 0.63 mm or less in 128 rows or more of detector with 256 or more acquisitions should be available. The system should be in position to perform 256 acquisition Slices/ Rotation for general, cardiac/vascular applications. (Specify the submillimetre slice thickness)
e	The Gantry should have 3D Positioning Laser lights.
f	The Scan field of view (FOV) in acquisition mode should be at least from 200 mm to 500 mm with intermediate Steps for scanning different anatomies.
g	Aperture should be at least 70 cm diameter.
2	**X ray Section:**
a	The X ray Generator should be compact and inbuilt in the Gantry.
b	The System X ray power should be 100 kW (actual power) and above.
c	The mA range available should be between 20 to 800 mA or more with increments in steps of not more than 10mA.
d	The X ray Tube should be essentially Dual Focus. The heat storage capacity should be 7 MHU or equivalent. Specify the method and technique of cooling.
	Any special feature of the X ray tube to be highlighted with literature.
e	Specify the focal Spots of the X ray tube.
f	The X ray tube should have a cooling rate of not less than 1000 KHU per MIN
g	The X ray tube Cooler Unit should be in built in the Gantry.
3	**Detectors:**
a	The Detector Offered should be Solid State. Specify the Material.
b	The 256 acquisition slice or more per Rotation should be possible. The Systems should have at least 128 Physical Rows of the detector or more.
c	Specify the Fan Angle of the X rays and the geometry. The detectors should not require frequent calibration.
4	**Patient Couch:**
a	The patient table offered should have a minimum load bearing capacity of at least 150 KG.
b	The Minimum table top height should not be more than 65cms from the floor level for easy transport of trauma patients.
c	The Floating table top width should be atleast 40 cms for better comfort.
d	The range of metal free scan should be atleast 165 cms.

e	The vertical range should be atleast 55 cms (max height — min height)
f	Specify the reproducing accuracy of the table.
g	Remote UP/DOWN , FWD/BWD of the Patient Couch should be standard.
5	**Topogram:**
a	Views: should be feasible in frontal and lateral views
b	Should be possible to interrupt acquisition manually if necessary.
6	**Spiral/Helical Section:**
a	The system offered should have Spiral Capability of at least 80 seconds & above. Real Time Spiral @ 10 f/s should be standard.
b	The range of Spiral facility in Axial Direction should be more than 100 cms.
c	The Reconstruction Time in Spiral scan should not be more than 100 millisecond.
d	The system should have the Smart Prep or equivalent facility & ability to track Contrast medium to trigger scan should be included in the scope of Supply
e	High Resolution scan package should be offered as standard and Specify the minimum slice thickness for which High Resolution scan package is possible.
f	Multi Slice CT Fluoroscopy to be quoted as standard. Price should be quoted separately.
7	**Console & Workstation**
a	The Console offered should be the Latest Multi tasking Processors and a menu driven platform with a RAM size of at least 8 GB.
b	CT console should be of dual monitor design . TheMonitor should be : Medical grade , Colour TFT/LCD, The Twin Monitor system should work on either shared or Common data base.
c	The display matrix should be at least 1024 x 1024.
d	The reconstruction time for an Axial scan should not be more than 100 milli seconds.
e	The Hard disk Capacity for both Image and Raw data should be more than 500GB
f	It should have facility to store at least 2,50,000 Images
g	The system should be supported with archiving facility of DVD & CD Main Console
h	DICOM facility to send , store , print , receive, Query / Retrieve , MWM , MPPS etc should be standard.
i	Patient radiation dose should be displayed on the monitor as well as on the patient films.
j	PC Based connectivity should be standard for easy transfer of Images & Report. The image transfer from main console to workstation should be automatic and immediate.
k	**Workstations & Server:** A multimodality client server architecture based solution with minimum concurrent 24000 slices rendering capacity, with 64GB RAM with storage of minimum 2TB and Additional storage of 10 TB on the server. **Client hardware specification**- 2no.s Workstation with licence : dual quad core processor, 16 GB RAM, 1TB hard drive, DVD Writing with medical grade monitor of minimum 2 MP resolution & 3 button mouse.
	MPR
	Minimum and maximum intensity projection.
	3D volume rendering.
	3D SSD (Shaded Surface Display).
	Advanced vessel analysis.
	Auto bone removal.
	Virtual endoscopy.
	Dedicated colonoscopy.
	Time point comparison.
l	Whole organ (brain & body) perfusion CT.

m	Coronary tree analysis: automated 3D processing of coronary arteries, calcium scoring, stent analysis, LV analysis.
n	Neuro DSA with automated bone removal.
o	Fusion CT: fusion of morphological data of CT & MRI.
	Dual Energy Applications :
i	DUAL ENERGY APPLICATIONS to be provided as standard: Renal Calculi Characterisation & Gout**.**
iv	Dual energy application must be possible on all workstation and all fields of view with minimum FOV 33cm.
v	Also Specify if DUAL ENERGY APPLICATIONS like Metal Artifact Correction / Beam Hardening artifact Correction, Brain Haemorrhage are available in the system.
	Application:
a	a. The system should have standard software like 3D Volume rendering , MIP,CT angio, color angio Display, CT Perfusion , should be available as standard on the system
b	The following soft ware should be offered as standard (MPR , ROI , VOLUME CALCULATION , CT NUMBER DISPLAY , WINDOW WIDTH , WINDOW LEVEL , TOPOGRAM DISPLAY , CINE DISPLAY , HRCT LUNG, DYNAMIC SCAN)
c	Cardiac Scan Attachment with ECG Gated Segmented Recon , Calcium score , Vessel Flythrough of the Coronaries should be available with software package.
d	Automatic display of MPR Images after scan will be preferred.
e	Bolus triggered Brain Perfusion CT study (at least 3-level) with automatic CBF, CBV, MTT, TTP maps, ROI placing, comparing ROI, saving maps
f	Neuro DSA with automatic bone removal software
h	Fusion CT: fusion of morphological data obtained on CT, MR or DSA.
8	**Dose reduction Techniques:**
d	Noise Suppression protocols to maintain LCR at low dose should be standard.
e	Special Softwares (Like MA Modulation in Routine & Cardiac Mode) to ensure Dose efficiency should be standard.
f	Specify the CT Dose Index.
g	Should have iterative reconstruction technique for X Ray dose reduction.
h	Low dose Paediatric CT mode should be available
i	Radiation dose reduction technique i.e. mA modulation in X, Y & Z axis, etc.
j	it should have iterative image reconstruction capabilities.
k	Patient radiation dose should be displayed on the monitor & patient films.
9	**Accessories: (Make and Model of all the quoted accessories should be specified)**
a)	Dry chemistry camera of DPI 500 or more of any reputed make with 500 Nos of films.
b)	Lead Glass as per AERB norms : 120 x 90 cm or more
c)	UPS with Maintenance free batteries capable of 30 minutes back up to run the entire CT, Computers, Dry chemistry camera, Work Stations etc.
d)	Dual Head Pressure Injector of reputed make with 50 sets of Syringes & 200 sets of tubings. Specify the make of Injector.
e)	Multi Para monitor 10 inch monitor , ECG , SPO2 , NIBP module of a reputed make for monitoring vitals.
g)	LIGHT WEIGHT lead aprons(0.25mm Lead equivalent) with hangers - 4 Nos.
h)	Lead apron stand — 1 No.
j)	Thyroid Shields – 2 nos.
k)	Gonadal Shields – 2 nos.
10	Training for a period of Two Weeks.

11	**Certifications:**
I	Offered model should be **European CE or US FDA** approved. Copy of certifications should be submitted with bid
II	The system should be AERB type approved and the copy of E-LORA Listing should be submitted along with bid.
III	Regular QA according to AERB norms will be responsibility of bidder during warranty and CMC period.
12	**The Turnkey Scope of Work - CT**
1	The Supplier should inspect the proposed site offered by the Consignee Institute in which the CT system has to be installed and they are required to submit the plan for the complete CT Scan Centre on a turnkey basis. The scope of work includes complete Civil work, Electrical, Plumbing, Furnishing, Air-conditioning and Fire fighting for the construction of CT Scan Centre.
2	While preparing the plan, the following aspects have to be addressed.
a)	Care should be taken to provide easy negotiation of the patient stretchers/ trolleys through corridors and doors.
b)	Radiation shielding for doors, walls, windows etc.
c)	Furniture like desk, chairs, shelves etc.
d)	Patient stretcher and other furniture/ accessory to make the scan centre functional.
3	**The cost of Turnkey for the area of 1200 sq.ft and Air-conditioning of Tonnage 15 TR will be considered for Ranking / Evaluation purpose.**
4	Moreover Bidders will have to quote the Unit Rates of the following components of turnkey work.
a)	Civil works
b)	Electrical work
c)	Public health (plumbing and sanitary fittings).
d)	Air Conditioning (HVAC)
e)	Interior Furnishing & Furniture
f)	Miscellaneous
	Scope of work for turnkey CT unit works:-
	The supplier should inspect the proposed site and submit all the detailed structural and architectural drawings and BOQ for the proposed CT Scan Centres along with technical bid of the tender.
	The CT SCAN CENTRE shall consist of the following rooms:
a.	CT Gantry Room
b.	Console room
c.	Equipment room
d.	Patient preparation room
f.	Patient waiting area
g.	Radiologist room
	The actual area of turnkey works done will be considered for payment, based on the unit rates and site measurements
	Civil work
a)	Civil construction work including construction of brick wall if any, plastering, flooring as per the approved plan and equipment layout plan.
b)	Concrete bed at CT equipment area.
c)	Platform for unloading and shifting the CT should be provided if necessary.

d)	Cable tray, trench & channel – necessary trenches, cable tray and channels at required location would be provided.
e)	All the construction work to be done as per the final plan approved by the Consignee.
f)	Active and passive room shielding for magnetic, fringe field should be provided as per the requirement of the equipment.
a)	**Flooring**
1	600 x 600 mm vitrified tiles with 100mm tile skirting to match in console room, lobby and patient preparation areas, Radiologist room etc.
2	50 mm thick cement concrete flooring with Vinyl flooring in CT equipment / UPS room.
b)	**Painting**
1	Two coats Plastic Emulsion Paint over 2 coats of wall putty including primer in patient preparation area, Lobby area, console room, CT Gantry & Equipment room etc.
c)	False Ceiling
1	Acoustical tile for ceiling with light weight insulating material of high quality supported on grid or finished seamless with support above ceiling. Finished with white paint or powder coated with white paint, if metallic. Ceiling height to suit the equipment mount and clearances.
	Plumbing work
1	All water pipes and fittings shall be of high density polythene of approved and standard make. The gratings shall be brass chrome plated. All plumbing accessories should be of standard make.
2	Hot water service to be provided if required.
	Electrical work
1	The supplier shall be required to specify the total load requirements for the CT scan centre including the load of air conditioning , room lighting and for the accessories if any. The supply line will be provided by the Institute up to one point within the CT Scan centre area. The distribution panel shall be provided by the vendor. Few lights in each room shall be connected to the UPS to provide emergency lighting.
2	The electrical work shall include the following:
a.	Wiring – All interior electrical wiring- with main distribution panel board, necessary MCBs, DB, joint box, switch box etc. the wires shall be of copper of different capacity as per the load and should be renowned make as listed below.
b.	Switches light and power points should be of modular type and of standard make as listed below.
c.	General lights – LED light fittings with 500 Lux Illumination
3	**AIR CONDITIONING:**
	Ductable package air conditioners and split AC units may be used according to room requirement and suitability. Humidity control should be effective to eliminate moisture condensation on equipment surface. The Air conditioning should be designed with standby provision to function 24 hours a day.
	The outdoor units of AC should have grill coverings to prevent theft and damage.
	Ventilation is required in toilet.
2	**Environment specifications:**
a)	Relative Humidity range: To be maintained between 60% and 80% in all areas except equipment room which shall be as per requirement of the equipment.
b)	Temperature ranges: 22± 2° C in all areas except equipment room which shall be as per requirement of the equipment.
c)	Air conditioning load: The heat load calculations and maintaining the desired temperature and humidity shall be the responsibility of the bidder.
	Furniture:

a)	Revolving chairs height adjustable, medium-back with hand-rest in the Control room, Radiologist room and viewing area. – 4 NO.S
b)	Chairs for patient waiting area – Three seater (chrome plated). - 10 NO.S
c)	Cupboard with laminate door shutters for storage of spare parts and accessories and records as per requirement. – 3 NO.S
d)	Drug trolleys 1 numbers for patient preparation area.
e)	Patient trolley with rubber foam mattress to be kept in the patient preparation room.
f)	Name boards for all rooms
g)	Tables for Workstation and Radiologist - 2 NO.S
h)	Changing rooms should have change lockers and dressing table.
i)	Dustbins: 10 no.s
j)	Any other furniture item as per requirement.
	All furniture items should be of standard make as mentioned in the table below.
	Miscellaneous:
1	LED X-ray Film viewer with adjustable brightness ; capable of holding 3 films of 14”x17” size. – 2 no.s
2	Cabling of Network (LAN) connectivity for camera system, console system, workstation and computers etc.
3	Broadband connection: for REMOTE SERVICE of CT system.
4	Fire extinguisher Dry CO2 type as required for the building safety.

	LIST OF ITEMS AND SUGGESTED MANUFACTURERS.	
	ITEMS	**PREFERRED MAKES**
A	**FLOORING VITRIFIED TILES**	-Somany, Kajaria , H&R Johnson, RAK india
B	**PAINT**	- Dulux, Asian Paints , Nerolac
C	**PLUMBING**	- Kohler, Jaguar , Grohe , Roca
D	**SANITARY ITEMS**	- CERA, Hindware, Parryware
E	**ELECTRICAL**	
1	**CABLES**	- Finolex, Havells ,V-Guard
2	**SWITCHES**	- Legrand, L&T, Crabtree , Roma
3	**DISTRIBUTION BOX , MCB**	- Legrand, L&T, Siemens, Havels
4	**LIGHT FITTINGS**	- Philips / Crompton / Wipro/syska
F	**AIR CONDINTIONING**	- Daikin, Hitachi, Blue Star, Voltas,
G	**FURNITURE**	- Hermen Miller , Godrej , Featherlite,Geeken

Sl. No	**BILL OF QUANTITY**	**Qty**
1	CT Scanner 256 SLICE CT ,as specified	1 no.
2	Servers: as specified	1 no.
3	Workstation Nodes: as specified	2 No.s
4	Dry Chemistry camera : as specified	1 no.
5	Lead Glass of 120 x 90 cm.	1 no.
6	UPS with Maintenance free batteries	1 set
7	Dual Head Pressure Injector	1 no.
8	Pressure Injector Syringes	50 no.s
9	Tubings for Pressure Injector	200 sets
10	Multi Para monitor: as specified	1 no.
11	ULTRA LIGHT WEIGHT lead aprons	4 Nos.

12	Lead Apron Hanger	4 Nos.
13	Lead apron stand	1 no.
14	Thyroid Shields	2 Nos.
15	Gonadal Shields	2 Nos.
	Components of Turnkey Work:	
1	Civil works	1200 ft^2
2	Electrical work	1200 ft^2
3	Public health (plumbing and sanitary fittings).	1200 ft^2
4	Air Conditioning	15 TR
5	Interior Furnishing & Furniture	1200 ft^2
6	Miscellaneous items	1 set
	Furniture:	
1	Revolving chairs height adjustable, medium-back with hand-rest.	4 NO.S
2	Chairs for patient waiting area – Three seater (chrome plated). -	10 NO.S
3	Cupboard with laminate door shutters	3 NO.S
4	Drug trolleys for patient preparation area.	1 NO
5	Patient trolley with rubber foam mattress	2 NO.s
6	Tables for Workstation and Radiologist .	2 NO.S
7	Changing rooms (with change lockers and dressing table).	1 set
8	Dustbins	10 NO.S
9	Room Signage	as required
10	Venetian Blinds	as required
	Miscellaneous:	
1	LED X-ray Film viewer	2 NO.s
2	Cabling of Network (LAN) connectivity for camera system, console system, workstation and computers etc	as required
3	Dry chemical power type fire extinguisher of 5kgs capacity	3 NO.s

Item Sl. No. 09
Digital mammography system

	General description: Large field of view digital mammography system for general screening, diagnostics and interventional applications. The system should have US FDA or European CE with four digit notified body number certificate and certificate to be submitted.
	The system should be AERB type approved.
	Regular QA according to AERB norms will be responsibility of bidder during warranty and CMC period.
	The system should consist of:
	1. Large field digital flat panel detector
	2. Ergonomic examination gantry designed for mammography applications with motorized movements
	3. Integrated digital acquisition system with user console and flat panel monitor
	4. Single track dual focus mammography X-ray tube with additional beam filters and automatic collimator
	5. High frequency generator
	6. Exposure control system and selectable dose modes

	7. Radiation shield and a mammography image receptor grid
	8. Motorized compression device and compression paddles
	9. Magnification device
	10. Suitable hardware & software for Stereotactic breast Biopsy
	TECHNICAL SPECIFICATIONS
1	**X-Ray Generator**
	a. High frequency generator type
	b. 5.0 kW or more generator power
	c. kV range: 20 to 35 or more in 1 kV steps
	d. mAs range: 3 to 500
	e. mA range: up to 100 or more
	f. Exposure monitoring generator and tube load pre- exposure display of the exposure parameters
	g. Displayed parameters kV, mAs, target filter, density selection Auto record of the exposure parameters for each mammogram
2	**X-Ray tube**
	a. Dual focus x-ray tube with small focal spot: 0.1 mm
	b. Spot size large focal spot: 0.3 mm
	c. Rotating Anode
	d. Anode heat storage capacity >150 kHU or more
	e. Anode heat dissipation: 40 kHU/min
	f. Beam or Target filter materials: mention the materials used.
	g. Tube heat monitoring system / device/ program
	h. Tube current large focal spot (25-30kV): 100 mA
	i. Tube current small focal spot (25-30 kV): 40mA
3	**Gantry assembly**
	a. Isocentric system
	b. Motorized rotation and vertical movement
	c. Dual speed movements
	d. Rotation angle: +180 to -165 degree
	e. Distance floor to image receptor:-65 to 150 cm
	f. Source to image receptor distance (SID) : 62 cm or better
	g. Wheelchair access
	h. Face shield
	i. Compression force display
	j. Pair of dual foot- pedals
	k. Automatic decompression after exposure
	l. magnification stand with dedicated paddles
	m. Magnification: 1.5 & 1.8
	n. Motorized compression force: 0 to 200 Newton
	o. Manual compression force: up to 270 Newton
	p. Large paddle
	q. Regular 19 x 23 sliding paddle
	r. Spot sliding compression paddle
4	**Exposure control**

	a. Both manual and Auto mode (Automatic Technique selection) Should be available
	b. Parameters controlled: kV mAs, filter
5	**Automatic technique selection**
	a. Parameters: Anode track, filter, kV mAs, Virtual cell and dose should be chosen automatically
	b. Different modes should be available for selection
6	**Collimator**
	a. Beam filter: Mo and Rh
	b. Light beam intensity (Lux)> 300
	c. FOV can be modified manually and can also be selected automatically based on the paddle and magnification platform
7	**Flat panel detector**
	a. Detector material (Amorphous Silicon or others) and Detector type (Direct or independent type)
	b. Detector size:- 24 x30 cm
	c. Pixel size: 100 um or less
	d. DQE at OLP/mm: 60%
	e. DQE at 5LP/mm : 29%
	f. Image depth>=14 bit
	g. Operating temperature: - 15 to 35 degrees Celsius
8	**Digital acquisition system**
	a. Local storage capacity:8000 images & more
	b. Preview image: <16 seconds
	c. LCD image monitor
	d. High luminance LCD: up to 500 cd/m2
	e. Image annotation
	f. Measurement functions
	g. Automatic dose (Skin dose and average Glandular Dose) annotation Automatic windowing
	h. Multi format display
	i. Zoom and roam
	j. Image invert
	k. Print layout for multi format printing
	l. Integrated CD R/W
	m. Thickness equalization (image harmonization)
	n. Fine view (improved conspicuity)
	o. Integrated quality Assurance program
	p. Repeat reject analysis
9	**Connectivity**
	a. Autosend (Autopush)
	b. Autoprint
	c. Autodelete based on storage commitment
	d. DICOM SEND (storage provide)
	e. DICOM storage commitment (storage commitment user)

	f. DICOM Work list (Modality work list user)
	g. DICOM Query/ Retrieve user
	h. DICOM Print (basic grayscale print user)
	i. Verification service (verification provider)
	j. DICOM CD
10	**Printer interface**
	a. Basic Grayscale print user
	b. Validated printer list for hardcopy diagnostic
11	**Grid/ Breast support assembly**
	a. Grid ratio:5:1
	b. Removal and installation of the grid/ breast support motorize
	c. Low attenuation carbon fiber support
12	**Accessories included**
	a. Pair of dual foot pedals
	b. Radiation shield with 0.3 mm Pb equivalent at 49 kV
	c. Face shield
	d. Large paddle- 24x31cm
	e. 19x23 cm sliding paddle
	f. Spot sliding compression paddle
	g. Remote service modem
	h. Quality control toolkit
	i. User manual and technical documentation
	j. UPS for power supply & backup of 30 minutes.
	k. Dry view camera: 500 DPI or more, with 500 films
	l. LED X-ray Film viewer with adjustable brightness; capable of holding 3 films of 14”x17” size. – 3 no.s
13	**Display workstation**
	a. Mammography diagnostic workstation
	b. Two high contrast and resolution 5 MP LCD B & W monitors
	c. Multi-modality viewer to integrate with PACS and to view DICOM images from other modalities.
	d. Customizable having protocols
	e. Dedicated mammography keypad
	f. Customizable functions buttons
	g. Patient list management tool
	h. User selectable auto contrast modes
	i. On line storage capacity for > 15000 images
	j. Is the hard disk capacity expandable
	k. Image retrieval time to display (4 Views) : <4 seconds
	l. RAM: minimum 6 GB
	m. Quadrant glass
	n. Flip, Rotate, Invert
	o. Annotations and graphics
	p. Measurements

	q. Zoom and roam
	r. Brightness and contrast
	s. Print screen
	t. Contrast enhancement processing
	u. Internal DVD-ROM drive
	v. DICOM storage SCU/SCP
	w. DICOM Query/ Retrieve SCU/SCP
	x. DICOM Print Storage commitment SCU
	y. DICOM Print (Color and B&W)
	z. DICOM Media interchange
	aa. TCP/IP network layer
	The Turnkey Scope of Work – MAMMOGRAPHY
	1. The Supplier should inspect the proposed site offered by the Consignee Institute in which the Mammography system has to be installed and they are required to submit the plan for the complete Mammography Centre on a turnkey basis. The scope of work includes complete Civil work, Electrical, Plumbing, Furnishing, Air-conditioning and Fire fighting for the construction of Mammography Centre.
	2. While preparing the plan, the following aspects have to be addressed.
	a. Care should be taken to provide easy negotiation of the patient stretchers/ trolleys through corridors and doors.
	b. Radiation shielding for doors, walls, windows etc.
	c. Furniture like desk, chairs, shelves etc.
	d. Patient stretcher and other furniture/ accessory to make the Mammography centre functional.
	3. The cost of Turnkey for the area of 600sq.ft and Air-conditioning of Tonnage 6 TR will be considered for Ranking / Evaluation purpose.
	4. Moreover Bidders will have to quote the Unit Rates of the following components of turnkey work.
	a) Civil works
	b) Electrical work
	c) Air Conditioning (HVAC)
	d) Interior Furnishing & Furniture
	e) Miscellaneous
	Scope of work for turnkey Mammography system:
	The supplier should inspect the proposed site and submit all the detailed structural and architectural drawings and BOQ for the proposed DR Centre along with technical bid of the tender.
	The Mammography CENTRE shall consist of the following rooms:
	a) Mammography Room
	b) Console room
	c) Patient preparation room

	The actual area of turnkey works done will be considered for payment, based on the site measurements.
1	**Civil work**
	i. Civil construction work including construction of brick wall if any, plastering, flooring as per the approved plan and equipment layout plan.
	ii. Concrete bed at Mammography equipment area.
	iii. Platform for unloading and shifting the Mammography should be provided if necessary.
	iv. Cable tray, trench & channel – necessary trenches, cable tray and channels at required location would be provided.
	v. All the construction work to be done as per the final plan approved by the Consignee.
	a. Flooring
	600 x 600 mm vitrified tiles with 100mm tile skirting.
	b. Painting
	Two coats Plastic Emulsion Paint over 2 coats of wall putty including primer in patient preparation area, Lobby area, console room, Mammographyroom .
	c. False Ceiling
	Acoustical tile for ceiling with light weight insulating material of high quality supported on grid or finished seamless with support above ceiling. Finished with white paint or powder coated with white paint, if metallic.Ceiling height to suit the equipment mount and clearances.
2	**Plumbing work**
	All water pipes and fittings shall be of high density polythene of approved and standard make. The gratings shall be brass chrome plated. All plumbing accessories should be of standard make.
3	**Electrical work**
	a. The supplier shall be required to specify the total load requirements for the Mammography centre including the load of air conditioning , room lighting and for the accessories if any.
	b. The supply line will be provided by the Institute up to one point within the Mammographycentre . The distribution panel shall be provided by the vendor. Few lights in each room shall be connected to the UPS to provide emergency lighting.
	c. The electrical work shall include the following:
	i. Wiring – All interior electrical wiring- with main distribution panel board, necessary MCBs, DB, joint box, switch box etc. the wires shall be of copper of different capacity as per the load and should be renowned make as listed below.
	ii. Switches light and power points should be of modular type and of standard make as listed below.
	iii. General lights – LED light with 500 Lux Illumination
4	**AIR CONDITIONING:**

	a. Package air conditioners units and split AC units may be used according to room requirement and suitability. Humidity control should be effective to eliminate moisture condensation on equipment surface. The Air conditioning should be designed with standby provision to function 24 hours a day.
	b. The outdoor units of AC should have grill coverings to prevent theft and damage.
	c. Ventilation is required in toilet.
5	**Environment specifications:**
	Humidity range: Relative humidity 60% and 80% in all areas except equipment room which shall be as per requirement of the equipment.
	Temperature ranges: 22 ± 2° C in all areas except equipment room which shall be as per requirement of the equipment.
	Air conditioning load: The heat load calculations and maintaining the desired temperature and humidity shall be the responsibility of the bidder.
6	**Furniture:**
	a. Revolving chairs height adjustable, medium-back with hand-rest in the Control room, Radiologist room and viewing area. – 4 NO.S
	b. Cupboard with laminate door shutters for storage of spare parts and accessories and records as per requirement. – 2 NO.S
	c. Drug trolleys for patient preparation area. – 1 No.
	d. Name boards for all rooms
	e. Tables for Workstation - 1 NO.
	f. Changing rooms should have change lockers and dressing table.
	g. Dustbins – 4 No's.
	h. Any other essential furniture item as per requirement.
	All furniture items should be of standard make as mentioned in the table below.
7	**Miscellaneous:**
	a. Cabling of Network (LAN) connectivity for camera system, console system, workstation and computers etc.
	b. Fire extinguisher Dry CO2 type as required for the building safety.
	LIST OF ITEMS AND SUGGESTED MANUFACTURERS.

SL NO	**ITEMS**	**PREFERRED MAKES**
A	FLOORING VITRIFIED TILES	- Somany, Kajaria , H&R Johnson, RAK india
B	PAINT	- Dulux, Asian Paints ,Nerolac
C	PLUMBING	- Kohler, Jaguar , Grohe , Roca
D	SANITARY ITEMS	- CERA, Hindware, Parryware
E	ELECTRICAL	
1	CABLES	- Finolex, Havells ,V-Guard
2	SWITCHES	- Legrand, L&T, Crabtree , Roma

3	DISTRIBUTION BOX , MCB	- Legrand, L&T, Siemens, Havels
4	LIGHT FITTINGS	- Philips / Crompton / Wipro/Syska
F	AIR CONDINTIONING	- Daikin, Hitachi, Blue Star, Voltas,
G	FURNITURE	- HermenMiller, Godrej, Featherlite,Geeken

	BOQ	
Sl No.	**Item Description**	**Quantity**
1	Digital mammography system with stereotactic biopsy	1 Nos
2	Dual foot pedals	2 Nos
3	Radiation shield	1 Nos
4	Face shield	1 Nos
5	Large paddle- 24x31cm	1 Nos
6	19x23 cm sliding paddle	1 Nos
7	Spot sliding compression paddle	1 Nos
8	Remote service modem	1 Nos
9	LED X-ray Film viewer	3 Nos
10	UPS for power supply & backup of 30 minutes.	1 Nos
11	Dry view camera: 500 DPI or more, with 500 films	1 Nos
12	Quality control toolkit	1 Nos
	Turnkey Work as per specification	
1	Civil works	600 sq ft
2	Electrical work	600 sq ft
3	Public health (plumbing and sanitary fittings).	6
4	Air Conditioning	600 sq ft
5	Interior Furnishing & Furniture	1 LS
6	Miscellaneous	1 LS

Item Sl. No. 10
DRF - Digital Flat Panel Fluoroscopy cum Radiography System

	Any two components out of three (X-Ray tube, X-ray Generator and Flat panel detectors) should be from the same manufacturer of the main (Complete) system The unit should be completely integrated system (integrated X-ray generator and image acquisition control console) having the following specifications:
	Generator:
	i.800 mA unit with microprocessor controlled high frequency X-ray generator with power output of 80 kW or more
	ii. Exposure kV range should be 40-140 kV
	It should be able to work on 800 mA at 80 kW for Radiography and from 0.5 to 5 mA at fluoroscopy
	iv. System should have facility for pulsed fluoroscopy. Please provide details
	v. Generator should have minimum exposure time of 1 ms or less
	vi. System should have multiple user defined programs (vendor defined programs)
	vii. There should be provision for automatic exposure control (AEC)
	viii. It should have provision for overload protection device and self-diagnosis
	ix. It should have provision for digital display of kV. mA both for radiography and fluoroscopy mode

	x. Generator parameters should be automatically set
	1. X-ray tube:
	i. One X-ray tube which is over couch
	ii. The X-ray tube should have dual focal spots. Small focus not more than 0.6 mm and large focus not more than 1.2 mm
	iii. X-ray tube rating should be compatible with X-ray generator output
	iv. Small focal spot power rating should be atleast 30 kW
	v. Large focal spot power rating should be atleast 70 kW
	vi. Anode heat storage capacity should at least be 600 kHU
	vii. Mention the heat dissipation rate and specify technology used for cooling
	viii. Should have provision of electromagnetic locks with collision protection sensors
	ix. Integrated computer controlled automatic X-ray beam filtering
	2. Table:
	i. Floor mounted table with carbon fibre table top, scratch resistant surface – give details
	ii. System should be motor driven, height adjustable with longitudinal and horizontal table top movements. Please specify the range of movements
	iii. Table should have angulations from longitudinal to head down positions (vertical +90 degrees to Trendelenburg -20 degrees)
	iv. Table should support patient weight up to 150 kg with full range of movements
	v. System should have well-designed foot switch for releasing fluoroscopy and acquisition
	vi. System should have provision for collision protection
	vii. Table should have integrated bucky unit for flat panel general radiography with a grid ratio of at least 8:1 or 40 lines/cm
	viii. Intercom system must be available to communicate with patients
	ix. Provision for control of all table movements both locally at the table as well as remote controlled on the console
	x. Table height should be range between 50-90 cm (±5%)
	xi. Remote controlled compression cone
	xii. System should have head to toe coverage without repositioning the patient.
	3. Direct digital imaging system for fluoroscopy:
	i. Field of view of at least 40 x 40 cm or more
	ii. Collimator should be automatic and remote controlled
	iii. System should have real time optimization techniques to maintain constant brightness at the lowest allowable dose to the patient
	iv. Should have cine loop facility and last image hold facility during fluoroscopy
	v. Acquisition matrix should be of at least 1024 x 1024 at 10 bit rate
	vi. Serial exposure rates atleast 6 fps and In pulsed fluoroscopy mode frame rate should be at least 15 frames per second.
	viii. Should be fitted with integrated dose measuring device
	4. Detector system:
	i. Single digital flat panel detector, using CsI scintillator with TFT convertor
	ii. Detector must be at least 40 x 40 cms or more
	iii. Image matrix size 2k x 2k pixels or more
	iv. Pixel size should be 200 micron or less
	v. Should allow centred/ de-centred collimation

	vi. DQE should be at least 60% at 0.05lps/mm.
	7. Image display system:
	i. Two monochrome monitors of 19" or more of medical grade to be provided, one in examination room and one in console room with resolution of 1 mega pixel or more
	ii. **Post Processing Work Station :**Post-acquisition image processing, viewing, reprocessing, hard copy documentation and onward transmission. It should be connected with main console.
	8. Control console:
	i. All system movements of table shall be controlled by the operator at the table in the examination room and also at the console. Remote console switches available at the console
	ii. The system should have facility for edge enhancement, positive/ negative display, windowing, contrast/ brightness, electronic shuttering, image/ pixel shifting, vertical and horizontal image reversal, and zoom functions
	iii. The system should have fast and direct access to all series, single images, in both examination (remote controlled) and console room iv. System should have angle/ distance measurement, image labelling and patient positioning facilities
	9. Image storage and transmission:
	i. Hard disc memory capacity of 8000 images and online image storage capacity of at least 50000 images in 1024 x 1024 matrix at 10/ 12 bits on the main system disk
	ii. The systems should support recording of images on compact discs/ DVD
	iii. The system should be DICOM 3.0 (or higher version) ready (like send, receive, print, record on CD/DVD, acknowledge, etc.) for connectivity to any network, computer/ PC, etc. in DICOM format
	vi. Vendor should connect this with existing LAN system and other laser cameras already existing in the department without any extra cost vii. System should be PACS/ HIS/ RIS interface ready
	10. Accessories:
	Dry Chemistry Camera. Should have 500 DPI and should print at least 3 sizes of films: 8x10, 14x17, 10x12 inches. 200 films of each size to be supplied.
	Online UPS along with batteries of appropriate rating to give 30min. back up to operate the complete system including X-Ray machine and Imager.
	Lead glass as per AERB norm and size 120 x 90 cm for console room
	Lead Aprons(0.5mm Lead equivalent) with hanger - 04Nos , Thyroid shields- 04, gonadal shields-02
	Radiation protection flaps
	Footstep for patient – 1 no.
	Hand grip
	Patient fixing belts and compression devices (for performing excretory urography)
	11. Essential certification:
	Radiation safety certificate: the offered model must have a valid AERB certificate at the time of submission of tender
	The system should be European CE with four digit notified body number or US FDA approved
	Regular QA according to AERB norms will be responsibility of bidder during warranty and CMC period.
	The Turnkey Scope of Work – DRF

	1. The Supplier should inspect the proposed site offered by the Consignee Institute in which the DRF system has to be installed and they are required to submit the plan for the complete DRF Centre on a turnkey basis. The scope of work includes complete Civil work, Electrical, Plumbing, Furnishing, Air-conditioning and Fire fighting for the construction of DRF Centre.
	2. While preparing the plan, the following aspects have to be addressed.
	a. Care should be taken to provide easy negotiation of the patient stretchers/ trolleys through corridors and doors.
	b. Radiation shielding for doors, walls, windows etc.
	c. Furniture like desk, chairs, shelves etc.
	d. Patient stretcher and other furniture/ accessory to make the DRF centre functional.
	3. The cost of Turnkey for the area of **1000sq.ft** and Air-conditioning of Tonnage 12 TR will be considered for Ranking / Evaluation purpose.
	4. Moreover Bidders will have to quote the Unit Rates of the following components of turnkey work.
	a)Civil works
	b)Electrical work
	c)Public health (plumbing and sanitary fittings).
	d)Air Conditioning (HVAC)
	e)Interior Furnishing & Furniture
	f)Miscellaneous
	Scope of work for turnkey DRF system:
	The supplier should inspect the proposed site and submit all the detailed structural and architectural drawings and BOQ for the proposed DRF Centres along with technical bid of the tender.
	The DRF CENTRE shall consist of the following rooms:
	a) DRF Room
	b) Console room
	c) Equipment room
	d) Patient preparation room
	e) Patient waiting area
	The actual area of turnkey works done will be considered for payment, based on the unit rates and site measurements
1	**Civil work**
	i. Civil construction work including construction of brick wall if any, plastering, flooring as per the approved plan and equipment layout plan.
	ii. Concrete bed at DRF equipment area.
	iii. Platform for unloading and shifting the DRF should be provided if necessary.
	iv. Cable tray, trench & channel – necessary trenches, cable tray and channels at required location would be provided.
	v. All the construction work to be done as per the final plan approved by the Consignee.
	a. Flooring
	i.600 x 600 mm vitrified tiles with 100mm tile skirting to match in console room, lobby and patient preparation areas, Radiologist room etc.
	ii. 50 mm thick cement concrete flooring with Vinyl flooring in DRF equipment / UPS room.
	b. Painting

	Two coats Plastic Emulsion Paint over 2 coats of wall putty including primer in patient preparation area, patient waiting area, console room, DRF room & Equipment room etc.
	c. False Ceiling
	Acoustical tile for ceiling with light weight insulating material of high quality supported on grid or finished seamless with support above ceiling. Finished with white paint or powder coated with white paint, if metallic. Ceiling height to suit the equipment mount and clearances.
2	**Plumbing work**
	All water pipes and fittings shall be of high density polythene of approved and standard make. The gratings shall be brass chrome plated. All plumbing accessories should be of standard make.
3	**Electrical work**
	a. The supplier shall be required to specify the total load requirements for the DRF centre including the load of air conditioning , room lighting and for the accessories if any.
	b. The supply line will be provided by the Institute up to one point within the DRF centre . The distribution panel shall be provided by the vendor. Few lights in each room shall be connected to the UPS to provide emergency lighting.
	c. The electrical work shall include the following:
	i. Wiring – All interior electrical wiring- with main distribution panel board, necessary MCBs, DB, joint box, switch box etc. the wires shall be of copper of different capacity as per the load and should be renowned make as listed below.
	ii. Switches light and power points should be of modular type and of standard make as listed below.
	iii.General lights – LED light fitting with 500 Lux Illumination
4	**AIR CONDITIONING:**
	a. Package air conditioners units and split AC units may be used according to room requirement and suitability. Humidity control should be effective to eliminate moisture condensation on equipment surface. The Air conditioning should be designed with standby provision to function 24 hours a day.
	b. The outdoor units of AC should have grill coverings to prevent theft and damage.
	c. Ventilation is required in toilet.
5	**Environment specifications:**
	Relative Humidity range: To be maintained between 60% and 80% in all areas except equipment room which shall be as per requirement of the equipment.
	Temperature ranges: 22 ± 2° C in all areas except equipment room which shall be as per requirement of the equipment.
	Air conditioning load: The heat load calculations and maintaining the desired temperature and humidity shall be the responsibility of the bidder.
6	**Furniture:**
	a. Revolving chairs height adjustable, medium-back with hand-rest in the Control room, Radiologist room and viewing area. – 4 NO.S
	b. Chairs for patient waiting area – Three seater (chrome plated). - 10 NO.S
	c. Cupboard with laminate door shutters for storage of spare parts and accessories and records as per requirement. – 3 NO.S
	d. Drug trolleys for patient preparation area. – 1 No.

	e. Patient trolley with rubber foam mattress to be kept in the patient preparation room.
	f. Name boards for all rooms
	g. Tables for Workstation - 1 NO.
	h. Changing rooms should have change lockers and dressing table.
	i. Dustbins – 10 No's.
	j. Any other essential furniture item as per requirement.
	All furniture items should be of standard make as mentioned in the table below.
7	**Miscellaneous:**
	a. LED X-ray Film viewer with adjustable brightness; capable of holding 3 films of 14"x17" size. – 3 no.s
	b. Cabling of Network (LAN) connectivity for camera system, console system, workstation and computers etc.
	c. Fire extinguisher Dry CO2 type as required for the building safety.
	LIST OF ITEMS AND SUGGESTED MANUFACTURERS.
	ITEMS **PREFERRED MAKES**
A	**FLOORING VITRIFIED TILES** - Somany, Kajaria , H&R Johnson, RAK india
B	**PAINT** - Dulux, Asian Paints , Nerolac
C	**PLUMBING** - Kohler, Jaguar , Grohe , Roca
D	**SANITARY ITEMS** - CERA, Hindware, Parryware
E	**ELECTRICAL**
1	**CABLES** - Finolex, Havells ,V-Guard
2	**SWITCHES** - Legrand, L&T, Crabtree , Roma
3	**DISTRIBUTION BOX , MCB** - Legrand, L&T, Siemens, Havels
4	**LIGHT FITTINGS** - Philips / Crompton / Wipro/ Syska
F	**AIR CONDINTIONING** - Daikin, Hitachi, Blue Star, Voltas,
G	**FURNITURE** - Hermen Miller , Godrej , Featherlite,Geeken

	BOQ	
SL. No	**Item Description**	**Quantity**
1	Digital Radiography Fluoroscopy System as per the Tender Specification	1 no.
2	Post Processing Work Station	1 no.
3	Dry Chemistry Camera as per specification	1 no.
4	Online UPS	1 no.
5	Lead Apron with Hanger	4 Nos.
6	Lead apron stand	1 no.
7	Thyroid Shields	4 Nos.
8	Gonadal Shields	2 Nos.
9	Radiation protection flaps	1 set
10	Footstep for patient – 1 no.	1 no.
11	Hand grip	LS
12	Patient fixing belts and compression devices (for performing excretory urography)	1 set
	Turnkey Work (1000 sq ft) as per specification	
1	Civil works	1000 Sq.ft.
2	Electrical work	1000

		Sq.ft.
3	Public health (plumbing and sanitary fittings).	1000 Sq.ft.
4	Air Conditioning	12 TR
5	Interior Furnishing & Furniture	1000 Sq.ft.
6	Miscellaneous	1 LS
	Furniture:	
1	Revolving chairs height adjustable, medium-back with hand-rest.	4 NO.S
2	Chairs for patient waiting area – Three seater (chrome plated). -	10 NO.S
3	Cupboard with laminate door shutters	3 NO.S
4	Drug trolleys for patient preparation area.	1 NO
5	Patient trolley with rubber foam mattress	2 NO.s
6	Tables for Workstation and Radiologist .	2 NO.S
7	Changing rooms (with change lockers and dressing table).	1 set
8	Dustbins	10 NO.S
9	Room Signage	as required
10	Venetian Blinds	as required
	Miscellaneous:	
1	LED X-ray Film viewer	2 NO.s
2	Cabling of Network (LAN) connectivity for camera system, console system, workstation and computers etc	as required
3	Dry chemical power type fire extinguisher of 5kgs capacity	3 NO.s
4	Lead glass 90 x 90 cm for console room	1 no.

Item Sl. No. 11
Portable - Colour Doppler

	The latest model portable USG Doppler unit should be quoted. This machine should be capable and will be required to function clinically as standalone systems.
1	Fully digital portable ultrasound machine with provision for Doppler examinations.
2	The unit should be compact, lightweight and portable. Weight should not exceed 7kg including battery (excluding cart and accessories).
3	It should be suitable for abdominal, small parts and vascular applications in adults and paediatric patients. Multiple preloaded as well as user configurable application presets should be available.
4	Minimum grey scale resolution to be 256 with 128 or more digital processing channels.
5	Scanning depth to be 30 cm or more.
6	The system to have a dynamic range of 165 decibels or more.
7	The system should support Convex , Linear probes and endocavitary probe.
8	**Transducers** (Frequency tolerance ±1 MHz)
	a. Convex electronic phased array transducer: 2-6 MHz for abdominal imaging.
	b. Linear transducer: 5-12MHz MHz for vascular and small part imaging.

	c. Endocavitary probe (5-12MHz) with 140 deg FOV or more .
9	All transducers should be lightweight digital broadband type transducers
10	The system should have a frame rate of at least 300 frames per second (fps) in B mode.
11	The system should have an ergonomic full alphanumeric soft keys keyboard with easy access scans controls and trackball/track pad. Provision for attaching an external keyboard and mouse should be present.
12	The System must have integrated high – resolution TFT/LCD/Single monitor of 12" Inches or more.
13	The system should have cine loop review facility of not less than 60 sec/1000 frames.
14	The system should have the facility of digital storage and retrieval of B/W and colour image data on built-in CD/DVD Drive. Provision for USB port and LAN transfer of data should also be present.
15	Imaging modes of Real time 2D, Colour Doppler, Pulsed wave Doppler and Power (energy) Doppler, Tissue Harmonic Imaging with contrast to be quoted as standard feature.
16	Controls for 2D mode: Total gain, depth, TGC, dynamic range, acoustic power output.
17	Controls for Colour Doppler: PRF, colour gain, position and size of ROI, steering of ROI, colour maps and colour invert.
18	Controls for pulsed Doppler: variable sample volume size from 1 to 5mm or more, steer, PRF, baseline, gain angle correction, spectral invert, duplex on/off.
19	Measurements for 2D mode: Multiple distances, area and volume.
20	Measurements for Doppler modes: Stenosis quantification in area percentage, diameter, PSV, EDV, mean, PI, RI, acceleration time and index. Automatic and manual measurements and display of pulsed Doppler calculations should be possible.
21	Facility for storage on DVD should be available, System should be DICOM 3.0 Compliant.
22	The system should be able to store atleast 5000 Images.
23	Unit should function with 200-240 V, 50 Hz AC, 5 amp power outlet.
24	In built battery backup should be at least one hour or more.
	Essential accessories:
25	B&W Thermal Printer
26	suitable carry bag for machine ,Mobile cart with transducer holder, jelly bottle holder and space for printer.
27	50 no.s roll of Thermal Printer Paper should be provided with the unit.
28	The unit should be Should have US FDA or European CE with four digit notified body number certificate and certificate to be submitted.

Sl No	**BOQ**	**Qty**
1	Portable Ultrasound Scanner, as specified	1 no.
2	Convex electronic phased array transducer: 2-6 MHz for abdominal imaging.	1 no.
3	Linear transducer: 5-12MHz MHz for vascular and small part imaging.	1 no.

4	Endocavitary probe (5-12MHz) with 140 deg FOV	1 no.
5	B&W Thermal Printer	1 no.
6	Mobile cart and suitable carry bag for machine	1 no.
7	Thermal Printer Paper	50 rolls

Item Sl. No. 12
Colour Doppler - 2D

	The equipment must be capable of operating in B, M, Doppler, Colour flow and Power Doppler modes. It must support transducers with linear, sector and convex formats. Further, it must include a full array of measurement and calculation packages. The specific minimum requirements for this equipment are as follow.
1	**User Interface & Ergonomics**
1.1	The system shall support backlight keys or provide an integrated light for ease of use in darkened work areas. The backlighting shall be tri-state to further simplify ease of use and indicate function selected.
1.2	The system shall include at least a 17" LCD monitor to allow for both excellent images viewing as well as providing for workflow and productivity features.
1.3	The system shall have three active universal probe ports in a convenient, easy to access location to maximize the availability of needed probes.
2	**Productivity**
2.1	The system shall offer an extended field-of-view imaging that operates by sweeping a transducer over the anatomy of interest. This mode shall build the extended field-of-view in a real-time manner, showing the image as it builds.
2.2	System shall have image management features that store images by patient and include the ability to review images from different exam dates.
2.3	System shall support the ability of post image acquisition optimization to optimize imaging parameters such as B Gain, TGC, Colour Gain, Dynamic Range, Doppler Gain, Doppler Base Line on image recalled from the image archive.
2.4	System shall allow for live image and archive images side-by-side or quad display on a single monitor. This display shall allow any type of image – B-Mode, Color, or power Doppler on either side.
2.5	The system shall display thumbnails on a clipboard while scanning to facilitate exams.
2.6	System should be able to reconstruct 3D image from 2D image data.
3	Tissue Harmonic imaging with contrast should be available as standard feature.
4	**Post-acquisition Data Processing.**
4.1	The system shall allow for post-storage image manipulation to provide maximum image flexibility, review and productivity. It shall include, at a minimum the ability to change the:
	Overall B-Mode gain, dynamic range and grey scale maps.
	Overall Doppler gain, base line shift, sweep speed and inverted spectral waveform.
4.2	The system shall provide a display zoom function on frozen images.
6	**Scanning Parameters**
6.1	The system shall provide the ability to scan in the compound imaging mode with multiple lines on all linear and convex probes.

	The system shall provide scan depths from a minimum of 2 cm to a maximum of at least 30 cm.
	System should have minimum of 17,000 Digital Channels for better resolution.
6.4	System should have Dynamic Range of atleast 170 Db.
7	**M-Mode Imaging**
	The system shall have a facility allowing the M-Mode cursor to be adjustable in any plane and allow for accurate measurements. The M-mode shall be available from a CINE loop or live image.
8	**Spectral Doppler (PW)**
8.1	Doppler mode shall be available on all probes.
8.2	The Doppler cursor shall be user-steerable with linear transducers.
8.3	The system shall provide the user with control to either have Doppler with real time B-Mode, Doppler with periodic B-Mode update or Doppler with frozen B-Mode scanning.
8.4	The system shall provide stereo audio of the Doppler spectral signal.
8.5	The system shall provide the user with control during timeline replay to review the spectrum only (i.e., frozen B-Mode) or with the spectrum and B-Mode together and synchronized.
8.6	The system shall provide the user with the ability to add a spectral peak and spectral mean trace onto the spectrum in both real time or after freezing the image.
9	**Measurements and Calculations**
9.1	The system shall provide digital calipers for at least the following measurements:
a)	Depth & Distance
b)	Circumference
c)	Area
d)	Volume
e)	Velocity
f)	Resistive index (RI)
9.2	All measurements should be possible on frozen images as well as on images recalled from the image archive.
9.3	The system shall provide a comprehensive set of obstetrical and gynaecologic calculations and vascular calculations with summary reports.
10	Image Archive and Networking
10.1	The device should store images onto an integrated DVD-R Multridrive and a USB port storage device.
10.2	The system shall include at least 100 GB of dedicated hard drive for large local storage capacity,with 20000 image storage capacity or more.
11	DICOM Connectivity should be a standard feature and Machine should be able to connect with any RIS/HIS
12	Standalone PC (Windows based) with suitable DICOM viewer, suitable colour inkjet printer with refillable ink tank to be supplied.
13	**Transducers** (freq tolerance: ± 1 MHz)
a)	Convex Probe with biopsy attachment. : 2 - 6 MHz
b)	Transvaginal / Intracavitary Probe with Biopsy attachment. : 6- 12 MHz
c)	Linear Probe with biopsy attachment. : 5 – 12 MHz FOV minimum 140 Deg.
d)	Sector Probe (TCD):2-5Mhz **(Optional)**
e)	Pediatrics micro convex probe **(Optional)**

14	The unit should have US FDA or European CE with four digit notified body number certificate and certificate to be submitted.
15	Suitable UPS with 30 minute backup for whole system.

Sl.No	BOQ	QTY
1	COLOUR DOPPLER SYSTEM , as specified	1 no.
2	Convex Probe with biopsy attachment. : 2 - 6 MHz	1 no.
3	Transvaginal / Intracavitary Probe with Biopsy attachment. : 6- 12 MHz	1 no.
4	Linear Probe with biopsy attachment. : 5 – 12 MHz FOV minimum 140 Deg	1 no.
5	Sector Probe (TCD):2-5MHz **(Optional)**	1 no.
6	Pediatrics micro convex probe **(Optional)**	1 no.
7	Suitable UPS for a 30 minute backup for whole system.	1 no.
8	Standalone PC (Windows based) with suitable DICOM viewer	1 no.
9	Colour inkjet printer with refillable ink tank	1 no.

Item Sl. No. 13
Colour Doppler System - (4D)

	High End State-of-art Colour Doppler Equipment
	The equipment must be capable of operating in B, M, Doppler, Color flow and Power Doppler modes, Contrast microbubble ultrasound & 4D Volume Scanning capabilities.
	It should support transducers with linear, sector, convex and volume formats. Further, it must include a full array of measurement and calculation packages. The specific minimum requirements for this equipment are as follow.
1	**User Interface & Ergonomics**
1.1	The keyboard should have Height adjustment. The adjustment should also include Keyboard rotation Side to Side.
1.2	The system shall support backlight keys or provide an integrated light for ease of use in darkened work areas. The backlighting shall simplify ease of use and indicate function selected.
1.3	The system shall include at least a 19" LCD monitor for both excellent image viewing as well as providing for workflow and productivity features.
1.4	The LCD monitor shall be mounted on an articulating arm that moves side-to-side, forward and backward.
1.5	The unit shall have gel warmer as attachment for the comfort of the patient.
1.6	The system shall have minimum Four active probe Ports in a convenient, easy to access location to maximize the availability of needed probes.
2	**Productivity**
2.1	The system shall offer an extended field-of-view imaging that operates by sweeping a transducer over the anatomy of interest. This mode shall build the extended field-of-view in a real-time manner, showing the image as it builds.
2.2	System shall have image management features that store images by patient and include the ability to review images from different exam dates.

2.3	System shall support the ability to store digital data, which allows optimizing imaging parameters such as B Gain, TGC, Colour Gain, Dynamic Range, Speckle Reduction levels, Doppler Gain, Doppler Base Line on old Images & old loops recalled from the image archive.
2.4	System shall allow for live image and archive images side-by-side or quad display on a single monitor. This display shall allow any type of image – B-Mode, Colour, or power Doppler on either side.
3	**Workflow**
3.1	The system shall implement a feature, which enables to help streamlining the workflow. In particular the system should automatically invoke the correct mode and imaging parameter and advance to the next step within the examination with a one-button operation.
4	Real-time 3D / 4D Imaging Capabilities.
5	Elastography should be available in convex, Linear Probes.
6	Contrast Ultrasound Capability (CEUS) with Times Intensity Curve Graphs.
7	Tissue Harmonic imaging and spatial compounding technique should be available.
8	**Data Processing.**
8.1	The system shall allow for Post-Storage image manipulation to provide maximum image flexibility, review and productivity. It shall include the ability to change all following on recalled old Stored Images/Loops:
a	Overall B-Mode gain, dynamic range and gray scale maps.
b	Overall Doppler gain, base line shift, sweep speed and inverted spectral waveform.
c	Anatomical M-Mode
8.2	The system shall provide a display zoom function on frozen images.
9	**Scanning Parameters**
9.1	The system should have minimum 65,000 digital system processing channels.
9.2	The system shall possess the ability to control speckle through the use of a speckle reduction algorithm that enhances borders, reduces speckle artifact and improves detail and contract resolution in gray scale with compatibility in Colour mode, 3D and side-by-side display. This feature shall have operator selectable settings and be capable of displaying in side-by-side mode with non-speckle reduced image.
9.3	The system shall provide the ability to scan in the compound imaging mode with up to 9 lines on all linear and convex probes.
9.4	The system shall provide scan depth at least 30 cm.
10	**B-Mode / M-mode Imaging**
	The system shall provide the capability for coded tissue harmonic imaging on all offered transducers.
	The system shall have an —anatomical M-Mode – allowing the M-Mode cursor to be adjustable in any plane and allow for accurate measurements.
11	Colour flow/Power Doppler
12	Spectral Doppler (PW)
13	**Measurements and Calculations**
13.1	Measurements should be possible on frozen images as well as on images recalled from the image archive.
13.2	The system shall provide a comprehensive set of obstetrical and gynaecologic calculations and vascular calculations with summary reports.

14	**Image Archive and Networking**
14.1	The device should store images onto an integrated DVD-R Multi-drive and a USB port storage device.
14.2	The system shall include at least 500 GB hard drive with minimum 20000 image storage capacity.
14.3	The device should store images in DICOM, JPG, WMV and AVI formats for maximum flexibility.
15	DICOM Connectivity: DICOM Connectivity should be a standard feature with the hospital network and a stand-alone PC (Windows based) with suitable DICOM viewer to be supplied & suitable Laser Colour Printer
	Standalone PC (Windows based) with suitable DICOM viewer, suitable colour inkjet printer with refillable ink tank to be supplied.
16	**Transducers (freq tolerance: ± 1 MHz)**
	a. Convex, with biopsy attachment. Operating Frequency: 2 - 5 MHz
	b. Linear, with biopsy attachment. Operating Frequency: 5 – 13 MHz
	c. Trans-vaginal Probe with Biopsy attachment, OperatingFrequency : 5-12 MHz
	d. 3D / 4D Volume Convex Probe
	e. Pediatric micro convex probe for Neurosonogram.
	f. Sector Probe (TCD):2-5Mhz **(Optional)**
17	Suitable UPS for a 30 minute backup for whole system.
18	The system should have US FDA or European CE with four digit notified body number certificate and certificate to be submitted.

Sl No	**BOQ**	**QTY**
1	COLOUR DOPPLER SYSTEM , as specified	1 no.
2	Convex, with biopsy attachment. Operating Frequency: 2 - 5 MHz	1 no.
3	Linear, with biopsy attachment. Operating Frequency: 5 – 13 MHz	1 no.
4	Trans-vaginal Probe with Biopsy attachment, Operating Frequency : 5-12 MHz	1 no.
5	3D / 4D Volume Convex Probe	1 no.
6	Pediatric micro convex probe for Neurosonogram.	1 no.
7	Sector Probe (TCD):2-5Mhz **(Optional)**	1 no.
8	Suitable UPS for a 30 minute backup for whole system.	1 no.
9	Stand alone PC (Windows based) with suitable DICOM viewer,	1 no.
10	Colour inkjet printer with refillable ink tank	1 no.
11	Suitable Laser Colour Printer	1 no.

Item Sl. No. 14
Computed Radiography with Dry Imager

	Computed Radiography must be a state of the art system manufactured by a reputed brand or manufacturer adhering to following specifications. CR system should broadly comprise of following modules/ components:	
	Image recording system (cassettes & reading plates)	
	Image reading system (reader/ digitizer)	
	Identification & CR processing workstation.	
	Dry imager.	

1	**Image recording system (cassettes & imaging plates).**	
	The following sizes of radiography cassettes along with image plates should be supported by the unit.	
	a. 35 cm X 43 cm or 14" X 17": 2 nos.	
	b. 24 cm X 30 cm or 10" X 12": 2.nos.	
	c. 18 cm X 24 cm or 8" X 10": 2 nos.	
	d. Mammography cassette 8" X 10": 1 nos**.(Optional)**	
2	**Image reader (CR reader/ digitizer)**	
	a. The CR reader / digitizer should be able to process 60 image plates/hr or more of the largest size cassette	
	b. CR reader / digitizer must be able to handle phosphor image plates. CR reader capable of handling latest Dual side /needle/structured/ columnar image plates will be preferred.	
	c. It should have a resolution of 6 pixels/mm (minimum) for standard resolution cassettes & 10 pixel/mm (minimum) for high resolution cassette reading.	
	d. Digitiser must have a resolution of 20 pixel/mm(minimum) for screening mammography.	
	e. It should have input -output buffer/ stacker that can load at least 4 cassettes at least.	
	f. Gray scale resolution: CR reader / digitizer should have a minimum resolution of 12bits/ pixel for images sent to CR processing station.	
3	**Identification Station & processing server**	
	a. The main console must have 4GB or more RAM, and 1 TB Hard Drive and 19 inch clinical grade monitor. The work station should have RAID configuration Hard Disk and 19" monitor.	
	b. Processing server capable of identification of patient demographics to the acquired images will be preferred, else a separate identification station must be provided.	
	c. The server and /or ID station must be DMWL (DICOM modality worklist) compliant to access patient and study data from HIS or RIS.	
	d. It should provide display of acquired images with greater details of demographics viz. patient/ study listing for easy access	
	e. The server must provide full amount of post processing features viz. geometric corrections, window level algorithms, annotation like markers, predefined text, drawing lines and geometrical shapes, multi-scale image processing, measuring distance and angles, shuttering, histograms, zoom, grey scale reversal, edge enhancement, noise reduction, indication of gray scale saturation level, latitude reduction etc.	
	f. It should facilitate full-fledged DICOM printing and should be able to print multiple formats of patient study.	
	g. Should be able to send DICOM images to DICOM workstation or PACS without loss of information	
	h. Should be equipped with DICOM CD writer for transferring image	
	i. Should be able to store image on external device viz. CD or pen drive etc.	
	j. The system should have a facility to indicate over /under exposure in the preview screen. Kindly specify the image preview time.	
	k. The software must have dedicated paediatric and mammography image processing.	
4	**Dry imager**	

	a. The system must have a dry imager without need of any wet chemistry	
	b. It must be DICOM 3.0 compatible allowing multiple modalities to be connected at a time	
	c. The system must be able to print at least 60 films/ hr of the largest size	
	d. The system must deliver its first film within 80 seconds from the request sent	
	e. The imager must have spatial resolution of 500 dpi minimum	
	f. The system must have contrast resolution of 14 bits/ pixel or more. The system must have at least three online film sizes and should be capable of printing any of the 8" X 10", 10" X 12", 14" X 17" films.	
	g. The imager should support daylight loading of films.	
	h. 500 Nos. Of film of each size should be supplied	
5	Suitable UPS with 15 minutes backup for the whole system	
6	The unit Should have US FDA or European CE with four digit notified body number certificate and certificate to be submitted.	

	BOQ	
Sl No	**Item Description**	**Qty**
1	CR UNIT, as specified	1 no.
2	35 cm X 43 cm or 14" X 17”	2 nos.
3	24 cm X 30 cm or 10" X 12":.	2 nos
4	18 cm X 24 cm or 8" X 10":	2 nos.
5	Mammography cassette 8" X 10": 1 nos**.(Optional)**	1 no.
6	Dry imager	1 no.
7	Film 14" X 17”	500 nos.
8	Film 10" X 12"	500 nos.
9	Film 8” x 10”	500 nos.
10	UPS with batteries	

Item Sl. No. 15

Computed Radiography Unit Single Loader

	Computed Radiography must be manufactured by a reputed brand or manufacturer adhering to following specifications. CR system should broadly comprise of following modules/ components:
a)	Image recording system (cassettes & reading plates)
b)	Image reading system (reader/ digitizer).
c)	Identification & CR processing workstation.
d)	Dry imager.
1	**Image recording system (cassettes & imaging plates).**
	The following sizes of radiography cassettes along with image plates should be supported by the unit. (unit rate of the film should be quoted by the bidder and it should be valid during the warranty period,200 nos of each film-size should be supplied with the unit as per BOQ)
	a. 35 cm X 43 cm or 14"X 17"
	b. 24 cm X 30 cm or 10" X 12"

	c. 18 cm X 24 cm or 8"X 10"
2	**Image reader (CR reader/ digitizer) Single loader**
	a. The CR reader / digitizer should be able to process 30 image plates/hr or more of the largest size cassette
	b. CR reader / digitizer must be able to handle phosphor image plates. CR reader capable of handling latest Dual side /needle/structured/ columnar image plates will be preferred.
	c. It should have a resolution of 6 pixels/mm (minimum) for standard resolution cassettes & 10 pixel/mm (minimum) for high resolution cassette reading.
	d. Digitiser must have a resolution of 10 pixel/mm (minimum).
	e. It should have two trays
3	**Identification Station & processing server**
	a. The main console must have 1GB or more RAM, and 500GB Hard Drive and 19 inch clinical grade monitor.
	b. The server and /or ID station must be DMWL (DICOM modality worklist) compliant to access patient and study data from HIS or RIS.
	c. It should provide display of acquired images with greater details of demographics viz. patient/ study listing for easy access
	d. The server must provide full amount of post processing features viz. geometric corrections, window level algorithms, annotation like markers, predefined text, drawing lines and geometrical shapes, multi-scale image processing, measuring distance and angles, shuttering, histograms, zoom, grey scale reversal, edge enhancement, noise reduction, indication of gray scale saturation level, latitude reduction etc.
	e. It should facilitate full fledged DICOM printing and should be able to print multiple formats of patient study.
	f. Should be able to send DICOM images to DICOM workstation or PACS without loss of information
	g. Should be equipped with DICOM CD writer for transferring image
	h. Should be able to store image on external device viz. CD or pen drive etc.
	i. The system should have a facility to indicate over /under exposure in the preview screen.
4	**Dry imager**
	a. The system must have a dry imager without need of any wet chemistry
	b. It must be DICOM 3.0 compatible allowing multiple modalities to be connected at a time
	c. The system must be able to print at least 30 films/ hr of the largest size
	d. The imager must have spatial resolution of 500 dpi minimum
	e. The system must have contrast resolution of 12 bits/ pixel or more. The system should be capable of printing the 8" X 10", 10" X 12", 14" X 17" films.
	f. The imager should support daylight loading of films.

	5. Suitable online UPS back up must be provided for 15 minutes backup for the whole system
	6. The unit should be US FDA or European CE approved.
	7. The necessary trolley/table/furniture must be provided by the bidder to keep workstation and unit.

	BOQ	
SN.	**Item Description**	
1	**Para 1: Cassetts**	
1.1	35 cm X 43 cm or 14"X 17"	1 No
1.2	24 cm X 30 cm or 10" X 12"	1 No
1.3	18 cm X 24 cm or 8"X 10"	1 No
1.4	14"X 17" film	200 No
1.5	10"X 12" film	200 No
1.6	8"X 10" film	200 No
2	**Para 2 & 3: CR Unit (Reader with workstation)**	1 No
3	**Para 4:** Dry Imager	1 No
4	**Para 5:** Online UPS	1 No
5	**Para 7:** Furniture	1 Lump sum

Item Sl. No. 16

Mammography (Analog /Conventional)

	Computed Radiography must be manufactured by a reputed brand or manufacturer adhering to following specifications. CR system should broadly comprise of following modules/ components:
a)	Image recording system (cassettes & reading plates)
b)	Image reading system (reader/ digitizer).
c)	Identification & CR processing workstation.
d)	Dry imager.
1	**Image recording system (cassettes & imaging plates).**
	The following sizes of radiography cassettes along with image plates should be supported by the unit. (unit rate of the film should be quoted by the bidder and it should be valid during the warranty period,200 nos of each film-size should be supplied with the unit as per BOQ)
	a. 35 cm X 43 cm or 14"X 17"
	b. 24 cm X 30 cm or 10" X 12"
	c. 18 cm X 24 cm or 8"X 10"
2	**Image reader (CR reader/ digitizer) Single loader**
	a. The CR reader / digitizer should be able to process 30 image plates/hr or more of the largest size cassette
	b. CR reader / digitizer must be able to handle phosphor image plates. CR reader capable of handling latest Dual side /needle/structured/ columnar image plates will be preferred.
	c. It should have a resolution of 6 pixels/mm (minimum) for standard resolution cassettes & 10 pixel/mm (minimum) for high resolution cassette reading.

	d. Digitiser must have a resolution of 10 pixel/mm (minimum).
	e. It should have two trays
3	**Identification Station & processing server**
	a. The main console must have 1GB or more RAM, and 500GB Hard Drive and 19 inch clinical grade monitor.
	b. The server and /or ID station must be DMWL (DICOM modality worklist) compliant to access patient and study data from HIS or RIS.
	c. It should provide display of acquired images with greater details of demographics viz. patient/ study listing for easy access
	d. The server must provide full amount of post processing features viz. geometric corrections, window level algorithms, annotation like markers, predefined text, drawing lines and geometrical shapes, multi-scale image processing, measuring distance and angles, shuttering, histograms, zoom, grey scale reversal, edge enhancement, noise reduction, indication of gray scale saturation level, latitude reduction etc.
	e. It should facilitate full fledged DICOM printing and should be able to print multiple formats of patient study.
	f. Should be able to send DICOM images to DICOM workstation or PACS without loss of information
	g. Should be equipped with DICOM CD writer for transferring image
	h. Should be able to store image on external device viz. CD or pen drive etc.
	i. The system should have a facility to indicate over /under exposure in the preview screen.
4	**Dry imager**
	a. The system must have a dry imager without need of any wet chemistry
	b. It must be DICOM 3.0 compatible allowing multiple modalities to be connected at a time
	c. The system must be able to print at least 30 films/ hr of the largest size
	d. The imager must have spatial resolution of 500 dpi minimum
	e. The system must have contrast resolution of 12 bits/ pixel or more. The system should be capable of printing the 8" X 10", 10" X 12", 14" X 17" films.
	f. The imager should support daylight loading of films.
	5. Suitable online UPS back up must be provided for 15 minutes backup for the whole system
	6. The unit should be US FDA or European CE approved.
	7. The necessary trolley/table/furniture must be provided by the bidder to keep workstation and unit.

Sl No	**BOQ**	**QTY**
1	MAMMOGRAPHY SYSTEM , as specified	1 no.
2	Lead Aprons with 0.25 mm lead equivalence	4 Nos.
3	Suitable Radiation shield	1 No.
4	LED X ray illuminator- 3 film – 2 Nos.	2 Nos.

5	Rotating stool for patient – 1 Nos.	1 No.
6	Suitable online UPS with at least 30 min back up.	1 no.
7	Turnkey requirement:	LS

Item Sl. No. 17
Mobile X-ray machine

	High Frequency mobile X ray machine with output 100 mA or more. The mobile x ray equipment is required to perform x ray studies in emergency and trauma centre and bedside in wards and ICU. The unit should be compact, lightweight and easily transportable. It should have following specifications. The system should have been quality certified.
	The unit should be operative on mains voltage from single phase 180-260 V AC with automatic main compensation.
1	**Generator:**
i	Power : 4 kW or more
ii	kVp. Range : 40 – 100 kVp or more
iii	m AS Range : 250 mAs or more.
iv	m A range : 10 mA to 100 mA or more
v	Exposure Time: 10 ms to 5 sec.
2	**The digital display:**
	kV and mAs parameters, System ON, System OFF, status and fault messages on the kV and mAs area
3	**X RAY Tube:**
	Stationary/Rotating Anode tube with focal spot 1.8 X 1.8 mm or better.
4	**Tube stand:**
	The tube stand should be fully counterbalanced with rotation in all directions.
5	**Collimator:**
	Collimator rotation should be +90 to -90 degrees with auto shut off lamp facility.
6	**Cassette storage box:**
	The equipment should have cassette storage box for minimum of 4 cassettes.
7	**Ergonomics:**
	The unit should have small foot print. The height of the column stand should not be more than 150 cm for easy transportation in the lift etc. and areas with small height doors. The equipment should be light weight, not more than 130 kg.
8	**Certification:**
i	System be AERB type approved.
ii	The Bidder should assist the institution for e-LORA registration formalities.
iii	Regular QA according to AERB norms will be responsibility of bidder during warranty and CMC period.
iv	Light Weight Lead Apron -2 Nos (Equivalent to .25 mm lead)

	BOQ	
Sl.No	**Item Description**	**Quantity**
i	Mobile X-Ray Unit	1 Nos.
ii	Light Weight Lead Apron	2 Nos.

Item Sl. No. 18

MRI 1.5 T

	1.5 Tesla MRI System with state-of-the-art latest features commercially available at the time of supply should be quoted. The bidder should submit an undertaking that the system and any part thereof is not recycled/refurbished. The system should be European CE with four digit notified body number/ US FDA approved and certificate to be submitted. The system should be based on user friendly platform, reliable and capable of providing excellent performance for clinical imaging and research. The detailed specification that follows shall be understood to be minimum requirement.
1	**MAGNET**
	a. Whole Body 1.5 Tesla Magnetic Resonance Imaging System optimized for higher performance in Whole Body and Vascular examinations with superconducting magnet, high performance gradients and digital Radio Frequency System.
	b. 1.5T active shielded super conductive magnet should be short bore and non-claustrophobic.
	c. It should have at least 70 cm patient bore with flared opening.
	e. Homogeneity of magnet should be less than 3.5 ppm over 45cm DSV
	f. The magnet should be well ventilated and illuminated with built-in 2 way intercom for communication with patient.
g	Cryogen vessel to be of Helium only with appropriate super thermal shielding and refrigeration facility for minimum Helium boil-off, Specify the Helium tank capacity and boil-off rate.
h	Helium level monitoring equipment in the magnet and facility for appropriate quick shutdown of the magnet in the event of emergency
i	Helium refill time should not be not less than 2years. Please mention the helium refill time.
2	**SHIM SYSTEM**
	a. High performance, highly stable shim system with global and localized automated shimming for high homogeneity magnetic field for imaging and spectroscopy.
	b. Auto shim should be available to shim the magnet with patient in position
3	**GRADIENT SYSTEM**
	a. Actively shielded Gradient system
	b. The gradient should be actively shielded with each axis having independently a slew rate of at least 200 T/m/s and a peak amplitude of 44mT/m.
	c. The system should have efficient and adequate Eddy current compensation
	d. Effective cooling system for gradient coil and power supply
4	**RF SYSTEM**
	a. A fully digital RF system capable of transmitting power of at least 15kw.
	b. It should also have at least 32 independent RF receiver channels with each having bandwidth of 1 MHz or more along with necessary hardware to support quadrature ICP array/Matrix coils.
	c. It should support Parallel acquisition techniques with a factor of up to 2 in 2D.
	d. Should allow remote selection of coils and / or coil elements.
5	**Patient Table**

a	The table should be fully motorized, MRI Compatible computer controlled table movement in vertical and horizontal directions Position accuracy should be +/- 1.0 C mm or better.
b	Should be able to take at least 140 kg load.
c	The table should have facility for manual traction in case of emergency.
d	Cushions and other patient comfort accessories. All parts of the table should be protected from liquid spill
e	The table should have patient hand-held alarm system.
f	The table should deliver the protocols for automatic bolus chasing in peripheral angio with automatic table movement.
6	**COMPUTER SYSTEM /IMAGE PROCESSOR / OPERATOR CONSOLE**
	a. The main Host computer should have a 19 inches or more high resolution LCD TFT color monitor with minimum 2MP matrix display
	b. The system should have image storage capacity of at least 2,00,000 images in 256x256 matrix.
	c. The main console should have facility for music system for patient in the magnet room. The system should have DVD / CD / Flash drive archiving facility. Supply 500 DVD along with the system.
	d. Two way intercom system for patient communication.
	e. MRI System should be enabled and networked to RIS/HIS/PACS
7	**MEASUREMENT SYSTEM**
	a. Largest Field of View should be at least 45 cm in all three axis.
	b. The measurement matrix should be from 128x128 to 1024x1024.
	c. Minimum 2D slice thickness mm should be equal to or less than 0.5
	d. Minimum 3D slice thickness mm should be equal to or less than 0.1
8	**COIL SYSTEM**
a	The main body coil integrated to the magnet must be Quadrature / CP. In addition to this following coils should be quoted.
b	Multichannel Head coils with at least 15 channel for high resolution brain imaging.
c	Neuro-vascular Coil with 16 or more channels or Head / Neck Coil , capable of high resolution neuro-vascular imaging
d	Neck phased array coil 8 channel or more.
e	Spine Array/Matrix Coils with atleast 32 channels for thoracic and lumbar spine imaging.
f	Body Array/Matrix coil with 18 – 32 channels with at least 38 cm Z- axis coverage for imaging of abdomen, angiograms and heart.
g	Dedicated Cardiac Coil / equivalent with atleast 18 channels.
h	Suitable coil with atleast 32 channels for peripheral angiography application
i	Bilateral Breast Coil with at least 8 channels.
j	SHOULDER coils – Multi channel (minimum 8 channel) flex loop or rigid type -1 no. Large FOV & 1 no. SMALL FOV
k	Dedicated Knee Coil with atleast 15 channels.
l	High resolution foot/ ankle coil – 8 channels or more

	The system should continuously monitor the RF coils used during scanning to detect failure modes. RF coils should not require either set up time or coil tuning; Multi coil connection for up to 2 or more coils simultaneous scanning without patient repositioning i.e. like 4GTIM/ GEM/D stream coil combination should be quoted as standard.
	Suitable Coil Storage Cart should be supplied for keeping the all supplied coils.
9	**APPLICATION SEQUENCES**
	a. The system should have basic sequences package with Spin Echo, InversionRecovery, Turbo Spin Echo with high turbo factor of 256 or more, Gradient Echo with ETL of 255 or more, FLAIR.
	b. Single slice, multiple single slice, multiple slice, multiple stacks, radial stacks and 3D acquisitions for all applications.
	c. Single and Multi shot EPI imaging techniques with ETL factor of 255 or more
	d. Fat suppression for high quality images both STIR and SPIR.
	e. The system should acquire motion artifact free images in T2 studies of brain in restless patients (Propeller, Multivane, Blade etc)
	f. Dynamic study for pre and post contrast scans and time intensity studies
	g. MR angio Imaging: Should have 2D/3D TOF, 2D/3D PC , MTS and TONE,ceMRA, Facilities for Accelerated time resolved vascular imaging with applications like Treats/Tracks/Tricks sequences.
	h. Fat and water excitation package. Diffusion Weighted Imaging, with at least b value of 5000 or more.
	i. Bolus chasing with automatic and manual triggering from fluro mode to 3D acquisition mode with moving table facility.
	j. Non contrast enhanced peripheral angiography for arterial flow with Native/Trance/Inhance sequences
	k. Whole body screening imaging studies for metastasis
	l. High resolution Abdominal and Liver imaging in breathold and free breathing modes with respirator triggered volume acquisitions
	m. The system should have basic and advanced MRCP packages including free breathing and 3D techniques.
	n. The system should have facility for flow quantification of CSF, vessel flow and hepatobiliary system.
	o. The system should have the Hydrogen, Single Voxel spectroscopy, Multivoxel,Multislice & Multiangle 2D, 3D Spectroscopy and Chemical shift imaging in 2D/3D. The complete processing/post-processing software including color metabolite maps should be available on main console. Complete prostate spectroscopy hardware and applications should be provided.
	p. Advanced Cardiac Applications: VCG gating, Morphology/wall motion; Cine perfusion imaging; Myocardial viability imaging; Arrhythmia rejection techniques, Advanced Cardiac Ventricular Measurement Analysis; Cine Cardiac Tagging Techniques; Coronary artery techniques; real time interactive imaging, 2D/3D fast field echo/balanced/steady state techniques and evaluation package on workstation
	q. Advanced Breast imaging Package.
	r. Perfusion imaging of brain.
	s. Susceptibility weighted imaging (i.e.SWI) /FMRI / Venous BOLD imaging.

	t. Multi Direction DWl and DTI with minimum of 32 directions(Complete package including quantification and tractography software).
	u. High resolution imaging for inner ear
8	**Workstation**
1	One server with 2 node with concurrent licenses to be supplied with the system. **Licenses:** Concurrent license here implies the capability to process all the loaded software to be accessible and usable on all the systems simultaneously without any processing delay. The software should also include a reputed antivirus software of a perpetual type or renewed by the supplier. **Hardware: Node:** The vendor has to supply the hardware in the form of CPU and Medical grade monitor 18" or more of 2MP resolution. **Hardware Server:** The server (single/dual configuration) should have image storage capacity of at least 3 Tera bytes, minimum 20,000 concurrent slice processing power and at least 64GB RAM. The server hardware to be included with 21" or more TFT/LCD monitor with dual processor. DICOM 3.0 compatibility and interfacing with other modalities must be possible. The workstation shall have the resolution, software and all functionality of a stand-alone workstation
2	All necessary software including post-processing software for all offered applications including evaluation for fMRI, perfusion (T1 perfusion and T2* perfusion), diffusion, DTI with fibre tracking, cardiac evaluation, and other associated post processing like MIP, MPR, surface reconstruction should be provided.
	The workstation should have the following features: a. Cardiac perfusion analysis, quantitative T1 mapping & Processing of Real Time BOLD imaging data, with colour metabolite mapping, quantification of the CSF flow data.
	b. Image Fusion software should be provided for Inter-modality and Intra-modality fusion.
	c. Software for vascular properties like IAUC, KEP as standard.
	d. DSA images should be viewable in Subtraction mode.
	e. Necessary and adequate hardware and software for sending and receiving the patient data {text + images}. Printing of films should be possible from both main console and workstation.
	f. Workstation should also be able to function independent of the main console. Post processing of the MRS data including for CSI with paramagnetic metabolic mapping
	g. Capability to calculate colour display of real MTT, real CBV, and real CBF
	h. Compatibility with data from other MRI system for post processing.
	i. Output in the form of jpeg, avi / equivalent formats should be possible.
	Cardiac Package: The workstation should have display of Cardiac cine images in movie mode with rapid avi creation and should have comprehensive cardiac post processing software including for coronary MRA with regular free updates in future. Calculation of ventricular area and volume, stroke volume, ejection fraction and relative ejection fraction, Time volume diagram generation, filling rates and myocardial wall motion, Graphic display of output calculation of flow and velocity parameter with colour coded display of velocity parameters. Diffusion tensor Imaging, 3D myocardial tagging should be possible.

11	**SAFETY FEATURES**
	The System should have following safety features
	a. The magnet system should include an Emergency Ramp Down unit (ERDU) for fast reduction of the magnetic field with Ramp Down time below 3 minutes
	b. The magnet should have quench bands that contain the fringe fields to a specified value in the event of a magnet quench
	c. Real time SAR calculation should be performed by software to ensure that RF power levels comply with regulatory guidelines and are displayed on each image
	d. The system shall have manual override of the motor drive for quick removal of the patients from the magnet bore
	e. Temperature sensor (built in) for magnet refrigeration efficiency must be provided.
	f. A CCTV system with colour LCD display to observe the patient should be provided:
12	**DOCUMENTATION**
	a. DICOM compatible Dry Chemistry laser camera with integrated processor for filming from main console & workstation.
	b. Printing on films of 14" x 17",11" x 14" and 10" x 8" sizes in a resolution of 500 or more dpi. It should be possible to connect other imaging modalities to the printer. 500 no.s of each-size films to be provided.
13	**UPS**
	a. The system should be provided with UPS system for the complete system with at least 30 minute back up.
14	**SUITABLE RF ENCLOSURE**
	RF Cabin: The system should be supplied with the imported RF cabin with RF room shielding, RF Door, RF window, and interiors for the same should be carried out suitably.
16	**ACCESSORIES**
	1. Storage box for all coils
	2. MR Compatible Dual Syringe Pressure injector : Independent dual-Syringe Pressure injector with following Features; Non-ferrous, automatic syringe size detection, performs single and dual phase contrast injections, provides Saline flush delivery and allows timed contrast delivery Must be compatible with 10, 15, 20 & 30m1 pre-filled contrast syringes and 50 ml syringes for both saline & contrast (20 Nos of 50 ml Syringes with 100 nos. of tube connectors should be provided) Must be able to observe progress of injection and view injection result
	3. MRI Compatible ECG leads (with 100 no.s Disposable Electrodes for MRI Image gating)
	4. MRI Compatible Anaesthesia Machine with integrated Ventilator, 2 vaporiser, circle absorber
	a) Capable of ventilating adult, pediatric and neonates.
	b) Soft ware for ventilation should support Volume control, Pressure control and Pressure support modes.
	c) Should have oxygen, nitrous oxide and air flow meters
	d) Isoflurane and sevoflurane vaporisers
	e) All safety alarms

	f) All consumables required for Adult-10Set, Pediatrics-3Set, Neonates -02Set
	5. One MRI compatible Multiparmeter Vital Signs Patient Monitor in MRI Room and One Slave monitor in console room with following modules provision to monitor the following
	a. Heart rate
	b. ECG
	c. NIBP – Size of Cuffs (adult & pediatric neonatal)
	d. Respiration (Capnograph)
	e. Two IBP – Pressure transducer with the MRI compatible stand.
	f. Oxygen saturation – Pulse oximeter with adult, pediatric probe, and neonatal probes - 2 sets (with the spare probes), Should have plethysmograph perfusion factor.
	g. ETCO2 and ETAA (end tidal anesthetic agents)
	h. Temperature (adult and pediatric)
	i) All consumables required for Adult-10Set, Pediatrics-3Set, Neonates -02Set
	7. MRI compatible syringe pump – 2 Nos.
	8. Arrangement of Gas lines in recovery room and magnet room – MRI compatible high pressure gas outlet for :
	a. Oxygen
	b. Air
	c. Nitrous Oxide with MRI compatible indexed system.
	d. Vacuum suction
	9. MRI Compatible 1 set of Laryngoscope :4 sizes blades- Neonatal, paediatrics, adult, extra
	10. MRI compatible Magill forceps : Adult & paediatric size- Two each.
	11. Stylet for endotracheal tube : Adult, paediatric size- Three each
	12. MRI compatible Clamps 2 Nos : Either towel clip or artery forceps.
	13. MRI Compatible two IV stands.
	14. Two non-magnetic patient transfer trolleys should be provided
	15. Two Anaesthesia bed/trolley for recovery room
	18. Metal detectors:, two no.s hand held. & One no. Metal detector: Walk-through
	19. Phantoms to be provided for regular QA studies.
	20. Complete manuals and other necessary documentation‘s should be provided.
17	**TRAINING**
	Qualified personnel nominated by the deptt, should be given application training by the vendor at their cost at site.
18	**STANDARD AND SAFETY**
	Should be FDA or European CE approved product.
22	**TURN KEY INSTALLATION**
	a. The system should be installed and handed over in working condition with all necessary electrical, air conditioning and civil work undertaken by the vendor in consultation with the user dept.
	b. All necessary interconnecting interfaces, cable, modules, and other hardware and software to fully integrate the system for full operational status.

	The Turnkey Scope of Work - MRI The Supplier should inspect the proposed site offered by the Consignee in which the MRI system has to be installed and they are required to submit the plan for the complete MRI Scan Centre on a turnkey basis. Prospective bidders are advised to acquaint themselves with access to site , location of work , local labour problems and any other matter relating to availability and carriage of construction materials. The scope of work includes complete Civil work, Electrical, Plumbing, Furnishing, Air-conditioning, Fire fighting and miscellaneous works for the construction of MRI Scan Centre. While preparing the plan, the following aspects have to be addressed.
	a. The MRI should be sited in such a manner; in order to minimise the effect of fringe magnetic field on surrounding areas. The areas lying within 5 Gauss line should be clearly demarcated and cordoned off with adequate warning.
	b. Care should be taken to provide easy negotiation of the patient stretchers/ trolleys through corridors and doors.
	c. RF shielding for doors, walls, glass viewer etc.
	d. Furniture like desk, chairs, shelves etc.
	e. Patient stretcher and other furniture/ accessory to make the scan centre functional.
	The cost of Turnkey for the area of 1500sq.ft and Air-conditioning of Tonnage 20 TR will be considered for Ranking / Evaluation purpose.
	Moreover Bidders will have to quote the Unit Rates of the following components of turnkey work and detailed BOQ should be mentioned.
	a. Civil works (in units like sq.m / cubic m , kg etc)
	b. Electrical work (in unit s like per metre price , unit price for panel , isolation etc)
	c. Public health (plumbing and sanitary fittings like per metre of pipe, number of points etc.)
	d. Air Conditioning (HVAC)-rate of tonnage, type of false ceiling and sq.m rate etc
	e. Interior Furnishing & Furniture
	f. Miscellaneous
	Scope of work for turnkey MRI unit works:- The supplier should inspect the proposed site and submit all the detailed structural and architectural drawings and BOQ for the proposed MRI Scan Centres along with technical bid of the tender. The MRI SCAN CENTRE shall consist of the following rooms:
	a. MRI Room
	b. Console room
	c. Equipment room
	d. Patient preparation room
	f. Patient waiting area
	g. Radiologist room
	The actual area of turnkey works done will be considered for payment, based on the unit rates and site measurements
	Civil work Any ab initio new construction or demolition of existing structure/walls etc and reconstruction is unambiguously included in the turnkey scope of work. This includes, but is not limited to expanding the area of MRI gantry room so as to make it

	compliant for installation of a 3T strength magnet.
	a) Civil construction work including construction of brick wall, plastering, flooring as per the approved plan and equipment layout plan.
	b) Concrete bed at MRI equipment area.
	c) Platform for unloading and shifting the MRI should be provided if necessary.
	d) Platform for Chiller unit would be provided. Fencing and weather protection facility should be provided for the Chiller unit.
	e) Cable tray, trench & channel – necessary trenches, cable tray and channels at required location would be provided.
	f) All the construction work to be done as per the final plan approved by the purchaser.
	g) Active and passive room shielding for magnetic, fringe field should be provided as per the requirement of the equipment.
	h) The entire complex will be made rodent/pest proof.
	a) Flooring Providing and laying approved quality , colour, design and shade fully homogeneous 600 x 600 mm(thickness to be specified by the manufacturer) vitrified tile flooring (Marbonite or Granamite, confirming to IS code 15622 with water absorption less than 0.08%) flooring in pattern as detailed in drawing or as directed by the EIC and grouted with matching colour approved quality readymade grout, curing, cleaning etc to required line level etc. all complete at all leads, lifts and heights to the entire satisfaction of the EIC. Providing and fixing 2-3mm thick POP protection over polythene covering sheet to flooring areas till handed over and cleaning, etc all complete as per drawings & specification and as directed by EIC with 100mm tile skirting to match in MRI room , console room , equipment room , patient preparation room, reporting room , patient waiting area and radiologist room. Note: Mode of measurement (Finished surface area of the tiles shall be measured and paid. Rate shall be inclusive of providing and laying levelling course, PVC spacers, providing and applying epoxy grout and no additional payment shall be made for wastages).
	50 mm thick cement concrete flooring at all heights and locations including scaffolding , preparing the surfaces , neat cement finished to correct line or as required to receive architectural finish , level and plumb , curing wherever required complete as per requirements and drawings , with Vinyl flooring in MRI equipment / UPS room.
b)	**Painting**
	Two coats Plastic Emulsion Paint over 2 coats of wall putty including primer in patient preparation area, Lobby area, console room, MRI equipment room etc. Pre laminated particleboard wall panelling in MRI examination room.
c)	**False Ceiling**
	Acoustical tile for ceiling with light weight insulating material of high quality supported on grid or finished seamless with support above ceiling. Finished with white paint or powder coated with white paint, if metallic. Ceiling height to suit the equipment mount and clearances.

d)	**Plumbing work**
	I. All water pipes and fittings shall be of high density polythene of approved and standard make. The gratings shall be brass chrome plated. All plumbing accessories should be of standard make.
	II. Copper pipes to be used for plumbing the Chiller to the MRI
	Note:
1	Tenderers are advised to visit the site of work to acquaint themselves about the levels of sub soil water, drainage facility for dewatering, accessibility to site etc. and quote the rates accordingly.
2	All sanitary wares & CP brass fitting & fixtures shall be of first quality with ISI mark (unless otherwise specified) and shall be of the make as per the latest approved list of materials as per list of approved make/model, if any. They shall be got approved by the Engineer-in-charge before incorporating in the work
3	All the items include testing after completion of the work. Concealed/underground GI pipe line is to be wrapped with hessian cloth and painted with two coats of anticorrosive paint. Disposing off: The surplus excavated materials by mechanical transport lead up to 2KM to the nearby dumping pits/dumping areas within institute campus identified by Engineer in charge, including all lifts, loading, unloading, stacking etc. complete as per specifications & as directed by the EIC.
e)	**Electric work**
	The supplier shall be required to specify the total load requirements for the MRI scan centre including the load of air conditioning , room lighting and for the accessories if any. The supply line will be provided by the Institute up to one point within the MRI Scan centre area. The distribution panel shall be provided by the vendor. Few lights in each room shall be connected to the UPS to provide emergency lighting. The electrical work shall include the following
	a. Wiring – All interior electrical wiring- with main distribution panel board, necessary MCBs, DB, joint box, switch box etc. the wires shall be of copper of different capacity as per the load and should be renowned make as listed below.
	b. Switches light and power points should be of modular type and of standard make as listed below.
	c. General lights – LED light fittings with 500 Lux Illumination
	d. MRI compatible lights for MRI examination room. The bulbs used within the RF cage should be easy replaceable and locally available.
	e. All wires used must be FRLS (Fire Retardant with low smoke) type only
f)	**AIR CONDITIONING:**
	i. Total capacity of the Air-Conditioning (duct-able + split) for the entire MRI scan centre area should be at least 20 TR.(incl. standby airconditioning)
	ii. Ductable package air conditioners and split AC units may be used according to room requirement and suitability. Humidity control should be effective to eliminate moisture condensation on equipment surface. . The Air conditioning should be designed with standby provision to function 24 hours a day.a)
	iii. The outdoor units of AC should have grill coverings to prevent theft and damage.
	iv. Ventilation is required in toilet.
g)	**Environment specifications:**

	Relative Humidity range: To be maintained between 60% and 80% in all areas except equipment room which shall be as per requirement of the equipment.
	ii. Temperature ranges: 22 ± 2° C in all areas except equipment room which shall be as per requirement of the equipment.
	iii. Air conditioning load: The heat load calculations and maintaining the desired temperature and humidity shall be the responsibility of the bidder
h)	**Furniture:**
	i. Revolving chairs height adjustable, medium-back with hand-rest . – 6 NO.S
	ii. Chairs for patient waiting area – Three seater (chrome plated). - 10 NO.S
	iii. Cupboard with laminate door shutters for storage of spare parts and accessories and records as per requirement. – 3 NO.S
	iv. Drug trolleys for patient preparation area.- 1 NO.
	v. Patient trolley with rubber foam mattress to be kept in the patient preparation room.
	vi. Tables for Workstation nodes- 2 NO.S
	vii. Changing rooms should have change lockers and dressing table.
	viii. Dustbins (plastic with lid) : 10 no.s.
	ix. All the rooms in the complex will be signposted. Sun film & ventilation blinds / curtain will be put up in all windows.
	a. All furniture items should be of standard make as mentioned in the table below.
i)	**Miscellaneous:**
	1 Reporting room should have LED X-ray Film viewer with adjustable brightness; capable of holding 3 films of 14”x17” size. – 2 no.s
	2 Cabling of Network (LAN) connectivity for camera system, console system, workstation and computers etc
	3 Broadband connection: for REMOTE SERVICE of MRI system.
	4 Dry chemical power type fire extinguisher of 5kgs capacity, with initial filling in brand new cylinder with power coated finish, fitted with Gun metal union, high pressure CO2 gas cartridge, discharge hose, wall mounting bracket etc. complete, confirming t IS:2171 of approved make & complete as directed by EIC.
	LIST OF ITEMS AND SUGGESTED MANUFACTURERS.
SL NO	**ITEMS** **PREFERRED MAKES**
A	**FLOORING VITRIFIED TILES** -Somany, Kajaria , H&R Johnson, RAK india
B	**PAINT** - Dulux, Asian Paints , Nerolac
C	**PLUMBING** - Kohler, Jaguar , Grohe , Roca
D	**SANITARY ITEMS** - CERA, Hindware, Parryware
E	**ELECTRICAL**
1	**CABLES** - Finolex, Havells ,V-Guard
2	**SWITCHES** - Legrand, L&T, Crabtree , Roma
3	**DISTRIBUTION BOX , MCB** - Legrand, L&T, Siemens, Havels
4	**LIGHT FITTINGS** - Philips / Crompton / Wipro/syska
F	**AIR CONDINTIONING** - Daikin, Hitachi, Blue Star, Voltas,
G	**FURNITURE** - Hermen Miller , Godrej , Featherlite,Geeken

	BOQ	
S.NO	**ITEM**	**QTY**
	Whole body 1.5 Tesla Magnetic Resonance Imaging system - 32 channels RF system ; as specified	1 NO
a	System Body Coil - Quadrature	1 NO
b	Multichannel Head coils with at least 15 channel	1 NO
c	Neuro-vascular Coil with 16 or more channels OR Head / Neck neuro-vascular imaging Coil	1 NO
d	Neck phased array coil - 8 channel or above	1 NO
e	Spine Array/Matrix Coils with atleast 32 channels	1 NO
f	Body Array/Matrix coil with 18 – 32 channels	1 NO
g	Dedicated Cardiac Coil / equivalent with atleast 18 channels	1 NO
h	Suitable coil with atleast 32 channels for peripheral angiography	1 NO
i	Bilateral Breast Coil with at least 8 channels	1 NO
j	SHOULDER coil – Multi channel (minimum 8 channel) flex loop or rigid type - Large FOV	1 NO
k	SHOULDER coil – Multi channel (minimum 8 channel) flex loop or rigid type - SMALL FOV	1 NO
l	Dedicated Knee Coil with atleast 12 channels.	1 NO
o	High resolution foot / ankle coil – minimum 8 channel	1 NO
q	Coil Storage Cart	1 NO
	Server : Thin-client server as per specification	1 NO
	Licenses: Concurrent licenses for Server.	2 NO.s
	Node Hardware: CPU and Medical grade monitor (18” or more; 2 megapixels or more resolution).	2 NO.s
	Antivirus software of reputed make (perpetual type or license to be renewed by the supplier).	1 NO
	Cardiac Package - License	1 NO
	Voice Recognition Software	2 NO.s
	ACCESSORIES	
1	Storage box for all coils	1 NO
2	Dual Syringe Pressure injector	1 NO
3	Dual Syringe Pressure injector syringes	20 No.s
4	Dual Syringe Pressure injector syringe connector	100 No.s
5	MRI Compatible ECG leads	100
6	MRI Compatible Anaesthesia Machine with integrated Ventilator, 2 vaporiser, circle absorber	1 NO
7	MRI Compatible Multiparmeter Vital Signs Patient Monitor & Slave monitor	1 NO
8	MRI compatible syringe pump	3 NO.s
9	MRI Compatible sets of Laryngoscope : 4 sizes blades- Neonatal, paediatrics, adult, extra large	1 NO.s
10	MRI compatible Magill forceps : Adult size-	2 NO.s
11	MRI compatible Magill forceps : Paediatric size-	2 NO.s
12	Stylet for endotracheal tube : Adult size	3 NO.s
13	Stylet for endotracheal tube : Paediatric size	3 NO.s

14	MRI compatible Clamps : Either towel clip or artery forceps.	2 NO.s
15	MRI Compatible IV stands	2 NO.s
16	MRI compatible suction apparatus	2 NO.s
17	Non-magnetic patient transfer trolleys	2 NO.s
18	Metal detectors : Handheld	2 NO.s
19	Metal detector: Walk-through	1 NO
20	Phantoms to be provided for regular QA studies.	as required
	Components of Turnkey Work:	
1	Civil works	1500 ft^2
2	Electrical work	1500 ft^2
3	Public health (plumbing and sanitary fittings).	1500 ft^2
4	Air Conditioning	20 TR
5	Interior Furnishing & Furniture	1500 ft^2
6	Miscellaneous	lumpsum
	Furniture:	
1	Revolving chairs height adjustable, medium-back with hand-rest	6 NO.S
2	Chairs for patient waiting area – Three seater (chrome plated). -	10 NO.S
3	Cupboard with laminate door shutters	3 NO.S
4	Drug trolleys for patient preparation area.	1 NO
5	Patient trolley with rubber foam mattress	2 NO.s
6	Tables for Workstation nodes.	2 NO.S
7	Changing rooms (with change lockers and dressing table).	1 set
8	Dustbins (plastic with lid) to be provided as required.	10 NO.S
9	Room Signage	as required
10	Venetian Blinds	as required
	Miscellaneous:	
1	LED X-ray Film viewer with adjustable brightness; capable of holding 3 films of 14”x17” size.	2 NO.s
2	Cabling of Network (LAN) connectivity for camera system, console system, workstation and computers etc	as required
3	Dry chemical powder type fire extinguisher of 5kgs capacity	3 NO.s

Item Sl. No. 19
MRI 3 T

	Whole body 3.0 Tesla Magnetic Resonance Imaging system optimized for higher performance in cardiac and neurological examinations with short superconducting magnet, high performance gradients and digital Radio frequency system. The system should have 32 channels RF system. The system should be totally new and should not contain refurbished or having recycled items.
1	**MAGNET**
a	3.0T active shielded super conductive magnet with best homogeneity. Field stability over time should be < or equal to 0.2 ppm/hr
b	Length should be short with at least 70cm bore diameter.

c	It should have facilities of better illumination ventilation and designed to avoid patient claustrophobia.
d	The homogeneity of the magnet should be mentioned in relation to 10, 20, 30, 40 cm DSV. Automatic shimming in phantom should be better than 3.5ppm in 40 DSV.
e	Please specify upto what FOV gradient linearity is maintained.
f	Magnet should be shielded from external interferences. Smaller fringe field preferred 5 Gauss and 10 Gauss Line in X, Y, Z axis specify yours Quote value for 5 gauss and 10 gauss line. The 5 Gauss line will have to be marked.
g	Cryogen vessel to be of Helium only with appropriate super thermal shielding and refrigeration facility for minimum Helium boil-off, Specify the Helium tank capacity and boil-off rate.
h	Helium level monitoring equipment in the magnet and facility for appropriate quick shutdown of the magnet in the event of emergency
i	Helium refill time should not be not less than 2years. Please mention the helium refill time.
j	Noise level inside the examination room should be minimum as possible. Specify db level
k	Physiological signal display on Gantry
l	Built - in 2 way Intercom facility to communicate with patient is required
m	Emergency helium release button should be provided at least in two places [inside MR examination room and console room]
2	**Shim system**
a	High performance and highly stable shim system with global and localized manual and auto-shimming for high homogeneity magnetic field for imaging. Specify time for shimming. Quote the number of shim coil used
b	Off-centre shimming should be possible.
c	Auto shim (global and voxel shim) should take minimum time to shim the magnet with patient in position.
3	**Gradient system**
a	Activity shielded Gradient System with strength of at least 44 mT/m with slew rate of 200T/m/sec. The rise time should not be more than 250 micro second to reach the maximum gradient strength.
b	These true slew rates should be available in each axis independently, for overall better duty cycle performance of the gradient.
c	The duty cycle should be 100 percent.
d	The Gradient system should have provision for eddy current compensation. Mention level of Eddy current compensation in %
e	Field of View should be at least 45 cm in all three axes.
f	Minimum TE & TR in 2D/3D should be specified in relation to the sequences.
g	Minimum Slice Thickness in 2D & 3D should be specified in relation to the sequences.
h	Echo Train length in both Spin echo and Gradient Echo should be at least 255 or more.
i	The measurement matrix should be from 128x128 to 1024x1024 in both 2D and 3D imaging as well.
4	**RF system**

a	A fully digital RF system capable of transmitting power of at least 25 KW or more , Dual RF power amplifiers. System should be capable of Multi Transmit with Multi amplifier driving / True shape for better B1 homogeneity
b	It should also have at least minimum of 32 independent ADC hardware RF channels with each having bandwidth of 1MHz or more along with necessary hardware to support Quadrature/CP array coils.
c	It should support Parallel acquisition techniques like ASSET/SENSE/iPAT with a factor of at least 4.
5	**RF Coils**
	The system body Coil integrated to the magnet must be quadrature /CP. In addition to this coil, following Coils (preferably be with equal number of elements as the channels) be quoted. RF coils in addition to main body coil (Transmit / Receive or receive coils) auto tune, array or no tune coils. Coils for the following applications should be available with the system. Circular polarized (CP) Array coils should included in the offer. Coil / RF design should support compatibility to coils manufactured by other manufacturers. Please specify the measures taken to prevent dielectric artifacts. (Quadrature design & EPI compatible) in addition to main body coil. All array coils should be compatible with parallel imaging techniques. Please specify the number of channels and elements available for each coil. Please mention the true acceleration factor for each of the array coils.
a	32 channels or more head coil-capable of multi frequency MR spectroscopy (1H).
b	Neck phased array coil 8 channel or more.
c	Neurovascular coil of 16 channels or more
d	Spine phased array coil 32 channels or more
e	Body phased array coils 32 channels of more (single or in combination) at least 45 cm z-axis coverage for imaging of abdomen, with at least 32 channels acquisition for body parts.
f	Suitable Coil / Coil combination for Peripheral Angiography 32 channels or more; with coverage of 80cm or more.
g	Suitable Carotid coil .
h	Breast coil 16 channel or more .
i	Suitable Phased array coil for faster and high resolution Cardiac imaging – 32 channels or more.
j	Shoulder coil – Multi channel (8 channels or more) flex loop or rigid type – 2nos. (One large and one small)
k	High resolution knee coil 8 channels or more; Tx & Rx.
l	High resolution foot/ ankle coil – 8 channels or more
m	Endocavitary Coil - Prostrate Study
5.a	**The supplier should quote coils or their combinations exclusively for each application. The number of coils should be as per the BOQ . It should be mentioned as independent coils and not having overlapping applications.**
6	**Patient Table**
a	The table should be fully motorized, MRI Compatible computer controlled table movement in vertical and horizontal directions Position accuracy should be +/- 1.0 C mm or better.
b	Should be able to take at least 140 kg load.

c	The table should have facility for manual traction in case of emergency.
d	Cushions and other patient comfort accessories. All parts of the table should be protected from liquid spill
e	The table should have patient hand-held alarm system.
f	The table should deliver the protocols for automatic bolus chasing in peripheral angio with automatic table movement.

7	**COMPUTER SYSTEM IMAGE PROCESSOR / OPERATOR CONSOLE**
a	Computer should be latest in the industry, fast and efficient
b	One colour console for acquisition, all calculations, post processing etc Console must have full colour with user define protocols with programmable inter scan delay. Necessary image processor with large RAM for ultra-fast image reconstruction should be provided It should be at least 8 GB RAM.
c	Computational Speed to match the single shot Echo Planar Imaging (EPI). Interactive angiogram, multi-planar three dimensional (3D) reconstruction, surface rendering, dynamic Imaging, vascular Imaging/angiography. Functional imaging, DTI etc. The main host computer should have at least 18-inch or more TFT/LCD type colour monitor.
d	The main console should have facility for music system for the patient in the magnet room.
e	Filming and adequate storage for images and other applications .
f	Total hard disk memory to be sufficient to store at least 250,000 images of 256 x 256 matrix data size.. Systems offering higher' storage will be preferred. The system should have CD/DVD archiving facility on the main console and work station.
g	DVD write/CD Read/Rewrite drive for writing of images, spectra and raw data along with the necessary software for reading the Images and spectra on DVD/CD storing capabilities. Provision for archival of k-space data and raw (unprocessed) images.
h	There should be a provision of retrieval of the reconstruction data (raw files) in an user friendly manner.
i	DICOM interface to hook DICOM dry/laser camera capable of storing printing 1024 x 1024 matrix size images at least in 16 format without loss of digital resolution.
j	The system should be capable to connect to PACS through RIS/HIS at no extra cost. Highest version of DICOM connectivity to be provided.
8	**Workstation**
1	One server with 2 node with concurrent licenses to be supplied with the system. **Licenses:** Concurrent license here implies the capability to process all the loaded software to be accessible and usable on all the systems simultaneously without any processing delay. The software should also include a reputed antivirus software of a perpetual type or renewed by the supplier.**Hardware: Node:** The vendor has to supply the hardware in the form of CPU and Medical grade monitor 18” or more of 2MP resolution.**Hardware Server:** The server (single/dual configuration) should have image storage capacity of at least 3 Tera bytes, minimum 20,000 concurrent slice processing power and at least 64GB RAM. The server hardware to be included with 21" or more TFT/LCD monitor with dual processor. DICOM 3.0 compatibility and interfacing with other modalities must be possible. The workstation shall have the resolution, software and all functionality of a stand-alone workstation

2	All necessary software including post-processing software for all offered applications including evaluation for fMRI, perfusion (ASL, T1 perfusion and T2* perfusion), diffusion, DTI with fibre tracking, cardiac evaluation, and other associated post processing like MIP, MPR, surface reconstruction should be provided.
	The workstation should have the following features: a. Cardiac perfusion analysis, quantitative T1 mapping & Processing of Real Time BOLD imaging data, with colour metabolite mapping, quantification of the CSF flow data.
	b. Image Fusion software should be provided for Inter-modality and Intra-modality fusion.
	c. Software for vascular properties like IAUC, KEP as standard.
	d. DSA images should be viewable in Subtraction mode.
	e. Necessary and adequate hardware and software for sending and receiving the patient data {text + images}. Printing of films should be possible from both main console and workstation.
	f. Workstation should also be able to function independent of the main console. Post processing of the MRS data including for CSI with paramagnetic metabolic mapping
	g. Capability to calculate colour display of real MTT, real CBV, and real CBF
	h. Compatibility with data from other MRI system for post processing.
	i. Output in the form of jpeg, avi / equivalent formats should be possible.
	Cardiac Package: The workstation should have display of Cardiac cine images in movie mode with rapid avi creation and should have comprehensive cardiac post processing software including for coronary MRA with regular free upgrades in future. Calculation of ventricular area and volume, stroke volume, ejection fraction and relative ejection fraction, Time volume diagram generation, filling rates and myocardial wall motion, Graphic display of output calculation of flow and velocity parameter with colour coded display of velocity parameters. Diffusion tensor Imaging, 3D myocardial tagging should be possible.
9	**Data Acquisition**
a	The system should be capable of 2D and 3D acquisitions in conventional, fast & ultra-fast spin echo and gradient echo modes so that real- time online images can be observed if needed.
b	2D multi-slice imaging should be possible in all planes (axial, sagiltal, coronal, oblique arid double oblique).
c	Minimum 512 x 512 matrix acquisition for all applications.
d	Half Fourier or other techniques to reduce scan acquisition time while maintaining adequate SNR
e	3D volume, multiple contiguous slabs, multiple interleaved and multiple overlapping slabs
f	Slice thickness in 2D and partition in 3D to be freely selectable
g	Dynamic acquisition (serial imaging) with capability to initiate scan sequences either from the magnet panel or from the console.
h	Dynamic acquisition number of repeat scans with delay time either identical time interval or selectable.
i	Auto slices positioning from the localizer images.
j	Maximum -off centre positioning both anterior-posterior and lateral direction and should be selectable.

k	Gating: physiological signals like ECG, pulse, respiratory, external signal triggering (interface for triggering input pulse from external source).
l	Simultaneous acquisition, processing and display of image data in 2D multi-slice mode.
m	Selection of voxel from oblique slices should be possible while doing spectroscopy.
n	The application software for image smoothing and edge sharpness etc. for improvement in image resolution should be quoted.
o	Artifact reduction/motion correction techniques/imaging enhancement/image filtering/image subtraction/addition multiplication/division techniques:
p	Flow 1st and 2nd order flow artifact compensation.
q	Presentation slabs: a number of relocatable saturation bands to be placed either inside or outside the region of interest.
r	Magnetization transfer saturation: Off resonance RF pulses to suppress signals from stationary tissue in FOV phase contrast capability in 2D & 3D mode.
s	Breath Hold Acquisition for Cardiac and Abdominal Imaging must be possible.
t	Fat saturation techniques: frequency selective RF pulses to suppress fat signal in the measured image FO. ROI selective (regional) fat suppression should also be given.
u	Magnetization transfer saturation; OFF-resonance RF pulses to suppress signals from stationary issue in FOV.
v	Phase contrast capability in 2D and 3D mode.
w	Image intensity correction.
x	Breath hold acquisition
10	**EPI mode**
	a. Single and multi shot EPI imaging techniques.
	b. Data acquisition in all three standard planes (axial, sagittal coronal) and oblique and double oblique planes
	c. Multi-coil acquisition in order to optimize throughput increase and increased effective FOV. Individual acquisition of every coil should be mentioned.
	d. Higher matrix acquisition capability in single shot EPI, Acquisition time, TR TE and slice thickness should be clearly mentioned and supported by data sheet reference.
	e. BOLD, SWI, T2 Perfusion (with all post processing licences as standard)
	f. Complete Functional MRI of Brain package as standard. It should be a goggle based system.(incl. of patient camera, goggles, headphone and all other related hardware).
	g. Susceptibility-weighted Phase Imaging to differentiate calcification & haemorrhage.
11	**Imaging sequences**
	a. The system should be capable of selecting TR and TEs as per requirement in majority of the pulse sequences.
	b. Spin echo (SE); multi-slice single echo, multislice multi- echo(B echo or more) with minimum TR and TE. SE with symmetrical and asymmetrical echo intervals: MT-SE imaging sequence.
	c. Inversion recovery (IR) including short TI, modified IRSE, FLAIR, DIR (Double Inversion Recovery) MT and FLAIR.
	d. Gradient echo (GE) 3D gradient echo with shortest TR and TE, free choice of flip angle selection while maintaining SNR
	Fast sequences

	a. Fast spin echo in 2D and 3D mode TI, T2 and PD contrast capable of acquiring maximum number of slices with a given TR a minimum TE. echo train should be at least 128 or more in fast spin echo mode.
	b. Half Fourier acquisition capabilities should be available with/ without diffusion gradients and in combination with fast spin echo.
	c. Fast inversion recovery with spin echo.
	d. Fast gradient spin echo, IR multi-slice multi-echo mode with maximum turbo factor Sequences should incorporate RF focusing to acquire ultra fast gradient spin echo.
	e. Fast gradient echo sequence should be provided to acquire images in ultra-fast 2D and 3D mode.
	f. Fat and water suppressed imaging sequences including the sequence which should give 4 contrast (in phase, opposed phase. FAT and Water) images in a single acquisition to be quoted as standard. EPI optimized sequences for T1, T2, PD imaging. perfusion, regular diffusion values {5b, 3 directions), EPI-FLAIR. CPI-IR, IPI-FLAIR diffusion tensor. EP1-MT-FLAIR, tensor diffusion (5b values in minimum in six directions) for diffusion studies. Suitable artifact/fat suppression techniques to be incorporated in the sequence to have optimum image quality. There should be capability of generation of ADC map (isotropic and anisotropy from the regular diffusion and tensor data). Facility of online generation of ADC map should be there. Optimized sequence package for special applications.
	g. MR angio; 2D/3D TOF, 2D/3D Phase contrast (with and without gating) magnetization transfer saturation, black blood angiography for cerebral, pulmonary, abdominal and peripheral vessel For peripheral angio moving table angiography should be offered so that complete limb can be examined in one go Bolus tracking software package should be offered. Sequences for breath hold angiography with contrast enchainment should also be offered.
	h. NON Contrast Angiography like Native, Inhance, Trance for whole body applications to be quoted as standard.
	i. Contrast bolus tracking (including single shot whole body MRA, interactive and automatic, etc.
	J1. The system should have the Hydrogen, Single Voxel spectroscopy, Multivoxel, multislice 2D, 3D Spectroscopy and also the Chemical shift imaging in 2D/3D. The complete processing / post- processing software including colour metabolite maps should be available. J2. Full comprehensive cardiac sequences which includes, (a) MR cardiology package for evaluation of heart in long and short axis with black blood cardiac imaging, (b) package for- prospective and retrospective gating, etc. Advanced Cardiac Applications: morphology, wall motion, perfusion imaging myocardial viability imaging, Myocardial tagging, Cardiac functions including EF, ED/ES volume, Cardiac output, and wall thickness. This processing can be in workstation and console.
	k. Sequence package for diffusion study including DTI (tractography) in organs like brain, kidney, muscle, heart etc if available . Unavailable techniques to be provided as and when available without any additional cost.
	l. Perfusion study in organ systems like kidney, brain, heart etc. Evaluation package for calculating CBV, CBF, MTT, perfusion map etc. Post processing of perfusion should be available in console also.

	m. Sequences for MRI imaging of joints with Metal implants like WARP/Maverick should be offered
	p. Hardware and sequences post processing software for MR Elastography of abdomen.
	q. Contrast Kinematics like TWIST / TRICKS / 4DTRAK should be offered.
	r. Image fusion should be offered
	s. Whole body imaging of 200 cm should be offered
	t. Programming environment under research agreement should be offered for creating and modifying pulse sequences and working on the system.
	u. Flow quantification in vessels and CSF, hepatobiliary system.
	v. MRI neurofunctional imaging sequence including BOLD/ Mosaic etc.
	w. Optimized breath hold sequences for abdominal studies including angiogram.
	x. Sequence package for functional mapping of brain.
	y. Internal ear imaging. 3D acquisitions like CUBE. SPACE, VISTA .
	aa. Susceptibility Weighted imaging should be provided as essential.
	bb. High SNR even in small FOV should be available. (Specify the details of the smallest FOV and the technique)
	cc. Non Contrast perfusion Imaging software like 2D-ASL and its post processing should be offered.
	dd. MR Cholangiography and Pancreatogram: Both breath-hold and respiratory triggered - Specialized sequences and processing to perform MRCP.
	ee. Pulmonary 2D/3D MRA sequence, including single breath hold sequence.
	ff. MR ventriculography and Cisternography, Myelography.
	gg. Parallel acquisition technique such as SENSE/SMASH/ASSET/ GRAPPA , iPAT, ARC and other new sequences to be quoted as standard
	hh. Specify the factor by which the acquisition time is reduced for similar acquisition with and with out parallel imaging technique. A scan time reduction factor 4 for head, body, cardiac, angio and ortho application is required
	ii. Flow quantification packages for CSF with dynamic CSF flow imaging, aqueduct. and spinal canal In-line motion correction for uncooperative' patients/pediatric applications, that is motions/patient movement correction sequence and algorithm (not just faster scanning or parallel imaging techniques) for non-cooperative/sick patients/children should be provided.
	jj. Post contrast free breathing spiral k-Space filling sequences.
12	**Imaging sequences**
	a. MRS: Proton (1H) MRS- Single voxel (SV), Multi-voxel CSI -2D and 3D- in both short and long TE
	b. Fat and iron quantification of liver: standard
13	**POST PROCESSING AND EVALUATION**
	a. 3DMultiplanar reconstruction (MPR) in any arbitrary plane including curved planes with freely selectable slice thickness and slice Increments.
	b. 3D Surface reconstruction and evaluation on reconstructed images with minimum time.
	c. MIP in 2D and 3D mode, targeted/segmented MIP in any orthogonal axis with minimum processing time and capable of displaying in cine mode.

	d. Full cardiac evaluation Operator selective or automatic contour mapping and calculation of Cardiac parameters like wall thickness, stroke volume EF, filling rate myocardial wall motion including display of data in label, graph and in cine mode with standard cardiology reporting set in BullsEye method. Blood flow quantification, velocity mapping, pressure gradient quantification shunt quantification, regurgitation calculation, stenosis blood flow, etc. These should be usable on main or on the work station. Evaluation and display of diffusion images, fMRI reference of EPI optimized sequence.
	e. Full Perfusion imaging with necessary post processing with time intensity graph and other statistical parameters
	f. Flow quantification and evaluation for vascular (high and low). CSF, bladder outlet and cine display Full Fledged Advanced Functional MRI: Whole brain coverage using high temporal resolution T2* - weighted BOLD) imaging Single-shot EP1 for multi-slice imaging. Complete fMRI processing software, Automatic real-time processing of functional BOLD MR data sets into functional activation map
	g. Full post processing for SVS, CSI, metabolic mapping with colour coding for BRAIN , BREAST , LIVER & PROSTRATE.
	h. Image statistics: measurement of distance, area, volume (2D and 3D), angle, SD, mean, image addition subtraction, multiplication, division, interpolation, segmental, threshold, histogram (ROC) Evaluation features like zoom, rotation, scroll, image synthesis, multi point T1 and T2 calculation (more than 8) window searching, text dialogues graphics. Sorting, searching, archiving, recalling, etc.
	The CCTV system with LCD display to observe the patient. Two-way communication should be possible with the patient from the console room
14	**UPS**
	The system should be provided with the suitable UPS system for the complete system (MR + accessories except Chiller) with at least 30 minutes back up.
15	**DOCUMENTATION**
	a. The dry imager system should have digital DICOM 3.0 dry chemistry camera with resolution of 16 bits/ 500 dpi or more. The system must have at least three online film sizes, and should be capable to print on any of the 8 x 10, 10 x 12, 14 x 17 sizes. The system should be freely configurable by the user, to use any of the above mentioned size. should be suplied with 500 films of each size.
	b. A colour laser printer for printing colour images and protocols on plane in 1200 dpi resolution and more than 20 ppm
16	**ACCESSORIES**
	1. Storage cabinet for all coils
	2. MRI Compatible Dual Syringe Pressure injector : Independent dual-Syringe Pressure injector with following Features; Non-ferrous, automatic syringe size detection, performs single and dual phase contrast injections, provides Saline flush delivery and allows timed contrast delivery Must be compatible with 10, 15, 20 & 30m1 pre-filled contrast syringes and 50 ml syringes for both saline & contrast (20 Nos of 50 ml Syringes with 100 nos. of tube connectors should be provided) Must be able to observe progress of injection and view injection result
	3. MRI Compatible ECG leads (with 100 no.s Disposable Electrodes for MRI Image gating)
	5. MRI Compatible Anaesthesia Machine with integrated Ventilator, 2 vaporiser, circle absorber
	a) Capable of ventilating adult, pediatric and neonates.

	b) Soft ware for ventilation should support Volume control, Pressure control and Pressure support modes.
	c) Should have oxygen, nitrous oxide and air flow meters
	d) Isoflurane and sevoflurane vaporisers
	e) All safety alarms
	f) All consumables required for Adult-10Set, Pediatrics-3Set, Neonates -02Set
	6. One MRI compatible Multiparmeter Vital Signs Patient Monitor in MRI Room and One Slave monitor in console room with following modules provision to monitor the following
	a. Heart rate
	b. ECG
	c. NIBP – Size of Cuffs (adult & pediatric neonatal)
	d. Respiration (Capnograph)
	e. Two IBP – Pressure transducer with the MRI compatible stand.
	f. Oxygen saturation – Pulse oximeter with adult, pediatric probe, and neonatal probes - 2 sets (with the spare probes), Should have plethysmograph perfusion factor.
	g. ETCO2 and ETAA (end tidal anesthetic agents)
	h. Temperature (adult and pediatric)
	i) All consumables required for Adult-10Set, Pediatrics-3Set, Neonates -02Set
	7. MRI compatible syringe pump – 2 Nos.
	8. Arrangement of Gas lines in recovery room and magnet room – MRI compatible high pressure gas outlet for :
	a. Oxygen
	b. Air
	c. Nitrous Oxide with MRI compatible indexed system.
	d. Vacuum suction
	9. MRI Compatible 1 set of Laryngoscope :4 sizes blades- Neonatal, paediatrics, adult, extra
	10. MRI compatible Magill forceps : Adult & paediatric size- Two each.
	11. Stylet for endotracheal tube : Ault, paediatric size- Three each
	12. MRI compatible Clamps 2 Nos : Either towel clip or artery forceps.
	13. MRI Compatible two IV stands. (if not provided already)
	14. Two non-magnetic patient transfer trolleys should be provided
	15. Two Anaesthesia bed/trolley for recovery room
	16. Metal detectors:, two no.s hand held. & One no. Metal detector: Walk-through
	17. Phantoms to be provided for regular QA studies.
	18. Complete manuals and other necessary documentation‘s should be provided.
17	**TRAINING**
	Qualified personnel nominated by the deptt, should be given application training by the vendor in India.
18	**STANDARD AND SAFETY**
	Should be FDA or European CE approved product.
22	**TURN KEY INSTALLATION**

	a. The system should be installed and handed over in working condition with all necessary electrical, air conditioning and civil work undertaken by the vendor in consultation with the user dept.
	b. All necessary interconnecting interfaces, cable, modules, and other hardware and software to fully integrate the system for full operational status.
	The Turnkey Scope of Work - MRI The Supplier should inspect the proposed site offered by the Consignee in which the MRI system has to be installed and they are required to submit the plan for the complete MRI Scan Centre on a turnkey basis. Prospective bidders are advised to acquaint themselves with access to site , location of work , local labour problems and any other matter relating to availability and carriage of construction materials. The scope of work includes complete Civil work, Electrical, Plumbing, Furnishing, Air-conditioning, Fire fighting and miscellaneous works for the construction of MRI Scan Centre. While preparing the plan, the following aspects have to be addressed.
	a. The MRI should be sited in such a manner; in order to minimise the effect of fringe magnetic field on surrounding areas. The areas lying within 5 Gauss line should be clearly demarcated and cordoned off with adequate warning.
	b. Care should be taken to provide easy negotiation of the patient stretchers/ trolleys through corridors and doors.
	c. RF shielding for doors, walls, glass viewer etc.
	d. Furniture like desk, chairs, shelves etc.
	e. Patient stretcher and other furniture/ accessory to make the scan centre functional.
	The cost of Turnkey for the area of 1500sq.ft and Air-conditioning of Tonnage 20 TR will be considered for Ranking / Evaluation purpose.
	Moreover Bidders will have to quote the Unit Rates of the following components of turnkey work and detailed BOQ should be mentioned.
	a. Civil works (in units like sq.m / cubic m , kg etc)
	b. Electrical work (in unit s like per metre price , unit price for panel , isolation etc)
	c. Public health (plumbing and sanitary fittings like per metre of pipe, number of points etc.)
	d. Air Conditioning (HVAC)-rate of tonnage, type of false ceiling and sq.m rate etc
	e. Interior Furnishing & Furniture
	f. Miscellaneous
	Scope of work for turnkey MRI unit works:- The supplier should inspect the proposed site and submit all the detailed structural and architectural drawings and BOQ for the proposed MRI Scan Centres along with technical bid of the tender. The MRI SCAN CENTRE shall consist of the following rooms:
	a. MRI Room
	b. Console room
	c. Equipment room
	d. Patient preparation room
	f. Patient waiting area
	g. Radiologist room

	The actual area of turnkey works done will be considered for payment, based on the unit rates and site measurements
	Civil work Any ab initio new construction or demolition of existing structure/walls etc and reconstruction is unambiguously included in the turnkey scope of work. This includes, but is not limited to expanding the area of MRI gantry room so as to make it compliant for installation of a 3T strength magnet.
	a) Civil construction work including construction of brick wall, plastering, flooring as per the approved plan and equipment layout plan.
	b) Concrete bed at MRI equipment area.
	c) Platform for unloading and shifting the MRI should be provided if necessary.
	d) Platform for Chiller unit would be provided. Fencing and weather protection facility should be provided for the Chiller unit.
	e) Cable tray, trench & channel – necessary trenches, cable tray and channels at required location would be provided.
	f) All the construction work to be done as per the final plan approved by the purchaser.
	g) Active and passive room shielding for magnetic, fringe field should be provided as per the requirement of the equipment.
	h) The entire complex will be made rodent/pest proof.
a)	**Flooring**
	Providing and laying approved quality , colour, design and shade fully homogeneous 600 x 600 mm(thickness to be specified by the manufacturer) vitrified tile flooring (Marbonite or Granamite, confirming to IS code 15622 with water absorption less than 0.08%) flooring in pattern as detailed in drawing or as directed by the EIC and grouted with matching colour approved quality readymade grout, curing, cleaning etc to required line level etc. all complete at all leads, lifts and heights to the entire satisfaction of the EIC. Providing and fixing 2-3mm thick POP protection over polythene covering sheet to flooring areas till handed over and cleaning, etc all complete as per drawings & specification and as directed by EIC with 100mm tile skirting to match in MRI room , console room , equipment room , patient preparation room, reporting room , patient waiting area and radiologist room. Note: Mode of measurement (Finished surface area of the tiles shall be measured and paid. Rate shall be inclusive of providing and laying levelling course, PVC spacers,providing and applying epoxy grout and no additional payment shall be made for wastages).
	50 mm thick cement concrete flooring at all heights and locations including scaffolding , preparing the surfaces , neat cement finished to correct line or as required to receive architectural finish , level and plumb , curing wherever required complete as per requirements and drawings , with Vinyl flooring in MRI equipment / UPS room.
b)	**Painting**
	Two coats Plastic Emulsion Paint over 2 coats of wall putty including primer in patient preparation area, Lobby area, console room, MRI equipment room etc. Pre laminated particleboard wall panelling in MRI examination room.
c)	**False Ceiling**

	Acoustical tile for ceiling with light weight insulating material of high quality supported on grid or finished seamless with support above ceiling. Finished with white paint or powder coated with white paint, if metallic. Ceiling height to suit the equipment mount and clearances.
d)	**Plumbing work**
	I. All water pipes and fittings shall be of high density polythene of approved and standard make. The gratings shall be brass chrome plated. All plumbing accessories should be of standard make.
	II. Copper pipes to be used for plumbing the Chiller to the MRI
	Note:
1	Tenderers are advised to visit the site of work to acquaint themselves about the levels of sub soil water, drainage facility for dewatering, accessibility to site etc. and quote the rates accordingly.
2	All sanitary wares & CP brass fitting & fixtures shall be of first quality with ISI mark (unless otherwise specified) and shall be of the make as per the latest approved list of materials as per list of approved make/model, if any. They shall be got approved by the Engineer-in-charge before incorporating in the work
3	All the items include testing after completion of the work. Concealed/underground GI pipe line is to be wrapped with hessian cloth and painted with two coats of anticorrosive paint. Disposing off: The surplus excavated materials by mechanical transport lead up to 2KM to the nearby dumping pits/dumping areas within institute campus identified by Engineer in charge, including all lifts, loading, unloading, stacking etc. complete as per specifications & as directed by the EIC.
e)	**Electric work**
	The supplier shall be required to specify the total load requirements for the MRI scan centre including the load of air conditioning , room lighting and for the accessories if any. The supply line will be provided by the Institute up to one point within the MRI Scan centre area. The distribution panel shall be provided by the vendor. Few lights in each room shall be connected to the UPS to provide emergency lighting. The electrical work shall include the following
	a. Wiring – All interior electrical wiring- with main distribution panel board, necessary MCBs, DB, joint box, switch box etc. the wires shall be of copper of different capacity as per the load and should be renowned make as listed below.
	b. Switches light and power points should be of modular type and of standard make as listed below.
	c. General lights – LED light fittings with 500 Lux Illumination
	d. MRI compatible lights for MRI examination room. The bulbs used within the RF cage should be easy replaceable and locally available.
	e. All wires used must be FRLS (Fire Retardant with low smoke) type only
f)	**AIR CONDITIONING:**
	i. Total capacity of the Air-Conditioning (duct-able + split) for the entire MRI scan centre area should be at least 20 TR.(incl. standby airconditioning)
	ii. Ductable package air conditioners and split AC units may be used according to room requirement and suitability. Humidity control should be effective to eliminate moisture condensation on equipment surface. . The Air conditioning should be designed with standby provision to function 24 hours a day.a)
	iii. The outdoor units of AC should have grill coverings to prevent theft and damage.

	iv. Ventilation is required in toilet.
g)	**Environment specifications:**
	I.Relative Humidity range: To be maintained between 60% and 80% in all areas except equipment room which shall be as per requirement of the equipment.
	ii. Temperature ranges: 22 ± 2° C in all areas except equipment room which shall be as per requirement of the equipment.
	iii. Air conditioning load: The heat load calculations and maintaining the desired temperature and humidity shall be the responsibility of the bidder
h)	**Furniture:**
	i. Revolving chairs height adjustable, medium-back with hand-rest . – 8 NO.S
	ii. Chairs for patient waiting area – Three seater (chrome plated). - 10 NO.S
	iii. Cupboard with laminate door shutters for storage of spare parts and accessories and records as per requirement. – 3 NO.S
	iv. Drug trolleys for patient preparation area.- 1 NO.
	v. Patient trolley with rubber foam mattress to be kept in the patient preparation room.
	vi. Tables for Workstation nodes- 2 NO.S
	vii. Changing rooms should have change lockers and dressing table.
	viii. Dustbins (plastic with lid) : 10 no.s.
	ix. All the rooms in the complex will be signposted. Sun film & ventilation blinds / curtain will be put up in all windows.
	All furniture items should be of standard make as mentioned in the table below.
i)	**Miscellaneous:**
	1 Reporting room should have LED X-ray Film viewer with adjustable brightness; capable of holding 3 films of 14”x17” size. – 2 no.s
	2 Cabling of Network (LAN) connectivity for camera system, console system, workstation and computers etc
	3 Broadband connection: for REMOTE SERVICE of MRI system.
	4 Dry chemical power type fire extinguisher of 5kgs capacity, with initial filling in brand new cylinder with power coated finish, fitted with Gun metal union, high pressure CO2 gas cartridge, discharge hose, wall mounting bracket etc. complete, confirming t IS:2171 of approved make & complete as directed by EIC.

LIST OF ITEMS AND SUGGESTED MANUFACTURERS.

SL NO	**ITEMS**	**PREFERRED MAKES**
A	**FLOORING VITRIFIED TILES**	-Somany, Kajaria , H&R Johnson, RAK india
B	**PAINT**	- Dulux, Asian Paints , Nerolac
C	**PLUMBING**	- Kohler, Jaguar , Grohe , Roca
D	**SANITARY ITEMS**	- CERA, Hindware, Parryware
E	**ELECTRICAL**	
1	**CABLES**	- Finolex, Havells ,V-Guard
2	**SWITCHES**	- Legrand, L&T, Crabtree , Roma
3	**DISTRIBUTION BOX , MCB**	- Legrand, L&T, Siemens, Havels
4	**LIGHT FITTINGS**	- Philips / Crompton / Wipro/Syska
F	**AIR CONDINTIONING**	- Daikin, Hitachi, Blue Star, Voltas,
G	**FURNITURE**	- Hermen Miller , Godrej , Featherlite,Geeken

	BILL OF QUANTITY	
S.NO	**ITEM**	**QTY**
	Whole body 3.0 Tesla Magnetic Resonance Imaging system - 32 channels RF system ; as specified	1 NO
a	System Body Coil - Quadrature	1 NO
b	32 channels or more HEAD coil-capable of multi frequency MR spectroscopy (H1).	1 NO
c	NECK phased array 8 channel.	1 NO
d	NEUROVASCULAR coil - 16 channels	1 NO
e	SPINE: Phased array coil 32 channels	1 NO
f	BODY : Phased array coils 32 channels (single or in combination)	1 NO
g	Dedicated Coil for PERIPHERAL ANGIO- 32 channels	1 NO
h	BREAST coil - minimum 7 channel	1 NO
i	SHOULDER coil – Multi channel (minimum 8 channel) flex loop or rigid type - Large FOV	1 NO
j	SHOULDER coil – Multi channel (minimum 8 channel) flex loop or rigid type - SMALL FOV	1 NO
k	High resolution knee coil - minimum 12 channel	1 NO
l	High resolution foot/ ankle coil – minimum 8 channel	1 NO
m	High resolution Tx & Rx KNEE coil minimum 8 channel .	1 NO
n	High resolution foot/ ankle coil – minimum 8 channel	1 NO
	Server : Thin-client server as per specification	1 NO
	Concurrent licenses for Server	2 NO.s
	Node Hardware: CPU and Medical grade monitor	2 NO.s
	Antivirus software for Server / Node	2 NO.s
	Cardiac Package - License	1 NO
	ACCESSORIES	
1	Storage box for all coils	1 NO
2	Dual Syringe Pressure injector	1 NO
3	Dual Syringe Pressure injector syringes	20 No.s
4	Dual Syringe Pressure injector syringe connector	100 No.s
5	MRI Compatible ECG leads	100 No.s
6	MRI Compatible Anaesthesia Machine with integrated Ventilator, 2 vaporiser, circle absorber	1 NO
7	MRI Compatible Multiparmeter Vital Signs Patient Monitor & Slave monitor	1 NO
8	MRI compatible syringe pump	3 NO.s
9	MRI Compatible sets of Laryngoscope : 4 sizes blades- Neonatal, paediatrics, adult, extra large	1 NO.s
10	MRI compatible Magill forceps : Adult size-	2 NO.s
11	MRI compatible Magill forceps : Paediatric size-	2 NO.s
12	Stylet for endotracheal tube : Adult size	3 NO.s
13	Stylet for endotracheal tube : Paediatric size	3 NO.s
14	MRI compatible Clamps : Either towel clip or artery forceps.	2 NO.s
15	MRI Compatible IV stands	2 NO.s
16	MRI compatible suction apparatus	2 NO.s

17	Non-magnetic patient transfer trolleys	2 NO.s
18	Metal detectors : Handheld	2 NO.s
19	Metal detector: Walk-through	1 NO
20	Phantoms to be provided for regular QA studies.	as required
	Components of Turnkey Work:	
1	Civil works	1500 ft^2
2	Electrical work	1500 ft^2
3	Public health (plumbing and sanitary fittings).	1500 ft^2
4	Air Conditioning	20 TR
5	Interior Furnishing & Furniture	1500 ft^2
6	Miscellaneous	lumpsum
	Furniture:	
1	Revolving chairs height adjustable, medium-back with hand-rest in the Control room, Radiologist room and viewing area	8 NO.S
2	Chairs for patient waiting area – Three seater (chrome plated). -	10 NO.S
3	Cupboard with laminate door shutters for storage of spare parts and accessories and records as per requirement.	3 NO.S
4	Drug trolleys for patient preparation area.	1 NO
5	Patient trolley with rubber foam mattress to be kept in the patient preparation room.	2 NO.s
6	Tables for Workstation nodes.	2 NO.S
7	Changing rooms (with change lockers and dressing table).	1 set
8	Dustbins (plastic with lid) to be provided as required.	10 NO.S
9	Room Signage	as required
10	Venetian Blinds	as required
	Miscellaneous:	
1	LED X-ray Film viewer with adjustable brightness; capable of holding 3 films of 14”x17” size.	2 NO.s
2	Cabling of Network (LAN) connectivity for camera system, console system, workstation and computers etc	as required
3	Dry chemical powder type fire extinguisher of 5kgs capacity	3 NO.s

GENERAL TECHNICAL SPECIFICATIONS

GENERAL POINTS:

1. Warranty:
   a) Five years Comprehensive Warranty as per Conditions of Contract of the TE document for complete equipment (including Batteries for UPS, other vacuumatic parts wherever applicable) Warranty period will be 5 years from the date of installation, commissioning and Turnkey Work from the date of satisfactory installation, commissioning, trial run & handing over of equipment to Hospital/Institution/Medical College.
   b) 98% up time Warranty of complete equipment with extension of Warranty period by double the downtime period on 24 (hrs) X 7 (days) X 365 (days) basis.
   c) All software updates should be provided free of cost during Warranty period.

2. After Sales Service:
   After sales service centre should be available at the city of Hospital/Institution/Medical College on 24 (hrs) X 7 (days) X 365 (days) basis. Complaints should be attended properly, maximum within 8 hrs. The service should be provided directly by Tenderer/Indian Agent. Undertaking by the Principals that the spares for the equipment shall be available for at least 10 years from the date of supply.

3. Training:
   On Site training to Doctors/ Technicians/ staff is to be provided by Principal/ Indian Agents (if they have the requisite know-how) for operation and maintenance of the equipment to the satisfaction of the consignee. The same will be in line with the training modalities as specified in general technical specification.

4. Annual Comprehensive Maintenance Contract (CMC) of subject equipment with Turnkey:

   a) The cost of Comprehensive Maintenance Contract (CMC) which includes preventive maintenance including testing & calibration as per technical/ service /operational manual of the manufacturer, labour and spares, after satisfactory completion of Warranty period may be quoted for next 5 years on yearly basis for complete equipment (including Batteries for UPS, other vacuumatic parts wherever applicable) and Turnkey (if any). The supplier shall visit each consignee site as recommended in the manufacturer's technical/ service /operational manual, but at least once in six months during the CMC period
   b) The cost of CMC may be quoted along with taxes applicable on the date of Tender Opening. The taxes to be paid extra, to be specifically stated. In the absence of any such stipulation the price will be taken inclusive of such taxes and no claim for the same will be entertained later.
   c) Cost of CMC will be added for Ranking/Evaluation purpose. The same will be taken at Net Present Value with a 10% discounting factor each year.
   d) The payment of CMC will be made on six monthly basis after satisfactory completion of said period, duly certified by end user on receipt of bank guarantee for 2.5 % of the cost of the equipment as per Section XV valid till 2 months after expiry of entire CMC period.
   e) There will be 98% uptime warranty during CMC period on 24 (hrs) X 7 (days) X 365 (days) basis, with penalty, to extend CMC period by double the downtime period.
   f) During CMC period, the supplier is required to visit at each consignee's site at least once in 6 months commencing from the date of the successful completion of warranty period for preventive maintenance of the goods.
   g) All software updates should be provided free of cost during CMC.
   h) Failure of the above [4. e) to 4. g)] by the supplier, may lead to the forfeiture of the Bank Guarantee for Annual CMC.
   i) The payment of CMC will be made as stipulated in GCC Clause 21.

Turnkey:

Turnkey is indicated in the technical specification of the respective items, wherever required. The Tenderer shall examine the existing site where the equipment is to be installed, in consultation with HOD of Hospital/Institution/Medical College concerned. Turnkey details of each Hospital/Institution/Medical College are given at the end of Technical Specification. The Tenderer to quote prices indicating break-up of prices of the Machine and Turnkey Job of each Hospital/Institution/Medical College. The Turnkey costs may be quoted in Indian Rupee will be added for Ranking Purpose.

The taxes to be paid extra, to be specifically stated. In the absence of any such stipulation the price will be taken inclusive of such duties and taxes and no claim for the same will be entertained later.

The Turnkey Work should completely comply with AERB requirement, if any.

Note 1: Tenderer's attention is drawn to GIT clause 18 and GIT sub-clause 11.1 A (iii). The tenderer is to provide the required details, information, confirmations, etc. accordingly failing which it's tender is liable to be ignored.

Note 2: General: Bidders are requested to make sure that they should attach the list of equipments for carrying out routine and preventive maintenance wherever asked for and should make sure that Electrical Safety Analyzer / Tester for Medical equipments to periodically check the electrical safety aspects as per BIS Safety Standards IS-13540 which is also equivalent to IEC electrical safety standard IEC-60601 is a part of the equipments. If the Electrical Safety Analyzer/Tester is not available they should provide a commitment to get the equipments checked for electrical safety compliance with Electronic Regional Test Labs / Electronics Test and Development Centres across the country on every preventive maintenance call.

Note 3: Adequate training of personnel and non-locked open software and standard interface interoperability conditions for networked equipment in hospital management information system (HMIS)

The successful tenderer will be required to undertake to provide at his cost technical training for personnel involved in the use and handling of the equipment on site at the institute immediately after its installation. The company shall be required to train the institute personnel onsite for a minimum period of 1 month

All software updates should be provided free of cost during warranty period and CMC period

Section – VIII
Quality Control Requirements

(Proforma for equipment and quality control employed by the manufacturer(s)

Tender Reference No.

Date of opening

Time

Name and address of the Tenderer:

Note: All the following details shall relate to the manufacturer(s) for the goods quoted for.

01 Name of the manufacturer
- a. full postal address
- b. full address of the premises
- c. telegraphic address
- d. telex number
- e. telephone number
- f. fax number

02 Plant and machinery details

03 Manufacturing process details

04 Monthly (single shift) production capacity of goods quoted for
- a. normal
- b. maximum

05 Total annual turn-over (value in Rupees)

06 Quality control arrangement details
- a. for incoming materials and bought-out components
- b. for process control
- c. for final product evaluation

07 Test certificate held
- a . type test
- b . BIS/ISO certification
- c . any other

08 Details of staff
- a. technical
- b skilled
- c unskilled

Signature and seal of the Tenderer

Section – IX
Qualification Criteria

1. The tenderer must be a manufacturer. In case the manufacturer does not quote directly, they may authorize an agent as per proforma of Manufacturer authorization form as given in the tender enquiry document to quote and enter into a contractual obligation.

2. (a) The Manufacturer should have supplied and installed in last **Five** years from the date of Tender Opening, at least 25% of the quoted quantity of the similar equipment meeting major parameters of technical specification which is functioning satisfactorily.

2. (b) The Tenderers quoting as authorized representative of the manufacturer meeting the above criteria should have executed at least one contract in the last five years from the date of tender opening of medical equipment anywhere in India of the same manufacturer.

3. **The startups claiming exemption on the required prior experience, and complying the condition of GIT Clause 35.3 (iv), should furnish along with the bid**

   (i) All necessary documents in support of the claim regarding exemption on prior experience as mandated by concerned Ministry/ Board of Govt. of India.

   Notwithstanding anything stated above, the Purchaser reserves the right to verify/ consider, whether the firm/ entity is eligible for exemption regarding prior experience requirement.

NOTE:

1. The tenderer shall give an affidavit as under:

   "We hereby certify that if at any time, information furnished by us is proved to be false or incorrect, we are liable for any action as deemed fit by the purchaser in addition to forfeiture of the earnest money."

2. In support of 2 (a) & 2 (b), the Tenderer shall furnish Performance statement in the enclosed Proforma 'A'.

   The manufacturer (Tenderer) / Indian Agent shall furnish Satisfactory Performance Certificate in respect of above, duly translated in English and duly notarized in the country of origin, alongwith the tender.

3. The Tenderer shall furnish a brief write-up, packed with adequate data explaining and establishing his available capacity/capability (both technical and financial) to perform the Contract (if awarded) within the stipulated time period, after meeting all its current/present commitments. The Tenderer shall also furnish details of Equipment and Quality Control in the enclosed Section VIII.

4. Notwithstanding anything stated above, the Purchaser reserves the right to assess the Tenderer's capability and capacity to perform the contract satisfactorily before deciding on award of Contract, should circumstances warrant such an assessment in the overall interest of the Purchaser.

5. The Purchaser reserves the right to ask for a free demonstration of the quoted equipment at a pre determined place acceptable to the purchaser for technical acceptability as per the tender specifications, before the opening of the Price Tender.

PROFORMA 'A'
PROFORMA FOR PERFORMANCE STATEMENT

(For the period of last five years)

Tender Reference No. : _____

Date of opening : _____

Time : _____

Name and address of the Tenderer : _____

Name and address of the manufacturer : _____

Order placed by (full address of Purchaser/ Consignee)	Order number and date	Description and quantity of ordered goods and services	Value of order (Rs.)	Date of completion of Contract		Remarks indicating reasons for delay if any	Have the goods been functioning Satisfactorily (attach documentary proof)**
				As per contract	Actual		
1	2	3	4	5	6	7	8

We hereby certify that if at any time, information furnished by us is proved to be false or incorrect, we are liable for any action as deemed fit by the purchser in addition to forfeiture of the earnest money.

Signature and seal of the Tenderer

**** The documentary proof will be a certificate from the consignee/ end user with cross-reference of order no. and date in the certificate along with a notarized certification authenticating the correctness of the information furnished.**

**** The bidders are requested to submit the latest purchase order copies supplied to AIIMS, PGIMER, JIPMER, Institute of National importance for the specific model quoted along with the price bid.**

Section – X
TENDER FORM

Date_____

To
Director & CEO
HLL Infra Tech Services Limited
Procurement and Consultancy Division
B-14 A, Sector -62, Noida -201307, Uttar Pradesh.

Ref. Your TE document No. _____dated _____

We, the undersigned have examined the above mentioned TE document, including amendment/corrigendum No. _____, dated _____ (*if any*), the receipt of which is hereby confirmed. We now offer to supply and deliver_____ *(Description of goods and services)* in conformity with your above referred document **for the sum as shown in the price schedules attached herewith and made part of this tender**. If our tender is accepted, we undertake to supply the goods and perform the services as mentioned above, in accordance with the delivery schedule specified in the List of Requirements.

We further confirm that, if our tender is accepted, we shall provide you with a performance security of required amount in an acceptable form in terms of GCC clause 5, read with modification, if any, in Section - V – "Special Conditions of Contract", for due performance of the contract.

We agree to keep our tender valid for acceptance as required in the GIT clause 20, read with modification, if any in Section - III – "Special Instructions to Tenderers" or for subsequently extended period, if any, agreed to by us. We also accordingly confirm to abide by this tender up to the aforesaid period and this tender may be accepted any time before the expiry of the aforesaid period. We further confirm that, until a formal contract is executed, this tender read with your written acceptance thereof within the aforesaid period shall constitute a binding contract between us.

We further understand that you are not bound to accept the lowest or any tender you may receive against your above-referred tender enquiry.

We confirm that we do not stand deregistered/banned/blacklisted by any Govt. Authorities.

We confirm that we fully agree to the terms and conditions specified in above mentioned TE document, including amendment/ corrigendum if any

(Signature with date)
(Name and designation)
Duly authorised to sign tender for and on behalf of

SECTION – XI
PRICE SCHEDULE

Price to be filled in the relevant field of Price Format in Excel provided in the e-tendering portal.

SECTION – XII
QUESTIONNAIRE

Fill up the Techno-Commercial Compliance Sheet Bid provided in spreadsheet (Excel file) and upload in the C-Folder

1. The tenderer should furnish specific answers to all the questions/issues mentioned in the Techno-Commercial Compliance Sheet. In case a question/issue does not apply to a tenderer, the same should be answered with the remark "not applicable".

2. Wherever necessary and applicable, the tenderer shall enclose certified scanned copy as documentary proof/ evidence to substantiate the corresponding statement.

3. In case a tenderer furnishes a wrong or evasive answer against any of the question/issues, their tender is liable to be ignored.

Note: *The documents like Priced Proforma Invoice (Single Proforma Invoice from Manufacturer's indicating uniform unit rates) and List of Consumables with prices can be uploaded in the Notes & Attachment under Rfx information (Please note, in the separate Notes & Attachment provided under Rfx information and not in the C-Folder Notes & Attachments).*

SECTION – XIII

BANK GUARANTEE FORM FOR EMD

Whereas _____ (hereinafter called the "Tenderer") has submitted its quotation dated _____ for the supply of _____ (hereinafter called the "tender") against the purchaser's tender enquiry No. _____ Know all persons by these presents that we _____ of _____ (Hereinafter called the "Bank") having our registered office at _____ are bound unto _____ (hereinafter called the "Purchaser) in the sum of _____ for which payment will and truly to be made to the said Purchaser, the Bank binds itself, its successors and assigns by these presents. Sealed with the Common Seal of the said Bank this _____day of _____ 20____. The conditions of this obligation are:

1) If the Tenderer withdraws or amends, impairs or derogates from the tender in any respect within the period of validity of this tender.
2) If the Tenderer having been notified of the acceptance of his tender by the Purchaser during the period of its validity:-

   fails or refuses to furnish the performance security for the due performance of the contract
   or
   fails or refuses to accept/execute the contract or
   if it comes to notice that the information/documents furnished in its tender is incorrect, false, misleading or forged

We undertake to pay the Purchaser up to the above amount upon receipt of its first written demand, without the Purchaser having to substantiate its demand, provided that in its demand the Purchaser will note that the amount claimed by it is due to it owing to the occurrence of one or both the two conditions, specifying the occurred condition(s).

This guarantee will remain in force for a period of forty-five days after the period of tender validity and any demand in respect thereof should reach the Bank not later than the above date.

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

SECTION – XIV

MANUFACTURER'S AUTHORISATION FORM

Director & CEO
HLL Infra Tech Services Limited
Procurement and Consultancy Division
B-14 A, Sector -62, Noida -201307, Uttar Pradesh.

Dear Sir,

Ref: Your TE document No _____ dated _____

We, _____ who are proven and reputable manufacturers of_____(*name and description of the goods offered in the tender*) having factories at_____, hereby authorise Messrs_____(*name and address of the agent*) to submit a tender, process the same further and enter into a contract with you against your requirement as contained in the above referred TE documents for the above goods manufactured by us.

We also state that we are not participating directly in this tender for the following reason(s): _____*(please provide reason here).*

We further confirm that no supplier or firm or individual other than Messrs. _____ (*name and address of the above agent*) is authorised to submit a tender, process the same further and enter into a contract with you against your requirement as contained in the above referred TE documents for the above goods manufactured by us.
We also hereby extend our full warranty, CMC as applicable as per clause 15 of the General Conditions of Contract, read with modification, if any, in the Special Conditions of Contract for the goods and services offered for supply by the above firm against this TE document.

We also hereby confirm that we would be responsible for the satisfactory execution of contract placed on the authorised agent

We also confirm that the price quoted by our agent shall not exceed the price which we would have quoted directly"

Yours faithfully,

[*Signature with date, name, designation and Email*]
for and on behalf of Messrs_____
[*Name & address of the manufacturers*]

Note:
(2) This letter of authorisation should be on the letter head of the manufacturing firm and should be signed by a person competent and having the power of attorney to legally bind the manufacturer.
(3) Original letter may be sent.
(4) The purchaser reserves the right to verify this document with its signatory.

SECTION – XV

BANK GUARANTEE FORM FOR PERFORMANCE SECURITY/ CMC SECURITY

Director & CEO
HLL Infra Tech Services Limited
Procurement and Consultancy Division
B-14 A, Sector -62, Noida -201307, Uttar Pradesh.

WHEREAS _____ (Name and address of the supplier) (Hereinafter called "the supplier") has undertaken, in pursuance of contract no_____ dated _____ to supply (description of goods and services) (herein after called "the contract").

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

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

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

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

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

This guarantee shall be valid up to 66 (Sixty Six) months from the date of Notification of Award i.e. up to ---------- (indicate date)

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

SECTION – XVI

CONTRACT FORM - A

CONTRACT FORM FOR SUPPLY, INSTALLATION, COMMISSIONING, HANDING OVER, TRIAL RUN, TRAINING OF OPERATORS & WARRANTY OF GOODS

(Address of the Purchaser/Consignee
Office issuing the contract)

Contract No_____ dated_____

This is in continuation to this office's Notification of Award No_____ dated _____

1. Name & address of the Supplier: _____

2. Purchaser's TE document No_____ dated_____ and subsequent Amendment No_____, dated_____ (if any), issued by the purchaser

3. Supplier's Tender No_____ dated_____ and subsequent communication(s) No_____ dated _____ (if any), exchanged between the supplier and the purchaser in connection with this tender.

4. In addition to this Contract Form, the following documents etc, which are included in the documents mentioned under paragraphs 2 and 3 above, shall also be deemed to form and be read and construed as integral part of this contract:

    (i) General Conditions of Contract;
    (ii) Special Conditions of Contract;
    (iii) List of Requirements;
    (iv) Technical Specifications;
    (v) Quality Control Requirements;
    (vi) Tender Form furnished by the supplier;
    (vii) Price Schedule(s) furnished by the supplier in its tender;
    (viii) Manufacturers' Authorisation Form (if applicable for this tender);
    (ix) Purchaser's Notification of Award

    Note: The words and expressions used in this contract shall have the same meanings as are respectively assigned to them in the conditions of contract referred to above. Further, the definitions and abbreviations incorporated under clause 1 of Section II – 'General Instructions to Tenderers' of the Purchaser's TE document shall also apply to this contract.

5. Some terms, conditions, stipulations etc. out of the above-referred documents are reproduced below for ready reference:

    (i) Brief particulars of the goods and services which shall be supplied/ provided by the supplier are as under:

Schedule No.	Brief description of goods/services	Accounting unit	Quantity to be supplied	Unit Price	Total price	Terms of delivery

Any other additional services (if applicable) and cost thereof: _____
Total value (in figure) _____ (In words) _____

(ii) Delivery schedule
(iii) Details of Performance Security
(iv) Quality Control
  (a) Mode(s), stage(s) and place(s) of conducting inspections and tests.
  (b) Designation and address of purchaser's inspecting officer
(v) Destination and despatch instructions
(vi) Consignee, including port consignee, if any

6. Warranty clause

7. Payment terms

8. Paying authority

_____
(Signature, name and address
of the Purchaser's/Consignee's authorised official)
For and on behalf of_____

Received and accepted this contract
(Signature, name and address of the supplier's executive
duly authorised to sign on behalf of the supplier)
For and on behalf of _____
(Name and address of the supplier)
(Seal of the supplier)

Date: _____

Place: _____

CONTRACT FORM – B

CONTRACT FORM FOR ANNUAL COMPREHENSIVE MAINTENANCE CONTRACT

Annual CM Contract No._____ dated_____

Between
(Address of Head of Hospital)

And
(Name & Address of the Supplier)

Ref: Contract No_____ dated_____ (Contract No. & date of Contract for supply, installation, commissioning, handing over, Trial run, Training of operators & warranty of goods)

In continuation to the above referred contract

1. The Contract of Annual Comprehensive Maintenance is hereby concluded as under: -

1	2	3	4					5
Schedule No.	Brief description of goods	Quantity. (Nos.)	Annual Comprehensive Maintenance Contract Cost for Each Unit year wise*.					Total Annual Comprehensive Maintenance Contract Cost for 5 Years [3 x (4a+4b+4c+4d+4e)]
			1st	2nd	3rd	4th	5th	
			a	b	c	d	e	

Total value (in figure) _____ (In words) _____

2. The CMC commence from the date of expiry of all obligations under Warranty i.e. from_____ (date of expiry of Warranty) and will expire on _____ (date of expiry of CMC)

3. The cost of Annual Comprehensive Maintenance Contract (CMC) which includes preventive maintenance, labour and spares, after satisfactory completion of Warranty period may be quoted for next 5 years as contained in the above referred contract on yearly basis for complete equipment (including X ray tubes, Helium for MRI, Batteries for UPS, other vacuumatic parts, _____ & _____) and Turnkey (if any).
4. There will be 98% uptime warranty during CMC period on 24 (hrs) X 7 (days) X 365 (days) basis, with penalty, to extend CMC period by double the downtime period.
5. During CMC period, the supplier shall visit at each consignee's site for preventive maintenance including testing and calibration as per the manufacturer's service/ technical/ operational manual. The supplier shall visit each consignee site as recommended in the manufacturer's manual, but at least once in 6 months commencing from the date of the successful completion of warranty period for preventive maintenance of the goods.
6. All software updates should be provided free of cost during CMC.
7. The bank guarantee valid till _____ [(fill the date) 2 months after expiry of entire CMC period] for an amount of Rs. _____ [(fill amount) equivalent to 2.5 % of the cost of the

equipment as per contract] shall be furnished in the prescribed format given in Section XV of the TE document, along with the signed copy of Annual CMC within a period of 21 (twenty one) days of issue of Annual CMC failing which the proceeds of Performance Security shall be payable to the Purchaser/Consignee.

8. If there is any lapse in the performance of the CMC as per contract, the proceeds Annual CMC bank guarantee for an amount of Rs. _____ (equivalent to 2.5 % of the cost of the equipment as per contract) shall be payable to the Consignee.
9. **Payment terms:** The payment of Annual CMC will be made against the bills raised to the consignee by the supplier on six monthly basis after satisfactory completion of said period, duly certified by the HOD concerned. The payment will be made in Indian Rupees.
10. **Paying authority:** _____ (name of the consignee i.e. Hospitalauthorised official)

_____
(Signature, name and address
of Hospital authorised official)
For and on behalf of_____

Received and accepted this contract.
(Signature, name and address of the supplier's executive
duly authorised to sign on behalf of the supplier)
For and on behalf of _____
(Name and address of the supplier)
(Seal of the supplier)

Date: _____

Place: _____

SECTION – XVII

CONSIGNEE RECEIPT CERTIFICATE

(To be given by consignee's authorized representative)

The following store (s) has/have been received in good condition:

1) Contract No. & date :_____

2) Supplier's Name :_____

3) Consignee's Name & Address with telephone No. & Fax No. : _____

4) Name of the item supplied :_____

5) Quantity Supplied :_____

6) Date of Receipt by the Consignee :_____

7) Name and designation of Authorized Representative of Consignee :_____

8) Signature of Authorized Representative of Consignee with date :_____

9) Seal of the Consignee :_____

SECTION – XVIII
Proforma of Final Acceptance Certificate by the Consignee

No_____ **Date_____**

To
M/s _____
_____
_____

Subject: Certificate of commissioning of equipment/plant.

This is to certify that the equipment(s)/plant(s) as detailed below has/have been received in good conditions along with all the standard and special accessories and a set of spares (subject to remarks in Para no.02) in accordance with the contract/technical specifications. The same has been installed and commissioned.

(a) Contract No_____ dated_____
(b) Description of the equipment(s)/plants: _____
(c) Equipment(s)/ plant(s) nos.:_____
(d) Quantity: _____
(e) Bill of Loading/Air Way Bill/Railway Receipt/ Goods Consignment Note no_____ dated _____
(f) Name of the vessel/Transporters:_____
(g) Name of the Consignee:_____
(h) Date of site hand-over to the supplier by consignee: :_____
(i) Date of commissioning and proving test:_____

Details of accessories/spares not yet supplied and recoveries to be made on that account.

Sl. No.	Description of Item	Quantity	Amount to be recovered

The proving test has been done to our entire satisfaction and operators have been trained to operate the equipment(s)/plant(s).

The supplier has fulfilled its contractual obligations satisfactorily ## or

The supplier has failed to fulfil its contractual obligations with regard to the following:

a) He has not adhered to the time schedule specified in the contract in dispatching the documents/ drawings pursuant to 'Technical Specifications'.
b) He has not supervised the commissioning of the equipment(s)/plant(s)in time, i.e. within the period specified in the contract from date of intimation by the Purchaser/Consignee in respect of the installation of the equipment(s)/plant(s).
c) The supplier as specified in the contract has not done training of personnel.

The extent of delay for each of the activities to be performed by the supplier in terms of the contract

is
The amount of recovery on account of non-supply of accessories and spares is given under Para no.02.
The amount of recovery on account of failure of the supplier to meet his contractual obligations is_____ (here indicate the amount).

(Signature)
(Name)
(Designation with stamp)

Explanatory notes for filling up the certificate:

i) He has adhered to the time schedule specified in the contract in dispatching the documents/drawings pursuant to 'Technical Specification'.
ii) He has supervised the commissioning of the equipment(s)/plant(s) in time, i.e. within the time specified in the contract from date of intimation by the Purchaser/Consignee in respect of the installation of the equipment(s)/plant(s).
iii) Training of personnel has been done by the supplier as specified in the contract.
iv) In the event of documents/drawings having not been supplied or installation and commissioning of the equipment(s)/plant(s) having been delayed on account of the supplier, the extent of delay should always be mentioned in clear terms.

Section – XIX

Consignee List

Sl. No.	Name of Hopsital and Address	Consignee Code	State	Airport	Dry Port/ Seaport
1	The Principal Siddartha Medical College NH 16 Service Road, Opp. Varun Maruthi Showroom Near Health University, Gunadala, Vijayawada Andhra Pradesh 520008 Phone: 09849903130 Email: principalsmcvja@yahoo.com	SMC-Vijayawada	Andhra Pradesh	HYDERABAD	VIZAG
2	Dr. M. Neeraja The Dean/ The Principal Govt. Medical College Opp. EE Roads & Buildings, Sai Nagar, Anantapur Andhra Pradesh - 515001 Phone : 08554-249115, 274568 EMail : gmc_atp@ap.nic.in; principal.gmcatp@yahoo.in	GMC-Anantapur	Andhra Pradesh	HYDERABAD	VIZAG
3	Dr. K. Ashok The Director Director's Quarters RIMS Campus Rajiv Gandhi Institute of Medical Sciences, Adilabad Vidya Nagar, Adilabad, Telangana 504001 Office: 08732-220521 Email: rimsadilabad@yahoo.com; directorrimsadilabad@yahoo.com	RGIMS-Adilabad	Telangana	HYDERABAD	VIZAG
4	Dr. Abbagani Vidyasagar The Principal Kakatiya Medical College, Waranagl Rangampet Street, Warangal, Telangana 506007 Phone: 0870-2446355, 2446888 Email: pwarangal@gmail.com; kmc_wgl@ap.nic.in	GMC-Warrangal	Telangana	HYDERABAD	VIZAG
5	Prof. A.K. Adhikari The Principal-cum-Chief Superintendent Gauhati Medical College Guwahati-781032 Tel: +91-2134538 / 2132751 Email: gmch-asm@nic.in	GMC-Guwahati	Assam	KOLKATA	KOLKATA
6	The Principal Assam Medical College, Dibrugarh Barbari, Dibrugarh, Assam - 786 002 Phone No. : (0373) 2300080, 2300352 Email: principalamch@rediffmail.com	AMC-Diburgarh	Assam	KOLKATA	KOLKATA
7	The Principal Srikrishna Medical College, Muzaffarpur NH 77, Uma Nagar, Rasulpur Saidpur Bazid Bihar - 842001 Phone No. : 0621-2260177 Email: info@skmedicalcollege.in	SKMC-Muzaffarpur	Bihar	KOLKATA	KOLKATA

8	The Principal Govt. Medical College, Darbhanga DMCH Road, Laheriasaria Darbhanga Bihar - 846001 Phone No. : 06272 233 092 Email: principaldmc202@gmail.com	GMC-Dharbhanga	Bihar	KOLKATA	KOLKATA
9	Dr. H. M. Mangal The Dean Govt. Medical College Civil Hospital Campus, Rajkot - 360001 Ph. No. : +91 281 2458337,2458338, 2458339 Email Address : deanrajkot@yahoo.co.in	PDUMC-Rajkot	Gujarat	AHMEDABAD	MUNDRA / PIPAVAV / KANDLA
10	The Principal Patliputra Medical College, Dhanbad B.C.C.L. Township, Koyla Nagar Dhanbad - 826005, Jharkhand Phone : +91-326-2230465 Email: enquiry@pmchdhanbad.com	PMCH-Dhanbad	Jharkhand	KOLKATA	KOLKATA
11	The Director Vijayanagar Institute of Medical Sciences Contonment, Bellary - 583104 Karnataka Phone: 08392-235201, 08392-242387 Email: directorvimsbellary@gmail.com	VIMS-Bellary	Karnataka	BANGALORE	BANGALORE
12	The Director Karnataka Institute of Medical Sciences P. B Road, Vidyanagar Hubballi - 580 022, Karnataka, India Phone: +91- 836- 2370057, +91- 836 - 2373447, +91 - 836 - 2373641 Email: directorkimshubli@gmail.com	KIMC-Hubbali	Karnataka	BANGALORE	BANGALORE
13	The Principal Government Medical College Medical College Rd, Kozhikode Kerala - 673008 Phone: 0495 235 0202 Email: principalmcc@gmail.com	GMC-Kozhikode	Kerala	KOCHI	KOCHI
14	Dr. N. Sridevi The Principal T. D. Medical College, Alappuzha Vandanam, Alappuzha, Kerala 688001 Phone: 0477 228 2611 Email: tdmcalappuzha@gmail.com	GTDMC-Alappuzha	Kerala	KOCHI	KOCHI
15	The Dean Govt. Medical College Jail Road, Near Sanjay Gandhi Hospital, Rewa Madhya Pradesh 486001 Phone: 07662-241655 Email: deanmcrewa@rediffmail.com	GMC-Rewa	Madhya Pradesh	MUMBAI	MUMBAI
16	The Director Netaji Subhash Ch. Bose Medical College, Jabalpur Nagpur Road, Jabalpur, Madhya Pradesh 482003 Phone: 076123 70951 Email: nscbmcjb@gmail.com	NSBMC-Jabalpur	Madhya Pradesh	MUMBAI	MUMBAI

17	Dr. S. N. Iyengar The Dean Gajra Raja Medical College, Gwalior Veer Savarkar Marg, Gwalior - 474009 Madhya Pradesh Phone: +91 (0751) 2403400 Email: grmc1946@yahoo.co.in	GRMC-Gwalior	Madhya Pradesh	MUMBAI	MUMBAI
18	The Dean Govt. Medical College, Aurangabad Panchakki Road, Aurangabad - 431001 Maharashtra Ph No. : 0240-2402028 Email: deangmca@gmail.com	GMC-Aurangabad	Maharashtra	MUMBAI	MUMBAI
19	The Dean Govt. Medical College, Latur Near Old Railway Station Latur (M.S.) 413512 Call us: 02382 247676 E-mail: info@gmclatur.org	GMC-Latur	Maharashtra	MUMBAI	MUMBAI
20	The Dean Govt. Medical College, Akola Akola - 444 001 Maharashtra Phone +91- 0724-2431960 Email : acadgmca@hotmail.com	GMC-Akola	Maharashtra	MUMBAI	MUMBAI
21	The Dean Shri Vasantrao Naik Govt. Medical College, Yavatmal Maharashtra - 445001 Phone: (07232) 242456,240843 Email: deanvngmc@sancharnet.in	SVNGMC-Yavatmala	Maharashtra	MUMBAI	MUMBAI
22	The Dean and Principal M. K. C. G. Medical College, Berhampur Berhampur, District - Ganjam Odisha. Pin: 760 004 Tel. No. (0680) 2292746 Fax: (0680) 2292809 E-mail : mkcgmc.bam@gmail.com	MKCGMC-Berhampur	Orissa	KOLKATA	KOLKATA
23	The Dean and Principal V. S. S. Medical College, Burla Burla, Sambalpur, Odisha - 768017 Phone: +91-6632430768 Email: vssmcburlaorissa@gmail.com	VSSMC-Burla	Orissa	KOLKATA	KOLKATA
24	The Principal Government Medical College Sangrur Road, New Lal Bagh, Patiala, Punjab 147001 Ph: 0175 221 2018 Email: gomcoitcell@yahoo.com	GMC-Patiala	Punjab	NEW DELHI	NEW DELHI
25	The Principal S. P. Medical College, Bikaner PBM Hospital, Bikaner, Rajasthan 334001 Phone: 0151 222 6300 Email: principal_spmc@live.com	SPMC-Bikaner	Rajasthan	JAIPUR	MUNDRA / PIPAVAV / KANDLA

26	The Principal R. N. T. Medical College, Udaipur Near Collectorate, Hospital Rd, Court Chouraha, Udaipur, Rajasthan 313001 Phone: 0294 241 8258 Email: rnt_mcudr62@rediffmail.com; rntmedicaleducationdept@gmail.com	RNTMC-Udaipur	Rajasthan	JAIPUR	MUNDRA / PIPAVAV / KANDLA
27	The Principal Govt. Medical College, Kota Near building, LIC Office, Rangbari Rd, Sector - A, Rangbari, Kota, Rajasthan 324010 Phone: 0141 222 7406 Email: principalmck@gmail.com	GMC-Kota	Rajasthan	DELHI AIR CARGO	ICD, TUGHLAKABAD
28	The Dean Thanjavur Medical College, Thanjavur Tamil Nadu - 613 004 Phone: 04362-240851, 04362-240951 Email: thjmc_tn@yahoo.com	GMC-Thanjavur	Tamil Nadu	CHENNAI	CHENNAI
29	The Dean Tirunelveli Medical College, Tirunelveli Address: Palayamkottai Tamil Nadu 627011 Phone: 0462 257 2733 Email: dean@tvmc.ac.in	GMC-Tirunelveli	Tamil Nadu	CHENNAI	CHENNAI
30	The Principal Agartala Govt. Medical College Agartala - 799 006 Phone: 03812357130/ 2356701 Email: agmc-tr@nic.in, agmc@rediffmail.com	AMC-Tripura	Tripura	KOLKATA	KOLKATA
31	The Dean Govt. Medical College, Jhansi Public Relation Officer Maharani Laxmi Bai Medical College, Hospital Jhansi Phone:- 0510-2321446 Email: principalmcjhs@gmail.com,clmlmcj@gmail.com	GMC-Jhansi	Uttar Pradesh	DELHI AIR CARGO	ICD, TUGHLAKABAD
32	The Principal B.R.D.Medical college Gorakhpur Uttar Pradesh 273013 Phone: 0551 250 1736 Email Id :brdmcgkp1969@gmail.com, info@brdmc.org	GMC-Gorakhpur	Uttar Pradesh	DELHI AIR CARGO	ICD, TUGHLAKABAD
33	The Principal M. L. N. Medical College, Allahabad George Town, Allahabad, Uttar Pradesh 211002 Phone: 2147483647 Email: ansari@gmail.com	MLNMC- Allahabad	Uttar Pradesh	DELHI AIR CARGO	ICD, TUGHLAKABAD
34	The Principal L. L. R. Medical College, Meerut Garh Road, Jai Bhim Nagar, Meerut Uttar Pradesh 250004 Phone: 0121-2760888 Email: medllrm@yahoo.com	LLRMMC- Meerut	Uttar Pradesh	DELHI AIR CARGO	ICD, TUGHLAKABAD

35	The Principal B. S. Medical College, Bankura Kenduadihi, Bankura West Bengal 722101 Phone: 03242 244 700 Email: bsmc_xsa@yahoo.com, prin_bsmc@wbhealth.gov.in	BSMC-Bankura	West Bengal	KOLKATA	KOLKATA
36	The Principal Govt. Medical College, Malda Englishbazar, Malda, West Bengal 732101 Phone: 03512 221 087 Email: prin_mldmch@wbhealth.gov.in	GMC-Malda	West Bengal	KOLKATA	KOLKATA
37	The Principal Prof. Samir Chandra Ghosh Roy North Bengal Medical College, Darjeeling Thiknikata, India, Siliguri, Darjeeling West Bengal 734012 Phone: 098320 17967 Email: sgroy53@gmail.com	NBMC-Darjeeling	West Bengal	KOLKATA	KOLKATA

NB: The consignee will ensure timely issue of NMIC, CDEC, Octroi Exemption Certificates, Road Permits & Entry Tax Exemption Certificates, wherever applicable, to the suppliers.