GLOBAL TENDER ENQUIRY DOCUMENT

FOR PURCHASE OF
MEDICAL EQUIPMENT

On E-Tendering Basis

FOR

LADY HARDINGE MEDICAL COLLEGE

NEW DELHI

GOVT. OF INDIA

MINISTRY OF HEALTH & FAMILY WELFARE

HSCC/PUR/LHMC/2014 Dated 16.07.2014

BY

HSCC (INDIA) LTD

(A GOVERNMENT OF INDIA ENTERPRISE)
Plot No. 6-A, Block-E, Sector-1, NOIDA (U.P.) – 201 301
PHONE: 0120-2540153
FAX: 0120-2542447
URL: www.hsccltd.com

INDEX

LADY HARDINGE MEDICAL COLLEGE, NEW DELHI

GOVT OF INDIA
MINISTRY OF HEALTH & FAMILY WELFARE

Tender Enquiry No.: HSCC/PUR/LHMC/2014 **Dated 16.07.2014**

NOTICE INVITING TENDERS (NIT) - On E-TENDER BASIS

Lady Hardinge Medical College & Associated Hospitals **(LHMC)**, New Delhi under Ministry of Health & Family Welfare, Govt. of India through their Consultant **HSCC (India) Ltd.** invites **On-line** sealed tenders from eligible and qualified tenderers, in single stage two bid system for supply, installation, testing, commissioning & handing-over of following **Radiotherapy Equipment on Turn-Key Basis** at LHMC, New Delhi:

Schedule No.	Equipment Name & Department	Total Quantity	Estimated Cost(INR)	EMD Amount (INR)
	Radiotherapy			
1	High Energy Linear Accelerator	1	15,00,00000.00	30,00,000.00
2	Low Energy Linear Accelerator	1	8,00,00000.00	16,00,000.00
3	High Dose Rate Brachytherapy	1	3,00,00000.00	6,00,000.00
4	CT Simulator	1	6,00,00000.00	12,00,000.00

The bidders are required to be registered at HSCC e-tender portal www.tenderwizard.com/HSCC. The bid documents are available online from 18.07.2014 to 20.08.2014. Please log on to www.tenderwizard.com/HSCC only for downloading bid document and for participation through **E-Tendering basis**. For submission and other details, please refer HSCC e-tender portal www.tenderwizard.com/HSCC. For submission of the bids, the bidders are required to have Digital Signature Certificate (DSC) from one of the authorized Certifying Authorities. The bidders are required to submit (a) Original non-refundable fee of INR 5,000/- as bid document fee per set in the form of Cash, account payee Demand Draft/Pay Order/Cashier's Cheque/Banker's Cheque, drawn on a scheduled Bank in India, in favour of **"HSCC (India) Ltd"** payable at New Delhi/Noida (b) Original Bid Security as per Bid Document and submit **in the office of CGM (Proc. & F&A), HSCC (India) Ltd., E-6A, Sector-1, Noida – 201301 before the date and time fixed for opening of the bid either by registered post or by hand failing which the bid will be declared non-responsive**.

Complete set of Bid Documents has been made available at E-Tender portal www.tenderwizard.com/HSCC, www.hsccltd.com & www.lhmc.in.

Purchaser (LHMC) reserves the right to accept or reject any bid without assigning any reason or incurring any liability whatsoever. Prospective bidders are advised to regularly scan through HSCC E-Tender portal www.tenderwizard.com/HSCC as corrigendum/amendments etc., if any, will be notified on this portal only and no separate advertisement will be made for this.

Director,
LHMC, New Delhi

SECTION I

LADY HARDINGE MEDICAL COLLEGE, NEW DELHI

GOVT OF INDIA
MINISTRY OF HEALTH & FAMILY WELFARE

Tender Enquiry No.: HSCC/PUR/LHMC/2014 **Dated 16.07.2014**

NOTICE INVITING TENDERS (NIT) - On E-TENDER BASIS

(1) Lady Hardinge Medical College & Associated Hospitals **(LHMC)**, New Delhi under Ministry of Health & Family Welfare, Govt. of India through their Consultant **HSCC (India) Ltd.** invites **On-line** sealed tenders from eligible and qualified tenderers, in single stage two bid system for supply, installation, testing, commissioning & handing-over of following **Radiotherapy Equipment on Turn-Key Basis** at LHMC, New Delhi:

Schedule No.	Equipment Name & Department	Total Quantity	Estimated Cost(INR)	EMD Amount (INR)
	Radiotherapy			
1	High Energy Linear Accelerator	1	15,00,00000.00	30,00,000.00
2	Low Energy Linear Accelerator	1	8,00,00000.00	16,00,000.00
3	High Dose Rate Brachytherapy	1	3,00,00000.00	6,00,000.00
4	CT Simulator	1	6,00,00000.00	12,00,000.00

(2) **Tender No.:**

Sl. No.	Description	Schedule
i.	Dates of sale of tender enquiry documents	**18.07.2014 to 20.08.2014** **07.00 hrs to 17.00 hrs IST**
ii.	Place of sale of Tender Enquiry Documents	HSCC (India) Ltd, Plot No. 6-A, Block-E, Sector-1, Noida (U.P)-201301
iii.	Cost of the Tender Enquiry Document	INR5, 000/-
iv.	Pre Tender Meeting Date & Time	**31.07.2014**, 11.00 hrs IST
v.	Pre Tender Meeting Venue	Same as 2 (ii)
vi.	Closing date & time for receipt of Tender	**20.08.2014**, 14.30 hrs IST
vii.	Time and date of opening of Techno – Commercial tenders	**20.08.2014**, 15.00 hrs IST
Viii	Venue of Opening of Techno Commercial Tender	Same as 2 (ii)

3. Please long on to www.tenderwizard.com/HSCC only for downloading bid document and for participation through **e-tendering basis**. All corrigendums/modifications/amendments, if any, will be published on the website www.tenderwizard.com/HSCC only. All bidders are requested to visit this website on regular basis.

4. Tenderer may also downloaded the tender enquiry documents from the web site http://eprocure.gov.in/cppp, www.hsccltd.com or www.lhmc.in and submit its tender by utilizing the downloaded document, along with the required non-refundable fee as mentioned in Para 3 above.

5. Interested tenderers may also obtain further information about this requirement from the above office selling the documents. Tender Enquiry Documents may be purchased on payment of non-refundable fee of INR 5,000/- per set in the form of Cash, account payee Demand Draft/Pay Order/Cashier's Cheque/Banker's Cheque, drawn on a scheduled Bank in India, in favour of **"HSCC (India) Ltd"** payable at New Delhi/Noida**.**

6. If requested, the Tender Enquiry Documents will be mailed by Registered Post/Speed Post to the domestic tenderers and by international airmail to the foreign tenderers, for which extra expenditure per set will be INR 500/- for domestic post and INR 1500/- for international airmail. The tenderer is to add the applicable postage cost in the non-refundable fee mentioned in Para 3 above.

7. All prospective tenderers may attend the **Pre Tender meeting**. The venue, date and time indicated in the Para 2 above and for training for **e-tendering**.

8. **Bids to be submitted on-line only in single stage two bid system, i.e. Techno-commercial Bid (un-priced bid) and the Price Bid, for the above, including Bid Security and Bid Document Fee on or before the closing date and time indicated in the Para 2 above, failing which the tenders will be treated as late and rejected.**

9. The bidders shall be required to furnish a **Bid Security** for each Schedule along with the Bid for an amount specified herein above in the form of Demand Draft drawn in favour of **Director, Lady Hardinge Medical College & Associated Hospitals (LHMC), New Delhi** from any Nationalised bank payable at New Delhi.

10. In the event of any of the above tender opening/closing dates being declared as holiday/closed day for the purchase organization, the bids will be sold/received/opened on the next working day at the stipulated time.

11. The successful bidder will be required to furnish Contract **Performance Security** for 10% of contract value in the form of a Demand Draft/Bank Guarantee drawn in favour of **Director, Lady Hardinge Medical College & Associated Hospitals (LHMC), New Delhi** from any Nationalised bank payable at New Delhi within 30 days of issue of notification of award of contract. All relevant terms and conditions of tender and other details are available in bid documents.

12. The Tender Enquiry Documents are not transferable.

13. Bids shall be evaluated separately for each **Schedule**.

14. HSCC reserves the right to accept or reject any or all of the tenders in full or in part including the lowest bid without assigning any reason thereof or incurring any liability thereby.

Director,
LHMC, New Delhi

INSTRUCTION FOR E-TENDERING

Bid Documents can be downloaded from www.tenderwizard.com/HSCC from 18.07.2014 to 21.08.2014 (up to 11.00 hrs. On 21.08.2014).

The bidder should have to obtain **Digital Signature Registration** and **Vendor's Registration** for participation in **e-tendering** i.e filling up the formats and uploading of the bid on the website www.tenderwizard.com/HSCC.

Bidders shall be able to fill-up the following formats of the Techno-Commercial Bid and Price Bid, only after getting Digital Signature Registration & up-load them in the portal site www.tenderwizard.com/HSCC after getting Vendor Registration.

The Bidder must upload the following scanned copies along with above tender formats as attachments to its techno-commercial bid.

The following documents must be signed and stamped by the bidders before scanning & attachment:

A) Techno – Commercial Tender (Un priced Tender)

i) Earnest money (EMD) furnished **(as per format)** in accordance with bid document, documentary evidence as per bid document for claiming exemption from payment of earnest money. Copy of evidence of **EMD & Bid Document Fee** being submitted separately in original as per the due date of tender submission.
ii) Tender Form as per Section X (without indicating any prices), **(as per format)**.
iii) Documentary evidence, as necessary in terms of clauses 5 and 18 establishing that the tenderer is eligible to submit the tender and, also, qualified to perform the contract if its tender is accepted.
iv) Tenderer/Agent who quotes for goods manufactured by other manufacturer shall furnish Manufacturer's Authorisation Form **(as per format)**.
v) Power of Attorney in favour of signatory of TE documents and signatory of Manufacturer's Authorisation Form.
vi) 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.
vii) Performance Statement as per section IX along with relevant copies of orders and end users' satisfaction certificate **(as per format)**.
viii). Technical compliance statement w.r.t. tender specifications. Product Brochure/Literature for the model & make offered.
ix). Valid quality certificates
x). Valid AERB/BARC certificate wherever applicable (X-Ray equipment).
xi). Audited balance sheets with Profit & Loss Account along with audited reports for the last 3 years duly signed and stamped by Chartered Accountant with Membership No.
xii) 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), **(as per format)**.
xiii) Certificate of Incorporation in the country of origin.
xiv). Name and address of the Banker with Account No. for payments
xv). Income Tax Account No. allotted by Income Tax Deptt. Of Govt. of India.
xvi) The bid document along with corrigendum/amendments etc., if any, duly signed & stamped, along with your techno-commercial bid.
xvii) Checklist as per Section XX **(as per format)**.

Price Bid

i). Price Schedule **(as per format)**
ii). CMC Price Schedule **(as per format)**
iii). Turnkey Price Schedule **(as per format)**

The Bidder shall ensure that the bid complete in all respects must be uploaded on the website www.tenderwizard.com/HSCC on or before the closing date & time indicated in the bid document. No rectification in the bid is possible after submission of the bid on-line.

The Bidder shall also ensure that EMD along with Bid Document Fee of the indicated amount has been submitted in original at HSCC (India) Ltd., E-6(A), Sector-I, Noida, on or before the closing date and time as mentioned in the bid document, failing which the bids shall be treated as late and rejected.

Only the **Techno-Commercial bid** shall be opened on 20.08.2014 at 15.00 hrs. The techno-commercial bid shall not be opened of those bidders who have not complied with the provisions of the Bid Document Fee and Bid Security clause in the tender document. Based on Techno-Commercial evaluation, the **Price bids** of only those bidders, who are found technically and commercially eligible, shall be opened at a later date to be intimated to them.

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 Director, Lady Hardinge Medical College & Associated Hospitals (LHMC), New Delhi.
(ii) "Tender" means Bids / Quotation / Tender received from a Firm / Tenderer / Bidder.
(iii) "Tenderer" means Bidder/ the Individual or Firm submitting Bids / Quotation / Tender
(iii) "Supplier" means the individual or the firm supplying the goods and services as incorporated in the contract.
(iv) "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.
(v) "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.
(vi) "Earnest Money Deposit" (EMD) means Bid Security/ monetary or financial guarantee to be furnished by a tenderer along with its tender.
(vii) "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.
(viii) "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.
(ix) "Consignee" means Director, Lady Hardinge Medical College & Associated Hospitals (LHMC), New Delhi.
(x) "Specification" means the document/standard that prescribes the requirement with which goods or service has to conform.
(xi) "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.
(xii) "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, checklist 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. TENDER ENQUIRY DOCUMENTS

8. Content of Tender Enquiry Documents

8.1 In addition to Section I – "Notice inviting 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 – Instructions from Ministry of Shipping/ Surface Transport (Annexure 1 & 2)
- Section XX – Check List for the Tenderers
- Section XXI – 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 on the website www.tenderwizard.com/HSCC only. All bidders are requested to visit this website on regular basis 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. The purchaser will respond in writing to such request provided the same is received by the purchaser not later than fifteen days (unless otherwise specified in the SIT) prior to the prescribed date of submission of tender.

C. PREPARATION OF TENDERS

11. Documents Comprising the Tender

11.1 **The Bidder has to submit his bid only through E-Tendering.** The Bidder shall prepare single stage Two part bids, i.e. Techno Commercial Bid (un-priced) and Price Bid and up-load in the site www.tenderwizard.com/HSCC through **e-tendering**. All Techno-commercial & Price Bid Formats of the bid document should be duly filled by the Bidders shall comprise the following:

A) Techno – Commercial Tender (Un priced Tender)

i) Earnest money 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.

ii) Tender Form as per Section X (without indicating any prices).

iii) 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.

iv) Tenderer/Agent who quotes for goods manufactured by other manufacturer shall furnish Manufacturer's Authorisation Form.

v) Power of Attorney in favour of signatory of TE documents and signatory of Manufacturer's Authorisation Form.

vi) 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.
vii) Performance Statement as per section IX along with relevant copies of orders and end users' satisfaction certificate.
viii) 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).
ix) Certificate of Incorporation in the country of origin.
x) Checklist as per Section XX.

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

The information given at clause no. 11.1 A) ii) & viii) above should be reproduced with the prices indicated.

N.B.

1. All pages of the Tender should be page numbered and indexed.
2. It is the responsibility of tenderer to go through the TE document to ensure furnishing all required documents in addition to above, if any.

11.2 The authorized signatory of the tenderer must sign the tender duly stamped at appropriate places and initial all the remaining pages of the tender.

The Bid shall contain no inter-lineations, erasures or overwriting except as necessary to correct errors made by the Bidder, in which case such corrections shall be initialled by the person or persons signing the Bid.

11.3 Unless otherwise mentioned, **e-tenders** shall contain all the documents including technical literature, catalogues, order copies, clients/end-user certificates for satisfactory performance of the equipment offered, balance sheets etc. as per the requirement as per Instructions for **E -Tendering**. The Bid shall be typed or written in indelible ink and shall be signed by the Bidder or persons duly authorised to bind the Bidder to the contract. The authorisation shall be indicated by written power-of-attorney accompanying the Bid. **All pages of the Bid, except for un-amended printed literature, shall be initialled, page numbered and stamped by the person or persons signing the Bid.**

11.4 A tender, which does not fulfil any of the above requirements and/or gives evasive information/reply against any such requirement, shall be liable to be ignored and rejected.

11.5 Tender sent by fax/telex/cable/electronically shall be ignored.

12. Tender currencies

12.1 The tenderer supplying indigenous goods or already imported goods shall quote only in Indian Rupees.

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 Yen. As regards price(s) for allied services, if any required with the goods, the same shall be quoted in Indian Rupees only 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 way shall be treated as non -responsive and rejected.

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. If any column does not apply to a tenderer, same should be clarified as "NA" by the tenderer.

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 and, also, to offer special discount for combined 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) 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; and

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) Deleted

c) the price of goods quoted CIP (name port of destination) in India as indicated in the List of Requirements, Price Schedule and Consignee List;

d) Deleted

e) 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;

f) the charges for Incidental Services, as in the List of Requirements and Price Schedule;

g) the prices of Turnkey (if any), as mentioned in List of Requirements, Technical Specification and Price Schedule; and

h) 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.

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) 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.

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.

15.2 However, as regards taxes and duties, if any, chargeable on the goods and payable, the conditions stipulated in GIT clause 13 will apply.

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.

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(d) 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 **"Director, Lady Hardinge Medical College"**

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.

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, however, may not agree to extend its tender validity without forfeiting its EMD.

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. Signing and Sealing of Tender

21.1 The tenderers shall submit their tenders as per the instructions contained in GIT Clause 11.

21.2 Unless otherwise mentioned in the SIT, a tenderer shall submit three copies of its tender marking them as "Original", "Duplicate" and "Triplicate". Duplicate & Triplicate tenders may contain all pages including Technical Literature/Catalogues as per in Original tenders.

21.3 The original and other copies of the tender shall either be typed or written in indelible ink and the same shall be signed by the tenderer or by a person(s) who has been duly authorized to bind the tenderer to the contract. The letter of authorization shall be by a written power of attorney, which shall also be furnished along with the tender.

21.4 All the copies of the tender shall be duly signed at the appropriate places as indicated in the TE documents and all other pages of the tender including printed literature, if any shall be initialled by the same person(s) signing the tender. The tender shall not contain any erasure

or overwriting, except as necessary to correct any error made by the tenderer and, if there is any such correction; the same shall be initialled by the person(s) signing the tender.

21.5 The tenderer is to seal the original and each copy of the tender in separate envelopes, duly marking the same as "Original", "Duplicate", "Triplicate" and so on and writing the address of the purchaser and the tender reference number on the envelopes. The sentence "NOT TO BE OPENED" before _____ (The tenderer is to put the date & time of tender opening) are to be written on these envelopes. The inner envelopes are then to be put in a bigger outer envelope, which will also be duly sealed, marked etc. as above. If the outer envelope is not sealed and marked properly as above, the purchaser will not assume any responsibility for its misplacement, premature opening, late opening etc.

21.6 TE document seeks quotation following **two Tender System**, in two parts. First part will be known as **'Techno - Commercial Tender'**, and the second part **'Price Tender'** as specified in clause 11 of GIT. Tenderer shall seal **'Techno - Commercial Tender'** and **'Price Tender'** separately and covers will be suitably super scribed. Both these sealed covers shall be put in a bigger cover and sealed and procedure prescribed in Paras 21.1 to 21.5 followed.

D. SUBMISSION OF TENDERS

22. Submission of Tenders

22.1 The Bidders has to submit their bid through **E-Tendering** only on the site **www.tenderwizard.com/HSCC**.

22.2 The bidder shall up-load supporting documents as indicated in the Instructions for E -Tendering on the site www.tenderwizard.com/HSCC through **e-tendering**. The bidders must ensure that they must submit their bid with-in the stipulated date & time as specified in the bid document through **e-tendering mode**.
It is responsibility of the bidder to ensure that EMD & Bid Document Fee whether sent by post or by person are reached to the office of HSCC (India) Ltd., E-6A, Sect-1, Noida-201301 (U.P.) by the specified submission date & time as per the bid document. In the event of specified date for submission of the bids fall on/is subsequently declared a holiday or closed day for the purchaser, the bids will be received up to the appointed time on the next working day.

22.3 The bids cannot be up-loaded after the specified date & time for submission of the bids as mentioned in the bid document.

23. Late Tender

23.1 **No Bid can be uploaded on the site after the deadline for submission of Bids prescribed by the Purchaser, pursuant to clause 13**.

23.2 The Bidder shall ensure that bid complete in all respect must be up-loaded on the website www.tenderwizard.com/HSCC on or before the closing date & time indicated in the bid document. No other rectification in the bid is possible after submission of the bid on-line.

24. Alteration and Withdrawal of Tender

24.1 No tender shall be withdrawn after the deadline for submission of the tender and before expiry of the bid validity period. If a bidder withdraws its bid during this period, it will result in forfeiture of the earnest money furnished by the bidder in its bid.

E. TENDER OPENING

25. Opening of Tenders

25.1 The purchaser will open the 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 The Bidders' names, the presence or absence of the requisite Bid Security, Bid Document Fee, Model & Make of equipment offered shall be made available at the opening through **E-Tendering.**

25.3 Price Bid of bidders whose offers (Techno-commercial bid) are found technically and commercially suitable and comply with the Bid Documents will only be opened on a date to be intimated later to these bidders.

25.4 Bids that are not opened at bid opening shall not be considered further for evaluation irrespective of the circumstances. Withdrawn bids shall not be considered..

25.5 **Non-submission of Bid Security & Bid Document Fee by any bidder as per the document will render the bidder's bid invalid and such bidder's bid shall not be opened and bid will be rejected.**

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. Preliminary 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, whether the documents have been properly signed stamped and whether the Tenders are generally in order.

27.2 Prior to the detailed evaluation of Price Tenders, pursuant to GIT Clause 34, the Purchaser will determine the substantial responsiveness of each Tender to the TE Document. For purposes of these clauses, a substantially responsive Tender is one, which conforms to all the terms and conditions of the TE Documents without material deviations. Deviations from, or objections or reservations to critical provisions such as those concerning Performance Security (GCC Clause 5), Warranty (GCC Clause 15), EMD (GIT Clause 19), Taxes & Duties (GCC Clause 20), Force Majeure (GCC Clause 26) and Applicable law (GCC Clause 31) will be deemed to be a material deviation. 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 If a Tender is not substantially responsive, it will be rejected by the Purchaser and cannot subsequently be made responsive by the Tenderer by correction of the nonconformity.

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 the 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 and will be summarily ignored;

(i) Tender form as per Section X (signed and stamped) not enclosed
(ii) Tender is unsigned.
(iii) Tender validity is shorter than the required period.
(iv) Required EMD (Amount, validity etc.)/ exemption documents have not been provided.
(v) Tenderer has quoted for goods manufactured by other manufacturer(s) without the required Manufacturer's Authorisation Form as per Section XIV.
(vi) Tenderer has not agreed to give the required performance security.
(vii) Goods offered are not meeting the tender enquiry specification.
(viii) Tenderer has not agreed to other essential condition(s) specially incorporated in the tender enquiry like terms of payment, liquidated damages clause, warranty clause, dispute resolution mechanism applicable law.
(ix) Poor/ unsatisfactory past performance.
(x) Tenderers who stand deregistered/banned/blacklisted by any Govt. Authorities.
(xi) Tenderer is not eligible as per GIT Clauses 5.1 & 17.1.
(xii) Tenderer has not quoted for the entire quantity as specified in the List of Requirements in the quoted schedule.

28. Minor Infirmity/Irregularity/Non-Conformity

28.1 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 tenderers. 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

30.1 In case any discrepancy is observed between the text etc. of the original copy and that in the other copies of the same tender set, the text etc. of the original copy shall prevail. Here also, the purchaser will convey its observation suitably to the tenderer by register / speed post and, if the tenderer does not accept the purchaser's observation, that tender will be liable to be ignored.

31. Qualification Criteria

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

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. However, as already mentioned in GIT sub clause 13.2, the tenderers have the option to quote for any one or more schedules and offer discounts for combined schedules. Such discounts wherever applicable will be taken into account to determine the lowest evaluated cost for the purchaser in deciding the successful tenderer for each schedule, subject to tenderer(s) being responsive.

34. Comparison of Tenders

34.1 Unless mentioned otherwise in Section – III – Special Instructions to Tenderers and Section – VI – 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 CMC prices will also be added for comparison/ranking purpose for evaluation. **Net Present value (NPV) of the Comprehensive Annual Maintenance charges (CMC) quoted for 3 years after the warranty period shall be added to the bid price for evaluation and will be calculated after discounting the quoted 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, Customs 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.

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 of 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 at the time of the awarding the contract, the purchaser reserves the right to increase by up to twenty five (25) per cent, the quantity of goods and services mentioned in the contract (rounded of 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 after one year from the Date of Notification of Award.

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 fax/ telex/cable (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.

42.3 The Purchaser/Consignee reserves the right to issue the Notification of Award consignee wise.

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

43.1 Failure of the successful tenderer in providing performance security 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	29
B	8 to 10	TE documents	No Change	29
C	11 to 21	Preparation of Tenders	No Change	29
D	22 to24	Submission of Tenders	No Change	29
E	25	Tender Opening	No Change	29
F	26 to 37	Scrutiny and Evaluation of Tenders	No Change	29
G	38 to 45	Award of Contract	No Change	29

SPECIAL INSTRUCTIONS TO TENDERERS (SIT)

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.

A Preamble

No Change

B TE documents

No Change

C Preparation of Tenders

No Change

D Submission of Tenders

No Change

E Tender Opening

No Change

F Scrutiny and Evaluation of Tenders

No Change

G Award of Contract

No Change

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, trade marks 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 thirty (30) 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 30 months 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:

a) 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 **Director, Lady Hardinge Medical College, New Delhi**.

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 with out 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 twenty-one (21) 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 & lodging will be borne by the purchaser and/or its nominated representative(s).

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.

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 or equivalent (acceptable to the purchaser) prior to despatch at the supplier's cost and furnish necessary certificate from the said agency in support of their claim.

9. Terms of Delivery

9.1 Goods shall be delivered by the supplier in accordance with the terms of delivery specified in 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. 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.

If the equipment is not commissioned and handed over to the consignee within 3 months, the insurance will be got 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 If 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) Immediately following such discontinuation, providing the Purchaser/Consignee, free of cost, the designs, drawings, layouts and specifications of the spare parts, as and if requested by the Purchaser/Consignee.

12.2 Supplier shall carry sufficient inventories to assure ex-stock supply of consumable spares for the goods so that the same are supplied to the Purchaser/Consignee promptly on receipt of order from the Purchaser/Consignee.

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.

i) Installation & commissioning, Supervision and Demonstration of the goods
ii) Providing required jigs and tools for assembly, minor civil works required for the completion of the installation.
iii) Training of Consignee's Doctors, Staff, operators etc. for operating and maintaining the goods
iv) Supplying required number of operation & maintenance manual for the goods

14. Distribution of Dispatch Documents for Clearance/Receipt of Goods

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 (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) Consignee Receipt Certificate as per Section XVII in original issued by the authorized representative of the consignee;
(iii) Two copies of packing list identifying contents of each package;
(iv) Inspection certificate issued by the nominated Inspection agency, if any.
(v) Certificate of origin;
(vi) Insurance Certificate as per GCC Clause 11.
(vii) 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) Insurance Certificate as per GCC Clause 11.
(v) Manufacturer's/Supplier's warranty certificate;
(vi) Inspection Certificate for the despatched equipments issued by recognized/ reputed agency like SGS, Lloyd or equivalent (acceptable to the purchaser) 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

15.1 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.

15.2 The **warranty** shall remain valid for **60 months** from the date of installation & commissioning 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.

a. No conditional warranty like mishandling, manufacturing defects etc. will be acceptable.
b. Warranty as well as Comprehensive Maintenance contract will be inclusive of all accessories and Turnkey work and it will also cover the following:-

- X-ray and CT tubes and high-tension cables.
- Helium replacement
- Any kind of motor.
- Plastic & Glass Parts.
- All kind of sensors including oxygen sensors.
- All kind of coils, probes and transducers including ECG cable, BP transducers, SpO2 Probes, Ultrasound and Colour Doppler Transducers/ probes, BP cuffs, Defibrillator internal and external paddles, chart recorders, ventilator reusable patient circuits, servo humidifier with chamber, electrodes and probes for blood gas analyzer, MRI coils.
- All kind of flat panel sensors and cassettes for DR & CR systems and patients handling trolleys etc
- Printers and imagers including laser and thermal printers with all parts.
- UPS including the replacement of batteries.
- Air-conditioners

c. Replacement and repair will be under taken for the defective goods.
d. 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 to a further period of twenty four (24) months from the date such rectified / replaced goods starts functioning to the satisfaction of the purchaser.

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.

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:

75 % payment of the contract price shall be paid on receipt of goods in good condition and upon the submission of the following documents:

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

(v) 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;
(vi) Certificate of origin.

b) On Acceptance:

Balance 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.

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 (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) Inspection certificate issued by the nominated inspection agency, if applicable as per contract;
(vii) Manufacturer's own factory inspection report and
(viii) Certificate of origin by the chamber of commerce of the concerned country;
(ix) Inspection Certificate for the despatched equipments issued by recognized/ reputed agency like SGS, Lloyd or equivalent (acceptable to the purchaser) prior to despatch.
(x) Certificate of origin

b) On Acceptance:

Balance payment of 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.

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 100 % payment to the Foreign Principal.

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. Payment shall be paid in Indian Rupees to the Indian Agent on proof of 100 % payment to the Foreign Principal.

C) Payment of Turnkey, if any:

Turnkey payment will be made to the manufacturer's agent 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. Payment shall be made in Indian Rupees to the Indian Agent on proof of 100 % payment to the Foreign Principal.

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 respective consignees. 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. Delay in the supplier's performance

22.1 The supplier shall deliver of 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.

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.

23. Liquidated damages

23.1 Subject to GCC clause 26, if the supplier fails to deliver any or all of the goods or fails to perform the services within the time frame(s) incorporated in the contract, 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 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.

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, acts of the Purchaser/Consignee either in its sovereign or contractual capacity, 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. 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.

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. General/ Miscellaneous Clauses

32.1 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.

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

32.3 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.

32.4 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.

32.5 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.

32.6 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.

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

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

33.1 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, Customs 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.

33.2 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.

33.3 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.

i. 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

L1 price, in a situation where L1 price is from someone other than on 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 L1 price, the 4% quantity earmarked for MSEs owned by SC/ST entrepreneurs will be met from other participating MSEs.

ii. 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 on MSE, failing which their tender will be liable to be ignored.

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.

SECTION - VI
LIST OF REQUIREMENTS

Part I

Schedule No.	Equipment Name & Department	Total Quantity	EMD Amount (INR)
	Radiotherapy		
1	High Energy Linear Accelerator	1	30,00,000.00
2	Low Energy Linear Accelerator	1	16,00,000.00
3	High Dose Rate Brachytherapy	1	6,00,000.00
4	CT Simulator	1	12,00,000.00

Part II: Required Delivery Schedule:

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

90 days from date of Notification of Award except, CT 64 Slice, MRI Unit and CT Simulator for which the delivery period will be 180 days, to delivery at consignee site. The date of delivery will be the date of delivery at consignee site (Tenderers may quote earliest delivery period).

b) For Imported goods directly from foreign:

90 days from the date of opening of L/C except CT 64 Slice, MRI Unit and CT Simulator for which the delivery period will be 180 days. The date of delivery will be the date of Bill of Lading/Airway bill. (Tenderers may quote the earliest delivery period).

Note: The Purchaser/Consignee reserves the right to extend the delivery period up to one year from the date of NOA at its discretion.

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:

Comprehensive Maintenance Contract (CMC) as per details in Technical Specification.

Part VI:

Required Terms of Delivery and Destination.

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

At Consignee Site – Specified in the List of Requirements

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

b) For Imported goods directly from abroad:

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

The shipping arrangements shall be made in accordance with the instruction of Ministry of Shipping & Transport, New Delhi, India as detailed in Annexure 1 at Section XIX.

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

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

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: OPTIONAL ITEMS: Bidders are requested to quote for all the available options as asked in the bidding document with reasonable pricing. However the pricing for optional items will not be considered for price comparison for ranking purpose. If the firm has not quoted for any optional item (except the items of turnkey) their offer will be treated as TECHNICALLY RESPONSIVE if otherwise meeting the specification.

TECHNICAL

SPECIFICATIONS

Technical Specification for a High-Energy Linear Accelerator

Sealed tenders (sealed separately as the "Technical Bid & the Price Bid-in duplicate) are invited directly from the manufacturers/principles for the supply of a state-of the-art clinical Radiotherapy Linear Accelerator cabable of producing 6MV and 15 MV dual photon energy for the routine and specialized treatment techniques. Linear Accelerator must have the latest technology and should be fully computer controlled with the latest state-of-art control system. The Linear accelerator system includes Medical Linear accelerator, Treatment Planning System, Record and Verification System, Dosimetry System, Quality Assurance and Radiation Safety System with other required ancillary and accessories. It should be capable of integrating with standard networking and PACS systems available in the market. The offered equipment should have the following technical features.

1. Linear Accelerator

An Advanced, new generation of high-energy medical linear accelerator should be equipped with a multileaf collimator (MLC) and an electronic portal imaging device (EPID) and kV-cone-beam CT (CBCT) to perform conformal treatment techniques such as three dimensional conformal radiotherapy (3D-CRT), intensity modulated radiation therapy (IMRT) and image-guided radiotherapy (IGRT) through record and verification system. The system should have the capability for future upgradation in order to perform advanced treatments of stereotactic radiosurgery and radiotherapy (SRS/SRT), volumetric Modulated Arc therapy, 4D-Radiotherapy and Adaptive Radiotherapy.

2.0 Photon Beam Characteristics

2.1 **Beam Energies**

The accelerator shall be capable of producing two clinically useful photon beams with energies of 15 MV as high energy and 6 MV as low energy.

2.2 **Dose Rate and Beam Stability**

2.2.1 The maximum dose rate for routine clinical applications shall equal at least 300 monitor units (MU)/min or more for a 10 x 10 cm field at the depth of maximum buildup at a TSD of 100 cm for both photon beams.

2.2.2 Specify the maximum dose rate and number of intermediate dose rate available in the offered linac model

2.2.3 Specify the beam stability time in milliseconds.

2.3 **Field Size Specifications**

The field size is defined as the distance along the radial and transverse axes between the points of 50% density on an x-ray film taken at 100 cm TSD with minimum buildup. The digital display, light field size and mechanical display should be accurate to within $\pm$ 2 mm.

2.3.1 The accelerator shall provide a continuously variable rectangular, unclipped field size from 1 x 1 cm to 35 x 35 cm at 100 cm SSD. The maximum clipped field size should equal or exceed 40 x 40 cm at 100 cm SSD. Clipped corners are unacceptable for fields smaller than 35 x 35 cm.

2.3.2 A detachable block holder should be provided to accommodate 2 trays simultaneously for wedges and block trays. The size of the blocking trays should be at least 5 cm larger

than the maximum field size at the lower position. Specify location and size of blocking trays.

2.3.3 Asymmetrical collimation for two sets of jaws shall be provided. One set of jaws shall be capable of crossing the center line by at least 10 cm as projected at 100 cm TSD. The collimators shall re-center automatically when the symmetrical mode of operation is re-selected.

2.4 **Beam Profile**

2.4.1 **Field Flatness Specification**

Variation of x-ray intensity relative to the central axis shall not exceed ± 4% at 100 cm SSD and 10 cm depth over the central 80% of the field for the longitudinal and transverse axes of all field sizes from 10 x 10 cm to 40 x 40 cm. State the maximum variations for the above field sizes at each energy.

2.4.2 **Field Symmetry Specifications**

The maximum percent differences of average doses shall not exceed ± 3.0% for the longitudinal and transverse halves of the field at 100 cm TSD and 10 cm depth, at gantry angles of 0, 90, 180 and 270 degrees. Field sizes shall be specified as 10 x 10 cm and 40 x 40 cm. Average dose is defined as the arithmetic average of minimum and maximum doses within the central 80% of the field for both axes.

2.4.3 **Radiation Field Penumbra**:

The width between the 20% and the 80% isodose lines measured for 10 X 10 cm^2 at depth of 10 cm at 100 cm SSD should not be more than 10mm. Specify the penumbra width.

2.5 **Beam Quality Index:**

The ratio of ionization measured at 20 cm and 10cm depth for a field size 10 X 10 cm2 at the detector level and with constant detector source distance = 100cm should be as given below:

Photon beam energy (MV)	Quality Index (QI)
6 MV	Specify
15 MV	Specify

2.6 **Radiation Leakage**

Radiation leakage limits shall be within appropriate regulatory agency guidelines as follows:

2.6.1 Photon leakage. The photon leakage rate at any point one meter from the target outside the cone defined by the primary x-ray collimator shall be less than 0.1% of the absorbed dose at the isocenter.

2.6.2 Collimator transmission. The movable collimators shall not permit transmission of radiation exceeding 0.5% of the central axis dose at Dmax measured in air for both photon energies.

2.6.3 Neutron leakage. The neutron leakage rate should not exceed 0.2% expressed in neutron dose equivalent (Sivert) when added to the photon leakage for a 10 x 10 cm field at the isocenter at any point one meter from the target when the jaws are closed.

2.6.4 In addition to meeting above specifications for radiation leakage, the linac should also meet all the mandatory safety and radiation leakage regulations as specified by Atomic Energy Regulatory Board (AERB), Mumbai, India for a medical linear accelerator.

2.7 **Rotational / Arc Therapy**

2.7.1 The Linac must have photon arc therapy feature with gantry rotation in clockwise and counter clockwise directions.

2.7.2 The dose rate/range of dose rate should be specified MU per degree. The MU/degree shall automatically be computed.

2.7.3 A range of continuously variable dose rate should be available. A unit able to deliver high dose per degree will be preferred

2.8 **Maximal Dose**

For TBI procedures, maximum dose up should be specified for a single field

2.9 **Congruence Between Optical and Radiation Field:**

The congruence between optical and radiation fields for 5x5 cm^2, 10 cm x10 cm at 0, 90,180 and 270 degree gantry angles with SSD = 100 cm should be within 2 mm along X,Y axes.

3.0 Electron Beam Characteristics

3.1 **Electron Beam Energies**

Five clinically useful electron beam energies shall be provided. The lowest energy shall be 4 or 6 MeV and the highest energy shall be 15 MeV/16 MeV or above. Energy shall be specified as the most probable energy (E_p) of the electron energy spectrum at 100 cm from the accelerator exit window.

3.2 **Dose Rate**

The dose rate at the isocenter shall not be less than 300 MU/minute for each electron energy.

3.3 **Field Size**

The electron beam size is defined by the inside dimensions of the electron beam applicators projected geometrically to a plane surface at 100 cm SSD. A range of field sizes from 4 x 4 cm to 25 x 25 cm is required. A method to obtain irregular field shapes shall be provided.

3.3.1 It shall be possible to visualize both the field defining light and the optical distance indicator with an electron applicator in place.

3.4 **Beam Profile**

3.4.1 Field Flatness

The maximum percent variation of the electron intensity at 100 cm SSD at D_{max} shall not exceed 5% (within the central 80% of the longitudinal and transverse axes relative to the central axis) for field sizes from 10 x 10 cm to 25 x 25 cm and for all the electron beam energies.

3.4.2 Beam Symmetry

The maximum percent variation in the average electron intensity to the longitudinal and transverse halves of the electron field at D_{max} for a 10 x 10 and 25 x 25 cm field at 100 cm SSD shall not exceed $\pm$ 2% at gantry angles of 0, 90, 180 and 270 degrees.

The average electron intensity is the average of the maximum and minimum points within the central 80% of the field for each of the axes.

3.5 **X-ray Contamination**

The x-ray contamination of the electron beam shall be less than 5% of the maximum dose for all energies specified previously.

3.6 **Total Skin Electron Therapy**

A high dose rate electron mode for total skin electron therapy must be provided with a minimum dose rate of 900 MU/min or above for the 6 MeV electron beam.

4. Accelerator System

4.1 The system must provide with either Magnetron or Klystron as the radiofrequency (RF) micro power source. The warranty should be at least for 5years. (Pro-rata guarantee is not acceptable).

4.2 Standing or travelling type of wave-guide along with the bending magnet, target assembly, vacuum ion-pump should be offered a warranty of 5 years. (Pro-rata guarantee is not acceptable).

4.3 Specify the target type and materials and also flattening filter materials in details

4.4 Electron gun should have warranty of minimum 5 years and the beam focal spot should be within 3 mm diameter.

5. Dose Monitoring System

5.1 Sealed type of dose monitoring chambers must be provided and should operate independent of ambient temperature and pressure. All dosimetry, patient and unit safety related interlocks must be sensed and controlled by hardware and software

5.2 The equipment shall provide two independent dose monitoring systems for primary and secondary dose monitoring as well dose distribution monitoring

5.3 The dose monitoring systems shall monitor the beam energy and shall terminate irradiation when the change of beam energy greater than ±3% of the nominal energy.

5.4 Provision of a controlling timer to protect against failure of dose monitoring systems shall comply with the requirements in accordance with respective IEC norms.

5.5 The reproducibility tolerance for the dose monitoring system shall be better than 1% or 1 MU.

5.6 The linearity tolerance of accumulated doses from 10 to 1000 MU for the dose monitoring system shall be ± 1% or 1 MU. Specify the linearity tolerance for less than 10MU in view of IMRT

5.7 The reproducibility tolerance at any gantry angles for the dose monitoring system shall be better than ± 1% or 1 MU.

6. Mechanical Features

6.1 Gantry

6.1.1 Gantry shall be motorized by local and remote controls. Automatic setup facility and in-room display of treatment parameters shall be provided.

6.1.2 The total range of gantry rotation shall not be less than 360°

6.1.3 Resolution and accuracy of digital readout shall be 0.1° and ± 0.5° or better

6.1.4 Resolution and accuracy of analog readout shall be 1° and ± 1° or better

6.2 Collimator

6.2.1 Collimator shall be motorized by local and remote controls

6.2.2 The cross-wire wander (rotation) shall not exceed 1mm diameter

6.2.3 The total range of collimator rotation shall not be less than ± 165°

6.2.4 Resolution and accuracy of digital readout shall be 0.1° and ± 0.5° or better

6.2.5 Resolution and accuracy of analog readout shall be 1° and ± 1° or better

6.3. Diaphragm (Jaws)

6.3.1 Each diaphragm shall be independently motorized by local and remote controls

6.3.2 One pair of diaphragm shall be traveled up to at least -10cm crossover the central axis in order to simulate the asymmetrical and offset fields.

6.3.3 Resolution and accuracy of digital readout shall be 1 mm and ± 1mm or better
6.3.4 Maximum angular deviation between the axes of opposing diaphragms shall be stated.

6.4 Multileaf Collimator

6.4.1 Number of multileaf collimator (MLC) leaves shall be at least 40 pairs or more. However, the better specification i.e more no. of leaves would be preferred

6.4.2 MLC leaf width projected at 100 cm TSD shall be 10 mm or less.

6.4.3 Multileaf speed together with maximum possible dose rate for dynamic radiotherapy shall be stated

6.4.4 Maximum range of leaf speed and extension between leaves shall be stated.

6.4.5 Accuracy and repeatability of leaf position shall be within ± 1mm or better. Accuracy of leaf alignment perpendicular to leaf movement about isocenter shall be within 1mm or better.

6.4.6 Radiation parameters such as leaf penumbra, leaf transmission, inter-leaf transmission and coincidence of radiation field vs optical field shall be stated.

6.4.7 The MLC system shall incorporate a fast and efficient QA tools (compliance of AAPM-TG-50 guidelines) for checking and monitoring all leaves position in real time. Deviations from leaves position calibration shall be interlocked to prevent treatment.

6.4.8 Clearance from bottom of collimator to isocenter shall be specified.

6.4.9 Provision of treatment verification and record system with the necessary interface for static and dynamic operation of MLC prior to treatment delivery.

6.5 Treatment Table/Couch

6.5.1 Vendor shall provide the treatment couch and accessories used for accurate image guided radiation therapy.

6.5.2 Indexed carbon fiber tabletop shall be provided.

6.5.3 The tabletop shall comply with the deflection requirement of IEC norm.
6.5.4 Lifting capacity shall be at least 200kg
6.5.5 IEC scale convention shall be provided.
6.5.6 Treatment tabletop shall be capable of free manual movement in both lateral & longitudinal directions
6.5.7 Lateral & longitudinal couch displacement shall not exceed 1mm under braked condition
6.5.8 Range of vertical, longitudinal and lateral movement shall be stated
6.5.9 Range and accuracy of isocentric rotation shall be stated.
6.5.10 Vendor shall specify the accuracy of isocentric rotation angle.
6.5.11 Mechanical isocenter accuracy for couch rotation shall not 1mm radius sphere
6.5.12 Vendor shall specify the accuracy of couch rotation isocenter
6.5.13 Vendor shall specify the coincidence of couch isocenter with gantry and collimator isocenter.
6.5.14 Vendor shall provide any auto-setup / remote control couch motions capability
6.5.15 Precision of digital couch rotation readout +/- 0° or accuracy of digital couch rotation readout +/- 1 ° or better.

6.5.16 Precision of digital couch vertical, longitudinal and lateral position readout shall be +/- 1mm or better, accuracy of digital couch vertical, longitudinal and lateral position +/- 2mm or better.

6.5.17 Vendor is required to facilitate with all available accessories, inter-changeable tabletop materials, removable parts for treatment. Provision of patient immobilization accessories, preferably with indexing capability compatible with the couch. Detailed list of all accessories shall be stated and provided.

6.5.18 Emergency down drive shall be provided to remove the patient in the case of power failure.

6.5.19 Two extra spare control pendants shall be provided

6.6 Electronic Portal Imaging System

6.6.1 The imager shall utilize amorphous silicon (a-Si) with higher resolution shall be provided

6.6.2 Vendor shall specify the maximum image field size at isocenter and at other distance achievable with a single exposure for the detector panel.

6.6.3 Specify details of all movements and positional accuracy of the imager.

6.6.4 Specify the details of pixel depth pitch of the imager.

6.6.5 Maximum image acquisition rate and minimum MU for full image resolution shall be stated

6.6.6 Spatial resolution (lp/mm) shall be stated if test object position is at isocenter and at detector

6.6.7 Accuracy of imager centre to beam isocenter shall be stated.

6.6.8 The EPID shall provide a suitable means to import & export images for verification and display on the same workstations; to acquire & transfer images through the existing oncology network; and to be capable of registration

6.6.9 Vendor shall provide features on image processing, image display, image analysis, image storage, image print and image enlargement. Details shall be stated.

6.6.10 Avoidance of irradiation of area outside sensitive detector panel and anti-collision device, vendor shall state and provide details including the usable life span of the EPID.

6.6.11 Vendor shall provide all accessories including necessary QA tools, maintenance tools etc. for EPID.

6.6.12 Provision of facilities for storage / archival of electronic portal images

6.6.13 Portal images can be exported to external facilities in a recognized format including BMP and TIFF.

6.6.14 Vendor state and provide any value-added features such as IMRT portal dosimetry and verification system of EPID (it must be quoted as optional items separately)

6.7 Patient Alignment system

6.7.1 Vendor is required to supply and install 4 sets LAP green laser alignment systems. A separate back pointer laser alignment system shall be provided and installed onto the

linear accelerator on offer. All laser products shall comply with respective code of IEC safety of laser products.

6.7.2 Two spare sets of LAP green lasers shall be provided.

6.7.3 Each laser beam shall be precisely adjustable vertically and horizontally by remote control to indicate the isocenter position within 1 mm and protected against accidental displacement

6.7.4 System should have 0.5mm line thickness at isocenter for patient alignment and set-up

6.8 Control Console and Treatment room display features

6.8.1 **Main control console:**

A computerized control console shall be located outside the treatment room. This console shall provide controls that must be activated in order for the accelerator to become operational in any of its various modes of operation and also provide displays of accelerator parameters. The following shall be present:

6.8.1.1 **Power Off**: Turns off all electrical power, including power to the computer, except for that power needed to maintain the accelerator in a "Stand By" condition

6.8.1.2 **Power On***:* Turns on electric power to the accelerator

6.8.1.3 **Total Dose:** Sets the desired total dose for patient's treatment

6.8.1.4 **Time:** Sets time for patient's treatment. Time shall be used as a back up in case of failure of total dose interlock. Backup time shall be calculated automatically with provision for manual reset.

6.8.1.5 **MU/Degrees:** Sets the desired MU/degree for rotational therapy. MU/degree shall be calculated automatically with provision for manual reset.

6.8.1.6 **Mode Selection:** Selects x-rays or electrons for treatment

6.8.1.7 **X-Ray Energy:** Selects photon beam energy

6.8.1.8 **Radiation On:** Turns on accelerator and radiation is produced

6.8.1.9 **Interrupt:** Immediately stops treatment.

6.8.1.10 **Treatment Complete***:* Indicates that desired dose has been delivered. In addition, the operator should be alerted if radiation terminates for any reason other than reaching the set integrated dose. In such cases, the dose remaining to be given shall be indicated

6.8.1.11 **Arc Therapy:** Enables the accelerator to perform arc therapy

6.8.1.12 **Wedge:** Requires that the presence, identification and orientation of a wedge must be confirmed at the control console.

6.8.1.13 **Port Film:** Opens jaws completely or partially, as selected by the operator, and limits the amount of radiation to be delivered to less than or equal to 20 cGy. This shall be operational in both the photon and electron modes but allow only the production of low energy photons. Once the port film has been completed, it should be possible to return the collimators to their original setting automatically.

6.8.1.14 **Special Procedures:** Prohibits accidental selection of procedures such as electron arcs or high dose rate electron irradiation by providing an "extra step" in selection procedure

6.8.2 Control Console Display/Monitors:

The following monitors and displays should be available at the control console, and with the exception of a back-up dose counter, it should be possible continuously to visually observe the value being registered on these counters and displays from the position of the operator.

6.8.2.1 **Dose Rate Indicator:** Indicates the dose rate at maximum build-up for a 10 x 10 cm field at 100 cm SSD.

6.8.2.2 **Dose Counters***:* Two counters that count integral dose detected by each of the two dosimeters

6.8.2.3 **Total Time Counter:** Counts total treatment time in 0.01-minute increments up to 9.99 minutes.

6.8.2.4 **Angle***:* Indicates position of gantry in degrees with precision of ± 0.5 degrees

6.8.2.5 **Symmetry:** Indicates beam symmetry in both major axes

6.8.4 It should be possible to adjust the parameters at or near the control console:

6.8.5 **Accelerator Parameter Checks: I**t shall be possible to monitor different accelerator parameters via an oscilloscope at or near the control console.

6.8.6 **Treatment room pendent:**

Hand pendants shall be provided. The hand pendent must have the control of gantry rotation, collimator rotation, collimator jaw settings, treatment couch motions (vertical lateral, longitudinal and turntable rotation around isocentre and room light control. To prevent possible malfunctioning, when hand pendant is in operation, the computer system must prevent conflicting signals from being sent to the same mechanical device.

6.9 Essential Accessories

6.9.1 **Shielding Blocks and Shadow Tray**

An accessory set of pre-shaped, screw-on blocks and shadow trays shall be delivered with the machine. At least 10 shadow blocks, of at least 5 HVL, shall be included. A detachable accessory mount is highly preferable.

6.9.2 **SSD indicator**
A optical distance indicator (ODI) of SSD from 80cm to 130 cm with accuracy of ±1 mm at isocentre should be provided.

6.9.3 **Front and Side pointers**

A mechanical front pointer to locate isocentre of the unit within ±2mm and to apply to any orientation of the machine shall be provided

6.9.4 **A closed-circuit color TV system** with TV monitors and two cameras in the linac treatment room shall be supplied.

6.9.5 A **patient calling system** with 6 channels shall be supplied. Internet broad band connectivity for remote servicing shall be provided. A LCD Projector should be supplied.

6.9.6 **Field Illuminating light:** A field illuminating system should be provided for both photon and electron modes.

6.10 Wedge Systems

610.1 Provision of a set of standard physical wedge filters with wedge angles 15°, 30°, 45° and 60°

6.10.2 Provision of virtual or dynamic programmable wedge fields of generating variable wedge angles starting from 1 0° up to 60

6.10.3 The programmable wedge fields shall provide a range of wedged fields starting at least 4cm up to 30 cm at 100 cm TSD

6.10.4 Provision of a statistics log for tracking the accuracy of the programmable wedge fields' profiles

6.10.5 Must provide dosimetric and QA equipments for dynamic wedge dosimetry and QA tests

6.10.5 Provision for automatic, motorized, universal wedge system for variable wedge angles from 0° up to 60

7. Intensity Modulated Radiation Therapy System

7.1 The linear accelerator system shall be capable of delivering Intensity (fluence) modulated photon beam within and across the given field apertures in order to produce highly conforming dose distribution as per the physician prescription.

7.2 Inverse treatment planning system shall be capable of doing IMRT Planning for all vendor's of the linear accelerator available.

7.3 Support for "step and shoot" IMRT and/or dynamic sliding window" IMRT delivery

7.4 Specify the linac performance for small MU delivery

7.5 Capable of delivering high quality intensity modulated fields using fractions of MU (please state minimum MU per segment)

7.6 Extended intensity modulated field size shall be at least 30 cm x 30 cm

7.7 Capable of automated delivery of multiple co-planar fields in sequence from the console with remote control of gantry, collimator and jaws motions between co-planar treatment fields.

7.8 Capable of verifying every parameter of segments downloaded from treatment planning systems through network for IMRT treatment

7.9 The latest technology for faster implementation of IMRT such as Volumetric Intensity Modulated Arc Therapy (VIMAT) or its equivalent should be provided as optional item quoting the price separately.

8. Image-Guided Radiotherapy System

8.1 Kilovoltage-based 3D-Image-Guided Radiotherapy (kV-IGRT) shall be provided and it should have FDA clearance. The system shall have the capability of producing 2D radiography, 2D fluoroscopy and 3D (volume) cone beam CT imaging modalities for patient's interfraction and intrafraction daily setup verification.

8.2 A 3D volume CT image data is reconstructed from a series of 2D projection images acquired as the linear accelerator gantry is rotated. This image data can be used for verification of patient position and target motion. This shall have flexibility in providing full or partial gantry rotations, with the opportunity to select a choice of gantry rotation speeds.

8.3 The cone-beam CT technology should be of amorphous silicon (a-Si) based flat panel detector technology.

8.4 The system should be able to acquire and display on-board 2D and 3D volume images of the patient immediately prior to treatment. The images should be in DICOM 3 and DICOM RT format. The network provided should be able to transfer images to (from) EPID/CBCT from (to) TPS and simulator and additional workstations.

8.5 The quality of image, especially axial CT images from the CBCT should be sufficient to delineate target and critical structure volumes.

8.6 The image registration software supplied should be able to overlay original reference images from the TPS to the on-board images and calculate offset values based on user defined reference points and structures. The software should then be able to move the table as per the offset values in 3D.

8.7 Based on the comparison of initial planning images and on-board images, change in treatment plan should be possible.

8.8 The system should have latest configuration of hardware (CPU, hard drive, RAM, min 21" square TFT monitor, color LASER printer)

8.9 There shall be a geometric calibration phantom for kV to MV isocenter alignment and other calibration.

8.10 Image quality phantom to determine the low contrast and spatial resolution shall be provided

8.11 Daily QA phantom for kV and MV projection imaging and kV CBCT checks and all other necessary IGRT QA tools shall be provided.

9. Optional Features (Price must be quoted separately)

9.1 The linear accelerator offered model should be a ready platform for upgradation to techniques without any design/functional constraints for newer radiotherapy techniques.

9.2 It should be possible to upgrade to perform the stereotactic radiosurgery and stereotactic radiotherapy (SRS/SRT) treatment. The SRS/SRT frames, localizers, table attachments, MicroMLC, treatment planning system and all other necessary phantom and quality assurance tools should be provided.

9.3 It should be possible to upgrade to perform 4D-Radiation Therapy (Respiratory compensated/controlled, gated and real-time tumor tracking) treatments. The vendor should provide all necessary gadgets in detail.

10. Utility Requirements

10.1 Power Supply

10.1.1 Power conditioner shall be installed to provide precise voltage regulation and protection for the linear accelerator on offer.

10.1.2 Should work on three phase 400-440 V / 50 Hz Power

10.1.3 UPS of suitable rating with voltage regulation and spike protection for 60 minutes back up for whole Linear Accelerator Systems (including associated TPS, server etc.) should be provided.

10.1.4 Silent Generator of 75 kVA should be provided and must be quoted separately.

10.1.5 Resettable over current breaker shall be fitted for protection

10.2 Water Chiller System

10.2.1 The chiller system shall be provided along with the machine by the principals. No local system shall be accepted.

10.2.2 The chiller system shall incorporate an automatic back-up facilities, remote control and alarm panel with warning facilities

10.2.3 Vendor should provide a fully automatic water chiller system for sufficient cooling of the linear accelerator

10.3 Air conditioning and ventilation:
To be provided. Specify temperature, relative humidity and air changes**.**

10.4 Safety Systems: Patient, staff and machines safety interlocks, emergency switches and beam off interlocks to be provided.

10.5 Machine space: Details about the physical dimensions and weights of the machine and its accessories including control console to be provided.

11. Equipment Warranty and After-Sales Services

11.1 The vendor shall give mandatory on-site warranty for first five years from the date of commissioning of the entire Linac system (including for all locally supplied items including consumables like batteries of the UPS, printer cartridges etc) from the Principals, except for the wave-guide, beam-bending magnet assembly, electron gun, X-ray tube & RF system, which shall carry guarantee for 10 years. Pro-rata warranty is not acceptable.

11.2 Vendor should provide comprehensive maintenance contract (CMC) rate year-wise for quoted machine other accessories for next 5 years after warranty period.

11.3 98% uptime warranty/guarantee during warranty and CMC period.

11.4 Spare parts kit should be available for minimum of 10 years and price must be included in the offer

11.5 During the warranty period, all the software updates and upgradation should be provided without asking for free of cost.

11.6 Please quote the rates of necessary consumables recommended valid for 5 years block

11.7 Factory trained service Engineer/Application specialists should be available in Delhi to look after the installation and maintenance of the system without patient treatment interruption.

12. Equipment Compliance with Standards and Safety

12.1 Should be ISO, IEC, FDA and/or CE certified product.

12.2 Should comply with the national regulatory AERB/BARC guidelines

12.3 The offered linac model should have **AERB type approval or NOC**.

12.4 Dosimetry, QA and Safety protocols should adherence to ICRP/ICRU/IAEA and national regulatory AERB/BARC guidelines/reports

12.5 Interlock system should be provided to afford maximum protection for personal against high voltage hazards.

12.6 High voltage protection and warning lights/symbols to be provided.

.

13. Staff Training and Documentation

13.1 The vendor should provide comprehensive training on Linear Accelerator, Treatment Planning in a well advanced center in any developed country for four persons (two for Radiation Oncologist, two for Medical Physicist).The training period should be at least for two weeks.

13.2 On-site application training should be provided for minimum four weeks for all staff members in the department

13.3 Beam Data: Representative photon and electron central axis profile dose curves, as well as flatness and symmetry profiles measured on the accelerator to be installed shall be provided. These curves need not be warranted by the vendor for clinical use.

1.3.4 User/Technical/Maintenance manual to be supplied in English

14. General Terms & Condition

14.1 All optional items to be quoted separately with separate prices in price bid.

14.2 A list of installations existing in the county with 'satisfactory service certificate', if available from the user, may be submitted to support the claim of a good performance of the equipment. The supplier shall mention the number of installations in India and worldwide, for the quoted model only. Such installations should have been supplied directly by the quoting firm itself. Current performance and status report from the user departments for the model quoted shall be provided.

14.3 All claims regarding meeting the specification should be duly supported by appropriate, latest technical catalogues/brochures from the manufacturer. The vendors shall submit point-wise compliance statement in regard to the specifications asked for in the tender and should mention corresponding page numbers matching with the technical details in the compliance statement**.**

14.4 **Penalty clause**: Penalty at the rate of RS.10, 000 per day for short falling of 95% uptime guarantee. If the machine lies non-functional for a period of more than two weeks continuously, the same penalty will be imposed even if 95% uptime clause is met with for the given calendar year.

14.5 **Price Gaurantee**: The supplier shall also give a commitment that the price quoted for the equipments in the tender is the minimum price quoted to any institution in the country for similar terms & conditions; whether Government, semi-Government, autonomous or non-Government; in the recent times (preceding six months) and shall remain so for at least the next six months subject to variations in the foreign exchange rates, if applicable.

II. Technical Specification for Advanced Treatment Planning System

1. General Specifications

1.1 Quotations are invited for an advanced, state-of-the-art radiotherapy treatment planning system capable of performing for conventional, 3D conformal and inverse treatment planning of Intensity Modulated Radiotherapy (IMRT) using coplanar and non-coplanar beams.

1.2 The TPS system should have the capability of integration with Simulators, CT simulators/MR/PET and linear accelerator of any vendor.

1.3 The system should have latest technology of hardware and software features.

1.4 **Two treatment planning workstation** with calculation licenses and additional **Two workstation** enabling simultaneous **contouring** with licenses and additional should be provided.

1.5 Virtual simulation using the software and licenses for virtual simulation features and for controlling moving laser shall be provided

1.6 The TPS should include Clarkson, 3D Pencil Beam, anisotropic, convolution and superposition/collapsed cone algorithms or any other algorithms for dose calculations in 2D and 3D external beam applications with electron and photon beams. Monte Carlo calculations algorithms, if available, should be quoted (price indicated separately).

1.7 Advanced tools for automatic and manual contouring/segmentation of normal structures and target volumes on arbitrary axial, coronal and sagittal planes. Non-uniform automatic and manual margining for CTV and PTV in 3D with exclusion barriers should be possible

1.8 Manual and fully automatic image alignment using mutual registration information modes for image fusion among CT, MRI, PET and USG should be provided. The fusion results should be qualitatively and quantitatively verifiable with checkered board and in vertical and horizontal split screens spyglass and image overlaying options.

1.9 3D visualization of anatomical structures, beams eye view (BEV), rooms-eye view (REV) and dose distributions shown in 2D and 3D solid, wired and transparent multiplanar views including colour wash mode.

1.10 Multiplan viewing for comparing dose distribution of at least three rival plans including interactive DVH (qualitative and quantitative) comparison. Summation and subtraction of dose plans should also be possible.

1.11 Creation of DRRs in any desired plane including the beam cross-sectional plane should be possible for export to EPID and virtual simulation console.

1.12 TCP and NTCP calculations option should be provided

1.13 A complete DICOM-RT import/export license must be provided along with the DICOM-3 image import/export license

2. 3D-Treatment Planning

2.1 Patient registration, record and file management should be user friendly.

2.2 Patient data acquisition through film scanners, digitizer, DICOM 3.0 import facility from CT Scanners/ MRI & Simulator of any vendor.

2.3 Advanced Contouring tools with patient identity information should be available. Auto segmentation/contouring based on electron density values for different organs should be included & follow ICRU-50 & 62 Volume definitions.

2.4 System should also be capable of showing the combined dose distribution to the target volume resulting from whole treatment received by teletherapy (photon, electron, photon + electron) and brachytherapy.

2.5 System must have facility of treatment planning for Photon & Electron beam of all energies in the therapeutic range.

2.6 The system must be capable of calculating mixed beam treatment with photon and electron radiation.

2.7 System must have facility of machine data acquisition through RFA/scanner, etc.

2.8 The system must support regular & irregular fields for all types of beam modifiers such as Bolus, Blocks, MLCs, tissue compensator, wedges, dynamic wedge, asymmetric beams, etc.

2.9 System must be capable of conformal radiotherapy planning and multiple isocentre calculations.

2.10 System should be capable of making tissue inhomogeneity correction (as per electron density), irregular point dose calculations and auto-contouring as per CT data. Accuracy of dose calculations must be as per TG-23 Bench Mark Tests.

3. Inverse Treatment Planning for IMRT

Inverse planning algorithms should be incorporated in the TPS for IMRT Planning with the following facilities:

3.1 Inverse planning system should be used to determine fluence pattern or beamlet intensities for each field and translate it to delivery instructions.

3.2 System should be capable of handling unlimited target and normal structure volume objectives and dose-volume constraints.

3.3 The dose optimization should be fast and interactive. Optimization algorithms namely deterministic/stochastic methods should be provided. Specify physical and biological optimization methods available in the offered system.

3.4 The system should support for both step-and-shoot and/or dynamic sliding window IMRT delivery.

3.5 Specify the leaf sequencing algorithms used in the offered system

3.6 The system should be capable of modeling/incorporating MLC head scatter, penumbra, physical limitation of motion, rounded leaf ends and tongue-and groove effects.

3.7 Specify the final dose calculation algorithms used in the offered inverse planning.

3.8 The dose grid should be finer than the size of the beamlet or incidence fluence

3.9 System should be capable of calculating doses in the build-up region using bolus

3.10 System should be capable of calculating doses in the region of flash and also in the mobile target like breast target.

3.11 System should be capable of incorporating 3DCRT base dose along with IMRT dose volume constraints.

3.12 In addition to fluence map optimization, if direct aperture optimization or its equivalent is available, it should also be quoted with price indicated separately. Optimization techniques should also be specified

3.13 Advanced inverse planning features should be included to follow ICRU-83 & Volume definitions and dose reporting and recording the treatment.

3.14 Comparison of planning images with images received via network from EPID system for necessary changes in treatment plan should be possible

3.15 Vendor should provide the necessary QA tools/gadgets for commissioning of the inverse planning system for dosimetric accuracy

4. Hardware configuration

4.1 The latest configuration of the computer/PC available at the time of shipping should be the basic platform for the TPS. The display system should be high performance 21" or above LCD monitor
.

4.2 A high quality film scanner (Vidar) suitable for 17" X 14" film size should be provided.

4.3 A device such as a DVD system for archiving of the patient data and plan

4.4 Two colour laser or equivalent printer suitable for dose plan printing

4.5 Suitable UPS for TPS computer and additional contouring workstation computer back-up of at least 30 minutes should be provided.

5. Optional features to be quoted

5.1. Volumetric Intensity Modulated Arc Therapy or Rotational Arc IMRT planning software should be provided with all necessary QA tools for clinical implementation.

5.2 The Monte-Carlo based IMRT system and biological optimization algorithms should be quoted.

5.3 4D Treatment Planning capability should be quoted, if commercially available in the market

III. Oncology Information & Image Management / Treatment Record and Verify system

1. General Specifications

1.1 The vendor shall provide a comprehensive oncology information & image management and treatment record & verify system.

1.2 It shall also record and verify treatment parameters of patients undergoing treatment on the linac(s).

1.3 The system shall be based on one comprehensive database, thereby eliminating the need for redundant entry of data used in different applications.

1.4 The system shall provide the following functions: Record and Review Patient Diagnoses; Plan a course of treatment in advance so that treatments are readily delivered when the patient arrives; Write RT prescriptions that detail treatment techniques, fractions, and dose; Define treatment fields; Link setup fields and notes to treatment fields; Setup notes can include photos that show how to set up the patient; Track dose to specific sites; Define site breakpoints with instructions that appear when the breakpoint will be exceeded; Store treatment plan information to avoid redundant and time-consuming data entry.

1.5 MLC user operation shall be accomplished entirely through the Oncology Information System (OIS), thereby eliminating the need for a separate control station for the MLC. Planned leaf shapes shall be incorporated directly into a patient's planned treatment field(s) in the electronic Chart.

1.6 The MLC shape shall automatically appear on the OIS treatment screen during the setup and treatment of any patient with a planned MLC shape. The shape shall be displayed simultaneously with all other pertinent treatment parameters.

1.7 The system shall have the capability of storing patient photos facilitating correct treatment. The digital patient photographs should upload to the database. After treatment of the first field, all subsequent fields shall be automatically and sequentially downloaded to start auto-setup of the next field without requiring operator interaction at either the OIS console or In-Room Monitor.

1.8 Port Films shall be capable of being planned ahead for appropriate treatment sessions, completed with prompting from the system, and automatically recorded in the electronic chart. Port Film dose shall be capable of being accumulated, if desired. The system shall permit override of individual treatment parameters (couch longitudinal for example) and require a password and appropriate user rights to successfully complete the override.

1.9 The record and verification station shall accept and store demographic data, notes or comments and diagnostic information for each radiotherapy patient. When the patient proceeds with tumor localization, treatment planning and simulation, the treatment parameters will also be entered into the patient's file automatically or manually.

1.10 A daily patient schedule and time management schedule must be capable of being displayed on the computer monitor at the record and verify workstation. This schedule shall include, at a minimum, the scheduled treatment time for each patient, the patient's identification number and the patient's name. The schedule shall be used to select a patient for treatment on the accelerator.

1.11 The system shall be capable of maintaining a record of field-specific and treatment-specific daily and cumulative doses for the target site and additional sites of interest. It shall be possible to specify a prescribed dose for each treatment site for every patient. The system shall prevent treatment if this dose will be exceeded upon completion of the treatment. A manual override shall be provided. Overriding prescribed dose limits by unauthorized personnel shall not be permitted. After the daily irradiation of a patient, the therapy history

will be updated and the given target doses, or doses calculated to other sites, shall be accumulated.

1.12 The Operating System shall provide a convenient and efficient means for the user to generate and to print hard copy reports of information contained in the database.

1.13 The scheduler of the OIS should be capable of maintaining schedules for multiple departments and scheduling any resource desired by the site. It should have a graphical user interface for ease of customizing schedule views, changing appointment times and minimizing keystrokes.

1.14 The OIS shall provide the capability to integrate simulation, CT, MRI, PET and electronic portal imaging system images into the OIS database to provide a readily available reference during the patient's course of treatment. Reviewing images immediately after acquisition from a remote location shall be permitted. The OIS shall provide the additional feature of managing drug administration to patients.

1.15 The Hardware should consist of the following: Two separate, but fully integrated servers, one each for data management and image management with back up with 500 GB capacity or more to handle our department workload; 6 additional Image Workstations for Review and Approval; a latest 5 mega pixel digital camera (lithium ion battery with at least 10 GB memory card) for acquiring patient photos; a networked color image DICOM laser printer; capability for high speed internet connectivity for Online Service support. A camera having capable of taking both still as well as motion picture having latest configurations should be supplied.

1.16 It should integrate the following (with suitable software and hardware) to transfer and store patient data, treatment parameters & images for automatic treatment delivery along with 05 workstations): (i) Linear Accelerator (ii) Treatment Planning System (iii) Existing CT scanner, MRI and PET (iv) Virtual Simulator Workstation and/or conventional simulator

1.17 It should support full DICOM connectivity for import and export of data with query retrieve support, DICOM CT, MR, PET image support, and DICOM RT structures set support.

IV. Dosimetry, Radiation Safety and Quality Assurance Systems/Tools

The following dosimetry instruments / accessories, radiation safety equipments and quality assurance tools that are required for the optimal functioning of the radiotherapy department shall be provided by the vendor.

1. Dosimetry System

1.1 Absolute dosimetry:

Secondary Standard Dosimeter Electrometer, Ion-Chambers, Water Phantom, Solid Water Phantom and Check Sources

1.1.1 A well-proven, reliable, high quality secondary standard dosimeter shall be provided. Two calibrated Farmer type thimble 0.6 cc ion chambers (N_{Dw} calibration factors) along with one check source, one large volume ion chamber (with calibration certificate), shall also be provided. The calibration certificates for the 0.6 cc ion chambers shall also contain the reading of the check source mentioned

1.1.2 The dosimeter/electrometer and all the detectors/ion chambers shall have triaxial TNC threaded connector to facilitate uniformity amongst all the dosimetry instruments.

1.1.3 The dosimeter/electrometer shall have wide measurement range and a large multifunction display. It shall be capable of measuring both current and charge with excellent resolution. It shall have negligible leakage current. There shall be provision for at least 2 different bias voltages.

1.14 Additionally it shall be possible to alter the polarity. BNC to TNC and TNC to BNC connector adapters shall also be supplied. The dosimeter shall have extremely good accuracy, repeatability, and stability. Two such dosimeters are to be supplied. Please provide specifications.

1.15 One simple, open-top water phantom of interior size 30 cm x 30 cm x 30 cm shall be provided for performing teletherapy dosimetry. The phantom shall have a Perspex slot for inserting the 0.6 cc cylindrical ion chamber at a position such that there is a clearance of at least 10 cm or more from the bottom of phantom. The outer surface of the phantom shall have accurate markings to know the water height above the center of chamber. At the bottom of phantom there shall be a rectangular marking with cross hairs to align the phantom and ion chamber with the central axis of the beam. There shall be a tap on one of the sides for draining out the water.

1.16 For the calibration of electron beams a parallel plate ion chamber system complete with a dedicated check source and N_{Dw} calibration certificate (with the check source reading noted on it) shall be provided. The chamber shall be a ROOS type or Markus type or NACP chamber. The chamber shall preferably not have any water-proof caps, sheathing and should be directly immersible for use in water or alternately the chamber shall have water-proof caps, sheathing for use in water phantom. It shall have triaxial TNC threaded type connector.

1.17 Please provide exhaustive details about the items offered. Since these items shall form the backbone of dosimetry, stress will be on the quality of items offered.

1.18 A solid, water equivalent phantom made up of slabs of different thicknesses shall be provided by the vendor for external beam teletherapy dosimetry. It shall be possible to use this phantom for both photon and electron beam dosimetry. The phantom shall be free of contaminants and air bubbles. Guarantee should be provided for electron density and homogeneity and shall be certified to be within 0.5% of water at photon energies. The slabs shall be of 40 x 40 cm size totaling a thickness of 50 cm. The exact details of the slab thickness and their quantities shall be obtained from the user department. Different slabs (of 2 cm thickness) with appropriate cavities to accommodate the two 0.6 cc ion chambers, parallel plate ion chamber should be provided additionally. Please note that these special slabs are in addition to the simple, solid slabs totaling a thickness of 50 cm. The phantom shall be of rigid type and should not show any kind of charge build-up effects. It shall not be affected by any change in ambient temperature and humidity.

1.19 For the all linear accelerator, permanent cabling between the control console of two linear accelerators and the interior wall of the treatment room for dosimetry measurements shall be provided and installed. The permanent cabling shall be for the complete RFA setup that can also be used for absolute dosimetry measurements with 0.6 cc ion chamber and parallel plate chamber. Complete description must be provided.

2. Reference Dosimetry System

2.1 **Radiation Field Analyzer (RFA) / Water Scanning System**

2.1.1 A 50 cm X 50 cm X 50 cm water phantom with water drain kit, as well as motorized system with remote control must be provided. State the scanable dimensions of the water phantom. The positional resolution of the movement shall be 0.1 mm or better. Radiation hardened probe holders for all detectors must be provided with the system. The Servo system shall be supported from all sides and has position feedback mechanism for long term reliability.

2.1.2 Appropriate semi-conductor photon detector, semi-conductor electron detector, small volume ion-chamber (0.125 cc approximately), reference detector shall be supplied. The ion chambers provided shall be completely water proof and totally immersible in water up to very large depths. Give details how the supplied detectors can be used to perform relative dosimetry for linacs' photon & electron beams.

2.13 Appropriate build-up caps shall be provided for the detectors provided to do in-air dosimetry for the photon energies of cobalt, 6 MV, 15 MV, and 18 MV. Provide complete details on this account.

2.14 The RFA computer system shall have Intel Xeon processors with at least 20 GB RAM, 500 GB hard disk space, 2 CD drives (out of which one shall be a DVD-Writer), at least 2 high speed USB ports, 21" TFT flat monitor, 4 GB storage capacity USB drive. A UPS system with 1 kVA capacity with 30 minutes backup time shall be supplied. A locally designed good quality mobile wooden rack (on strong wheels) for stacking the RFA control parts and computer shall be provided.

2.15 The RFA software shall have licenses for beam data conversion to the treatment planning systems. Besides these it shall also be possible to convert the curves / profiles into simple ASCII format and Excel format and transfer to other Windows applications.

2.16 For the quality assurance and the clinical implementation of the various features of the linear accelerator, and for comprehensive QA of film dosimetry software along with a 16-bit advanced scanner shall be supplied. The scanner shall have excellent scanning qualities with long term stability and shall be from a reputed manufacturer who is in the field of radiotherapy film dosimetry. The scanner shall be able to handle an optical density range of 0 to 3.5 or better. Its geometric accuracy shall be better than 1% or 2 pixels in both the axes.

3. Periodic QA/Safety Devices and Software Systems/Tools

3.1 A simple QA device (two numbers) that can measure accuracy of the gantry angle, collimator angle, couch angle, isocenter accuracy, optical-radiation field congruence, optical field readouts, etc shall be supplied.

3.2 Two sets of QA device that can perform daily QA like photon/electron energy checks; radiation field flatness, symmetry; output consistency, etc shall be provided. The detector instrument supplied shall get connected to a laptop (high resolution, high-end, 10 GB RAM, wide screen, at least 500 GB or more hard disk, DVD writer, Bluetooth technology, etc) that will be kept in the control console. One laptop must be provided with each such QA device. Permanent cabling must be laid between the control console area and the interior wall of the treatment room for two linac machines or alternately a reliable wireless connectivity can be provided. Appropriate software must be provided that can store analyze all the data, store them and report the data in a user friendly format. Provide comprehensive details on the systems offered.

3.3 The institute has multiple CT scanners. A QA phantom for treatment planning system shall be supplied that has different electron density inserts for calibrating CT numbers (Hounsfield units) against electron density and mass. Furnish complete description about the phantom.

3.4 Two calibrated digital thermometers, two digital barometers, two ion chamber based survey meters, two digital survey meter, one neutron survey meter shall be provided. All survey meters and the barometers shall have proper calibration certificates.

4. Dosimetry System for IMRT Pre-Treatment Patient-Specific Verification/QA

4.1 IMRT Phantom

4.1.1 For performing QA of IMRT, a latest, state-of-the-art water equivalent phantom (one number) shall be supplied. It shall be possible to do exposure of multiple directions for high accuracy in IMRT verification. The phantom material shall be water / tissue equivalent. It shall have a universal design for both dose and dose distribution verification of patient-specific pre-treatment IMRT treatment plans.

4.1.2 It should be possible to easily adjust the phantom on the Linac couch and on CT scanners couch top. It shall be possible to do absolute dose verification with different ionization chamber types that are being offered.

4.1.3 Appropriate markers shall be engraved on the surface of the phantom in different colors for its easy adjustment under the accelerator and in a CT scanner. Localizer plates for the use of the phantom in a CT scanner shall also be quoted.

4.2 IMRT QA Detector and Software System

4.2.1 For easy verification of IMRT fluences and doses, a separate fluence/dose verification device/equipment shall be supplied. The department requires one number of this device. All the necessary software shall be supplied. The device must be based on either ion chamber or diode array of detectors giving the highest resolution possible with the software. The active volume of the chamber/diode must be small. It must be possible to do both photon and electron measurements. Adequate amount of buildup materials of different thicknesses should be provided for measurements with different energy beams. It must be possible to do automatic temperature and pressure verification devices. Latest available technology should be quoted for the transferring of data from the detector array to the processing laptop computer. In addition to the cable based connection, cable less technology also to be quoted.

5. Mould Room, Patient Fixation and Immobilization Accessories

5.1 General Specifications:

The following items are required in developing and implementing of a comprehensive, ultra-modern 3-D conformal radiotherapy, and intensity modulated radiation therapy program in the department of Radiotherapy. For all the items the vendor should provide the product information brochures.

5.2 Shielding blocks and compensator filter device

5.2.1 A computer controlled system for design and fabrication of shielding blocks, and tissue-compensating filters should be quoted. The system should mill (milling machine) or cut Styrofoam blocks by software controls. The data for shielding block cutting should be either manually acquired or using film digitizer or by means of direct interfacing with 3-D treatment planning systems. It should be possible to make both simple non-divergent and accurately divergent shielding blocks. It should be possible to view the shielding block contours on a computer monitor and produce a template printout for quality control, patient record, etc.

5.2.2 Using the CT images as the input, the system should be capable of designing a 3-D missing tissue compensator. The designing should be based on 3-D calculation using CT pixel values. It should be possible to transfer the data from the treatment planning system by either direct link or by floppy disk

5.2.3 Physical characteristics and performance specifications are as follows;

a. Positioning accuracy: ± 0.5 mm
b. Reproducibility: ± 0.5 mm
c. Dimensions of foam blocks: From a minimum of 20 cm x 20 cm x 2 cm to a maximum of 45 cm x 45 cm x 10 cm or more
d. Maximum cutting area within one block: 40 cm x 40 cm
e. Cutting accuracy: Better than 0.5 mm
f. Focus to tray distance: Adjustable
g. Connectivity with a computer
h. Computer: Latest system configuration
i. Backlit Digitizer: Minimum active area should be 50 cm x 50 cm, with 2000 lines per inch resolution
j. Plotter: Flatbed A3 plotter. Plotting on tray should also be possible

6.3 Block Casting System

6.3.1 A block casting system should be quoted for filling the Styrofoam milled using the above system with lead or low melting point alloy. The system should have a solid-state alloy melter with digital readout. It should have precise temperature control and have advanced alloy dispenser.

6.4 Patient fixation / Immobilization Accessories

6.4.1 **Head Rest - 8 sets**
Should be made of soft rubber for patients' comfort and of different sizes for various treatment positions.

6.4.2 **Head and neck fixation plates - 10 numbers**
This should be made of perspex. It should be possible to immobilize the head rests with this device.

6.4.3 **Prone head rests - 10 numbers**
Vacuum based radio-translucent cushions for patient immobilization, which are filled with tiny polystyrene beads or of any similar material with same properties, for the following needs:
a. for treating head and upper thorax region (supine & prone) - 10 nos.
b.for treating head and upper thorax region (supine) - 10 nos.
c. for prone head holder -10 nos.
d. large cushion (bed type) with treatment windows - 10 nos.
e. large cushion (bed type) without treatment windows - 10 nos.
f. small cushion with treatment windows (for rectal / bladder cases)-10
g. cushion for treating thorax region with arms up position - 10 nos.

6.4.4 **Appropriate storage racks** (10 sets), color tags (10sets), helping hand sets (10 sets), S-type hooks (10 sets), shall be provided.

6.4.5 **A motor / pump** shall be provided to mould the cushion (to suck out the air).

6.4.5 **Separation meter – 10 numbers**
Should be made up of light metal with accurate scales

6.4.6 Shoulder retractor for head and neck patients –5 numbers

6.5. Breast Immobilization System

6.5.1 For treating breast patients, a carbon-fiber based immobilization system using side mountable thermoplastic sheets should be supplied. The system should be complete in all respects with board, brackets, handles, 30 thermoplastic sheets etc. In addition to such a system, a complete set of breast treatment brassiere should also be provided. With this it should be possible to treat any size of breast.

6.6 Electron Foam Cutter (220 volts with Nickel Chrome Wire Assembly)

6.6.1 Two electron foam cutters with large cutting surface for cutting high density foam for making electron cut outs for radiotherapy patients. Appropriate high density flat foams of 30x30x1.5 size for making electron cutouts shall be provided (two cartons).

6.6.2 Cadmium free Low melting point alloy for making customized shields: 300 Kg

6.7 Thermoplastic sheets

6.7.1 For immobilization of patients (using the head rest and fixation plates provided), appropriate thermoplastic sheets of following sizes and quantities shall be supplied:
a. Thermoplastic sheet for face / head region only- 100 numbers
b. Thermoplastic sheet for head & neck region with shoulder area covered – 100 numbers.
c. Please quote for appropriate base plate also (six numbers)
d. Thermoplastic sheets for abdominal / pelvis region – 100 numbers.
e. Please quote for appropriate base plate also (six numbers).

6.8 **Water Bath System**

6.8.1 One suitable water bath system with temperature control shall also be provided for preparing the thermoplastic mask for the patients.

6.9 **Bolus System**

6.9.1 Soft jelly bolus material of size 30 cm x 30 cm with a thickness of 0.5 cm, 1 cm, 1.5 cm, 2 cm and 3 cm shall be supplied – 5 sheets for each thickness.

Technical Specification for a Low-Energy Linear Accelerator

Sealed tenders (sealed separately as the "Technical Bid & the Price Bid-in duplicate) are invited directly from the manufacturers/principles for the supply of a state-of the-art clinical Radiotherapy Linear Accelerator cabable of producing 6MV single photon energy for the routine and specialized treatment techniques. Linear Accelerator must have the latest technology and should be fully computer controlled digital system. It should be capable of integrating with standard networking and PACS systems available in the market. The offered equipment should have the following technical features.

1. Linear Accelerator

An Advanced, new generation of low-energy medical linear accelerator should be equipped with a multileaf collimator (MLC) and an electronic portal imaging device (EPID) to perform conformal treatment techniques such as three dimensional conformal radiotherapy (3D-CRT). through record and verification system. The system should have the capability for future upgradation in order to perform advanced treatments of intensity modulated radiation therapy (IMRT) and image-guided radiotherapy (IGRT)

2.0 Photon Beam Characteristics

2.1 **Beam Energy**

The accelerator shall be capable of producing one clinically useful photon beam with energy of 6 MV as low energy.

2.2 **Dose Rate and Beam Stability**

2.2.1 The maximum dose rate for routine clinical applications shall equal at least 300 monitor units (MU)/min or more for a 10 x 10 cm field at the depth of maximum buildup at a TSD of 100 cm for both photon beam.

2.2.2 Specify the maximum dose rate and number of intermediate dose rate available in the offered linac model

2.2.3 Specify the beam stability time in milliseconds.

2.3 **Field Size Specifications**

The field size is defined as the distance along the radial and transverse axes between the points of 50% density on an x-ray film taken at 100 cm TSD with minimum buildup. The digital display, light field size and mechanical display should be accurate to within $\pm$ 2 mm.

2.3.1 The accelerator shall provide a continuously variable rectangular, unclipped field size from 1 x 1 cm to 35 x 35 cm at 100 cm SSD. The maximum clipped field size should equal or exceed 40 x 40 cm at 100 cm SSD. Clipped corners are unacceptable for fields smaller than 35 x 35 cm.

2.3.2 A detachable block holder should be provided to accommodate 2 trays simultaneously for wedges and block trays. The size of the blocking trays should be at least 5 cm larger than the maximum field size at the lower position. Specify location and size of blocking trays.

2.3.3 Asymmetrical collimation for two sets of jaws shall be provided. One set of jaws shall be capable of crossing the center line by at least 10 cm as projected at 100 cm TSD. The collimators shall re-center automatically when the symmetrical mode of operation is re-selected.

2.4 **Beam Profile**

2.4.1 **Field Flatness Specification**

Variation of x-ray intensity relative to the central axis shall not exceed ± 4% at 100 cm SSD and 10 cm depth over the central 80% of the field for the longitudinal and transverse axes of all field sizes from 10 x 10 cm to 40 x 40 cm. State the maximum variations for the above field sizes at each energy.

2.4.2 **Field Symmetry Specifications**

The maximum percent differences of average doses shall not exceed ± 3.0% for the longitudinal and transverse halves of the field at 100 cm TSD and 10 cm depth, at gantry angles of 0, 90, 180 and 270 degrees. Field sizes shall be specified as 10 x 10 cm and 40 x 40 cm. Average dose is defined as the arithmetic average of minimum and maximum doses within the central 80% of the field for both axes.

2.4.3 **Radiation Field Penumbra**:

The width between the 20% and the 80% isodose lines measured for 10 X 10 cm^2 at depth of 10 cm at 100 cm SSD should not be more than 10mm. Specify the penumbra width.

2.5 **Beam Quality Index:**

The ratio of ionization measured at 20 cm and 10cm depth for a field size 10 X 10 cm^2 at the detector level and with constant detector source distance = 100cm should be as given below:

Photon beam energy (MV)	Quality Index (QI)
6 MV	Specify

2.6 **Radiation Leakage**

Radiation leakage limits shall be within appropriate regulatory agency guidelines as follows:

2.6.1 Photon leakage. The photon leakage rate at any point one meter from the target outside the cone defined by the primary x-ray collimator shall be less than 0.1% of the absorbed dose at the isocenter.

2.6.2 Collimator transmission. The movable collimators shall not permit transmission of radiation exceeding 0.5% of the central axis dose at Dmax measured in air for both photon energies.

2.6.3 Neutron leakage. The neutron leakage rate should not exceed 0.2% expressed in neutron dose equivalent (Sivert) when added to the photon leakage for a 10 x 10 cm field at the isocenter at any point one meter from the target when the jaws are closed.

2.6.4 In addition to meeting above specifications for radiation leakage, the linac should also meet all the mandatory safety and radiation leakage regulations as specified by Atomic Energy Regulatory Board (AERB), Mumbai, India for a medical linear accelerator.

2.7 **Rotational/ Arc Therapy**

2.7.1 The Linac must have photon arc therapy feature with gantry rotation in clockwise and counter clockwise directions.

2.7.2 The dose rate/range of dose rate should be specified MU per degree. The MU/degree shall automatically be computed.

2.7.3 A range of continuously variable dose rate should be available. A unit able to deliver high dose per degree will be preferred

2.8 **Congruence Between Optical and Radiation Field:**

The congruence between optical and radiation fields for 5x5 cm^2, 10 cm x10 cm at 0, 90,180 and 270 degree gantry angles with SSD = 100 cm should be within 2 mm along X,Y axes.

3. Accelerator System

3.1 The system must provide with either Magnetron or Klystron as the radiofrequency (RF) micro power source. The warranty should be at least for 5years. (Pro-rata guarantee is not acceptable).

3.2 Standing or travelling type of wave-guide along with the bending magnet, target assembly, vacuum ion-pump should be offered a warranty of 5 years. (Pro-rata guarantee is not acceptable).

3.3 Specify the target type and materials and also flattening filter materials in details

3.4 Electron gun should have warranty of minimum 5 years and the beam focal spot should be within 3 mm diameter.

4. Dose Monitoring System

4.1 Sealed type of dose monitoring chambers must be provided and should operate independent of ambient temperature and pressure. All dosimetry, patient and unit safety related interlocks must be sensed and controlled by hardware and software

4.2 The equipment shall provide two independent dose monitoring systems for primary and secondary dose monitoring as well dose distribution monitoring

4.3 The dose monitoring systems shall monitor the beam energy and shall terminate irradiation when the change of beam energy greater than ±3% of the nominal energy.

4.4 Provision of a controlling timer to protect against failure of dose monitoring systems shall comply with the requirements in accordance with respective IEC norms.

4.5 The reproducibility tolerance for the dose monitoring system shall be better than 1% or 1 MU.

4.6 The linearity tolerance of accumulated doses from 10 to 1000 MU for the dose monitoring system shall be ± 1% or 1 MU. Specify the linearity tolerance for less than 10MU in view of IMRT

4.7 The reproducibility tolerance at any gantry angles for the dose monitoring system shall be better than ± 1% or 1 MU.

5. Mechanical Features

5.1 Gantry

5.1.1 Gantry shall be motorized by local and remote controls. Automatic setup facility and in-room display of treatment parameters shall be provided.

5.1.2 The total range of gantry rotation shall not be less than 360°

5.1.3 Resolution and accuracy of digital readout shall be 0.1° and ± 0.5° or better

5.1.4 Resolution and accuracy of analog readout shall be 1° and ± 1° or better

5.2 Collimator

5.2.1 Collimator shall be motorized by local and remote controls

5.2.2 The cross-wire wander (rotation) shall not exceed 1mm diameter

5.2.3 The total range of collimator rotation shall not be less than ± 165°

5.2.4 Resolution and accuracy of digital readout shall be 0.1° and ± 0.5° or better

5.2.5 Resolution and accuracy of analog readout shall be 1° and ± 1° or better

5.3. Diaphragm (Jaws)

5.3.1 Each diaphragm shall be independently motorized by local and remote controls

5.3.2 One pair of diaphragm shall be traveled up to at least -10cm crossover the central axis in order to simulate the asymmetrical and offset fields.

5.3.3 Resolution and accuracy of digital readout shall be 1 mm and ± 1mm or better

5.3.4 Maximum angular deviation between the axes of opposing diaphragms shall be stated.

5.4 Multileaf Collimator

5.4.1 Number of multileaf collimator (MLC) leaves shall be at least 40 pairs and should cover the maximum field size of 40x40cm^2

5.4.2 MLC leaf width projected at 100 cm TSD isocenter, shall be 10 mm

5.4.3 Multileaf speed together with maximum possible dose rate for dynamic radiotherapy shall be stated

5.4.4 Maximum range of leaf speed and extension between leaves shall be stated.

5.4.5 Accuracy and repeatability of leaf position shall be within ± 1mm or better. Accuracy of leaf alignment perpendicular to leaf movement about isocenter shall be within 1mm or better.

5.4.6 Radiation parameters such as leaf penumbra, leaf transmission, inter-leaf transmission and coincidence of radiation field vs optical field shall be stated.

5.4.7 The MLC system shall incorporate a fast and efficient QA tools (compliance of AAPM-TG-50 guidelines) for checking and monitoring all leaves position in real time. Deviations from leaves position calibration shall be interlocked to prevent treatment.

5.4.8 Clearance from bottom of collimator to isocenter shall be specified.

5.4.9 Provision of treatment verification and record system with the necessary interface for static and dynamic operation of MLC prior to treatment delivery.

5.5 Treatment Table/Couch

5.5.1 Vendor shall provide the treatment couch and accessories used for accurate 3D conformal radiotherapy

5.5.2 Indexed carbon fiber tabletop shall be provided.

5.5.3 The tabletop shall comply with the deflection requirement of IEC norm.

5.5.4 Lifting capacity shall be at least 200kg

5.5.5 IEC scale convention shall be provided.

5.5.6 Treatment tabletop shall be capable of free manual movement in both lateral & longitudinal directions

5.5.7 Lateral & longitudinal couch displacement shall not exceed 1mm under braked condition

5.5.8 Range of vertical, longitudinal and lateral movement shall be stated

5.5.9 Range and accuracy of isocentric rotation shall be stated.

5.5.10 Vendor shall specify the accuracy of isocentric rotation angle.

5.5.11 Mechanical isocenter accuracy for couch rotation shall not 1mm radius sphere

5.5.12 Vendor shall specify the accuracy of couch rotation isocenter

5.5.13 Vendor shall specify the coincidence of couch isocenter with gantry and collimator isocenter.

5.5.14 Vendor shall provide any auto-setup / remote control couch motions capability

5.5.15 Precision of digital couch rotation readout +/- 0° or accuracy of digital couch rotation readout +/- 1 ° or better.

5.5.16 Precision of digital couch vertical, longitudinal and lateral position readout shall be +/- 1mm or better, accuracy of digital couch vertical, longitudinal and lateral position +/- 2mm or better.

5.5.17 Vendor is required to facilitate with all available accessories, inter-changeable tabletop materials, removable parts for treatment. Provision of patient immobilization accessories, preferably with indexing capability compatible with the couch. Detailed list of all accessories shall be stated and provided.

5.5.18 Emergency down drive shall be provided to remove the patient in the case of power failure.

5.5.19 Two extra spare control pendants shall be provided

5.6 Electronic Portal Imaging System

5.6.1 The imager shall utilize amorphous silicon (a-Si) with higher resolution shall be provided

5.6.2 Vendor shall specify the maximum image field size at isocenter and at other distance achievable with a single exposure for the detector panel.

5.6.3 Specify details of all movements and positional accuracy of the imager.

5.6.4 Specify the details of pixel depth pitch of the imager.

5.6.5 Maximum image acquisition rate and minimum MU for full image resolution shall be stated

5.6.6 Spatial resolution (lp/mm) shall be stated if test object position is at isocenter and at detector

5.6.7 Accuracy of imager centre to beam isocenter shall be stated.

5.6.8 The EPID shall provide a suitable means to import & export images for verification and display on the same workstations; to acquire & transfer images through the existing oncology network; and to be capable of registration

5.6.9 Vendor shall provide features on image processing, image display, image analysis, image storage, image print and image enlargement. Details shall be stated.

5.6.10 Avoidance of irradiation of area outside sensitive detector panel and anti-collision device, vendor shall state and provide details including the usable life span of the EPID.

5.6.11 Vendor shall provide all accessories including necessary QA tools, maintenance tools etc. for EPID.

5.6.12 Provision of facilities for storage / archival of electronic portal images

5.6.13 Portal images can be exported to external facilities in a recognized format including BMP and TIFF.

5.6.14 Vendor state and provide any value-added features such as IMRT portal dosimetry and verification system of EPID (it must be quoted as optional items separately)

5.7 Patient Alignment system

5.7.1 Vendor is required to supply and install 4 sets LAP green laser alignment systems. A separate back pointer laser alignment system shall be provided and installed onto the linear accelerator on offer. All laser products shall comply with respective code of IEC safety of laser products.

5.7.2 Two spare sets of LAP green lasers shall be provided.

5.7.3 Each laser beam shall be precisely adjustable vertically and horizontally by remote control to indicate the isocenter position within 1 mm and protected against accidental displacement

5.7.4 System should have 0.5mm line thickness at isocenter for patient alignment and set-up

5.8 Control Console and Treatment room display features

5.8.1 **Main control console:**

A computerized control console shall be located outside the treatment room. This console shall provide controls that must be activated in order for the accelerator to become operational in any of its various modes of operation and also provide displays of accelerator parameters. The following shall be present:

5.8.1.1 **Power Off**: Turns off all electrical power, including power to the computer, except for that power needed to maintain the accelerator in a "Stand By" condition

5.8.1.2 **Power On***:* Turns on electric power to the accelerator

5.8.1.3 **Total Dose:** Sets the desired total dose for patient's treatment

5.8.1.4 **Time:** Sets time for patient's treatment. Time shall be used as a back up in case of failure of total dose interlock. Backup time shall be calculated automatically with provision for manual reset.

5.8.1.5 **MU/Degrees:** Sets the desired MU/degree for rotational therapy. MU/degree shall be calculated automatically with provision for manual reset.

5.8.1.6 **Mode Selection:** Selects x-rays or electrons for treatment

58.1.7 **X-Ray Energy:** Selects photon beam energy

5.8.1.8 **Radiation On:** Turns on accelerator and radiation is produced

5.8.1.9 **Interrupt:** Immediately stops treatment.

5.8.1.10 **Treatment Complete***:* Indicates that desired dose has been delivered. In addition, the operator should be alerted if radiation terminates for any reason other than reaching the set integrated dose. In such cases, the dose remaining to be given shall be indicated

5.8.1.11 **Arc Therapy:** Enables the accelerator to perform arc therapy

5.8.1.12 **Wedge:** Requires that the presence, identification and orientation of a wedge must be confirmed at the control console.

5.8.1.13 **Port Film:** Opens jaws completely or partially, as selected by the operator, and limits the amount of radiation to be delivered to less than or equal to 20 cGy. This shall be operational in both the photon and electron modes but allow only the production of low energy photons. Once the port film has been completed, it should be possible to return the collimators to their original setting automatically.

5.8.1.14 **Special Procedures:** Prohibits accidental selection of procedures such as electron arcs or high dose rate electron irradiation by providing an "extra step" in selection procedure

5.8.2 Control Console Display/Monitors:
The following monitors and displays should be available at the control console, and with the exception of a back-up dose counter, it should be possible continuously to visually observe the value being registered on these counters and displays from the position of the operator.

5.8.2.1 **Dose Rate Indicator:** Indicates the dose rate at maximum build-up for a 10 x 10 cm field at 100 cm SSD.

5.8.2.2 **Dose Counters***:* Two counters that count integral dose detected by each of the two dosimeters

5.8.2.3 **Total Time Counter:** Counts total treatment time in 0.01-minute increments up to 9.99 minutes.

5.8.2.4 **Angle***:* Indicates position of gantry in degrees with precision of ± 0.5 degrees

5.8.2.5 **Symmetry:** Indicates beam symmetry in both major axes

5.8.4 It should be possible to adjust the parameters at or near the control console:

5.8.5 **Accelerator Parameter Checks: I**t shall be possible to monitor different accelerator parameters via an oscilloscope at or near the control console.

5.8.6 **Treatment room pendent:**

Hand pendants shall be provided. The hand pendent must have the control of gantry rotation, collimator rotation, collimator jaw settings, treatment couch motions (vertical lateral, longitudinal and turntable rotation around isocentre and room light control. To prevent possible malfunctioning, when hand pendant is in operation, the computer system must prevent conflicting signals from being sent to the same mechanical device.

5.9 Essential Accessories

5.9.1 **Shielding Blocks and Shadow Tray**

An accessory set of pre-shaped, screw-on blocks and shadow trays shall be delivered with the machine. At least 10 shadow blocks, of at least 5 HVL, shall be included. A detachable accessory mount is highly preferable.

5.9.2 **SSD indicator**
A optical distance indicator (ODI) of SSD from 80cm to 130 cm with accuracy of ±1 mm at isocentre should be provided.

5.9.3 **Front and Side pointers**

A mechanical front pointer to locate isocentre of the unit within ±2mm and to apply to any orientation of the machine shall be provided

5.9.4 **A closed-circuit color TV system** with TV monitors and two cameras in the linac treatment room shall be supplied.

5.9.5 A **patient calling system** with 6 channels shall be supplied. Internet broad band connectivity for remote servicing shall be provided. A LCD Projector should be supplied.

5.9.6 **Field Illuminating light:** A field illuminating system should be provided for both photon and electron modes.

5.10 Wedge Systems

5.10.1 Provision of a set of standard physical wedge filters with wedge angles 15°, 30°, 45° and 60°

5.10.2 Provision of virtual or dynamic programmable wedge fields of generating variable wedge angles starting from 1 0° up to 60

5.10.3 The programmable wedge fields shall provide a range of wedged fields starting at least 4cm up to 30 cm at 100 cm TSD

5.10.4 Provision of a statistics log for tracking the accuracy of the programmable wedge fields' profiles

5.10.5 Must provide dosimetric and QA equipments for dynamic wedge dosimetry and QA tests

5.10.5 Provision for automatic, motorized, universal wedge system for variable wedge angles from 0° up to 60

6. Optional Features (Price must be quoted separately)

6.1 The linear accelerator offered model should be a ready platform for upgradation to techniques without any design/functional constraints for newer radiotherapy techniques.

6.2 It should be possible to upgrade to perform the intensity modulated Radiotherapy and image-guided radiotherapy treatment and all other necessary phantom and quality assurance tools should be provided.

7. Utility Requirements

7.1 Power Supply

7.1.1 Power conditioner shall be installed to provide precise voltage regulation and protection for the linear accelerator on offer.

7.1.2 Should work on three phase 400-440 V / 50 Hz Power

7.1.3 UPS of suitable rating with voltage regulation and spike protection for 60 minutes back up for whole Linear Accelerator Systems (including associated TPS, server etc.) should be provided.

7.1.4 Silent Generator of 75 kVA should be provided and must be quoted separately.

7.1.5 Resettable over current breaker shall be fitted for protection

7.2 Water Chiller System

7.2.1 The chiller system shall be provided along with the machine by the principals. No local system shall be accepted.

7.2.2 The chiller system shall incorporate an automatic back-up facilities, remote control and alarm panel with warning facilities

7.2.3 Vendor should provide a fully automatic water chiller system for sufficient cooling of the linear accelerator

7.3 Air conditioning and ventilation:
To be provided. Specify temperature, relative humidity and air changes**.**

7.4 Safety Systems: Patient, staff and machines safety interlocks, emergency switches and beam off interlocks to be provided.

7.5 Machine space: Details about the physical dimensions and weights of the machine and its accessories including control console to be provided.

8. Equipment Warranty and After-Sales Services

8.1 The vendor shall give mandatory on-site warranty for first five years from the date of commissioning of the entire Linac system (including for all locally supplied items including consumables like batteries of the UPS, printer cartridges etc) from the Principals, except for the wave-guide, beam-bending magnet assembly, electron gun, X-ray tube & RF system, which shall carry guarantee for 10 years. Pro-rata warranty is not acceptable.

8.2 Vendor should provide comprehensive maintenance contract (CMC) rate year-wise for quoted machine other accessories for next 5 years after warranty period.

8.3 98% uptime warranty/guarantee during warranty and CMC period.

8.4 Spare parts kit should be available for minimum of 10 years and price must be included in the offer

8.5 During the warranty period, all the software updates and upgradation should be provided without asking for free of cost.

8.6 Please quote the rates of necessary consumables recommended valid for 5 years block

8.7 Factory trained service Engineer/Application specialists should be available in Delhi to look after the installation and maintenance of the system without patient treatment interruption.

9. Equipment Compliance with Standards and Safety

9.1 Should be ISO, IEC, FDA and/or CE certified product.

9.2 Should comply with the national regulatory AERB/BARC guidelines

9.3 The offered linac model should have **AERB type approval or NOC**.

9.4 Dosimetry, QA and Safety protocols should adherence to ICRP/ICRU/IAEA and national regulatory AERB/BARC guidelines/reports

9.5 Interlock system should be provided to afford maximum protection for personal against high voltage hazards.

9.6 High voltage protection and warning lights/symbols to be provided.

10. Staff Training and Documentation

10.1 The vendor should provide comprehensive training on Linear Accelerator, Treatment Planning in a well advanced center in any developed country for four persons (two for Radiation Oncologist, two for Medical Physicist).The training period should be at least for two weeks.

10.2 On-site application training should be provided for minimum four weeks for all staff members in the department

10.3 Beam Data: Representative photon and electron central axis profile dose curves, as well as flatness and symmetry profiles measured on the accelerator to be installed shall be provided. These curves need not be warranted by the vendor for clinical use.

10.4 User/Technical/Maintenance manual to be supplied in English

11. General Terms & Condition

11.1 All optional items to be quoted separately with separate prices in price bid.

11.2 A list of installations existing in the county with 'satisfactory service certificate', if available from the user, may be submitted to support the claim of a good performance of the equipment. The supplier shall mention the number of installations in India and worldwide, for the quoted model only. Such installations should have been supplied directly by the quoting firm itself. Current performance and status report from the user departments for the model quoted shall be provided.

11.3 All claims regarding meeting the specification should be duly supported by appropriate, latest technical catalogues/brochures from the manufacturer. The vendors shall submit point-wise compliance statement in regard to the specifications asked for in the tender and should mention corresponding page numbers matching with the technical details in the compliance statement**.**

11.4 **Penalty clause**: Penalty at the rate of RS.10,000 per day for short falling of 95% uptime guarantee. If the machine lies non-functional for a period of more than two weeks continuously, the same penalty will be imposed even if 95% uptime clause is met with for the given calendar year.

11.5 **Price Guarantee**: The supplier shall also give a commitment that the price quoted for the equipments in the tender is the minimum price quoted to any institution in the country for similar terms & conditions; whether Government, semi-Government, autonomous or non-Government; in the recent times (preceding six months) and shall remain so for at least the next six months subject to variations in the foreign exchange rates, if applicable.

Technical Specification for High Dose-Rate Brachytherapy Remote-After Loading System

General Specification

The High Dose-Rate (HDR) Brachytherapy Remote After-Loading System includes Treatment Unit, Control Unit, Treatment Planning System and applicators and other required accessories for clinical application. The HDR system should be capable for the treatment of intracavitary, intraluminal, interstitial and surface mould brachytherapy.

1. Brachytherapy Treatment Unit:

1.1 The system should be capable for the treatment of intracavitary, intraluminal, interstitial and surface mould brachytherapy

1.2 The HDR system should be latest microprocessor and PC controlled and it must have latest hardware and advanced software.

1.3 The system should have minimum 20 channels or more for all types of brachytherapy treatments.

1.4 The system should be on wheels for easy mobility in the treatment area and provided with storage safe of lead/ tungsten alloy to guarantee and compatible with guidelines of international safety regulations especially AERB.

1.5 Specify the in-built radiation safety measures provided in the unit including power failure, emergencies, channels indexer, activity of the source and dose rate, verification system for channel number and connectivity of the applicator etc.

1.6 Specify the surface dose rate of the system source container when full strength of the source is loaded

1.7 The treatment unit should have an in-built integrated radiation detector to check the safe return of the source (GM Type tube).

1.8 The source must be retractable and reach in the safe position in the events of an emergency/ power failure etc specifies the source retraction methods.

1.9 Refurnished / reconditioned unit should not be offered. The vender shall quote month and year of the fabrication of the unit and provide the certificate of the same & of its being original.

1.10 The Source head should have adequate shielding and its height should be adjustable.

1.11 The system should have the dummy cable to check the treatment parameters prior to treatment.

2. Radioactive Source

2.1 The system should use either radioactive sources of Ir-192 or Co-60.

2.2 Activity should be capable of using at least 10Ci Ir-192 or 2Ci Co-60 source.

2.2 Please specify the activity, physical characteristics and dimensions of the source being supplied with the unit. Specify the number of source offered and usability period of the each source quoted. Please specify the following:

(i) Specify the maximum source extension
(ii) Specify the step size (minimum two or more are preferred
(iii) Specify the dwell position per catheter
(iv) Specify the maximum dwell time per position in the catheter
(v) Specify the maximum treatable length in cm
(vi) Specify the accuracy in position in mm.
(vii) Specify the active diameter and length of the source.
(viii) Specify the mode of source movement in each channel of the unit
(ix) Source cable must be able to pass through catheters of curvature 2 cm or less

3. Treatment Control Console:

3.1 Stand alone and independent PC based control unit should be provided with flat panel 21" or larger plasma color monitor, keyboard, mouse build in audio card, network card, backup media, printer etc and direct link with 3D-TPS to be supplied.

3.2 It should have protection circuit inbuilt to prevent treatment without proper applicator connection, door closing and proper index locking.
3.3 It should have all self-testing provision necessary for the treatment
3.4 Control unit software should run on window application
3.5 Access must be limited to authorized users with password protection
3.6 The treatment times must be automatically corrected for the decay of the radioactive source
3.7 There should be higher dwell position for the source in each channel
3.8 On-line extensive display of status codes with an indication of the action required
3.9 Large patient's database should be provided with a backup option to an external storage device
3.10 The system should provide real-time information during treatment.
3.11 Provision for checking of complete operation of the system prior to actual treatment including electronic and radiation safety checks should be available.

4. Brachytherapy Treatment Planning System (TPS)

4.1 A state-of-the-art brachytherapy planning system capable for performing conventional 2D and advanced 3D-treatment planning with dose-volume histogram analysis methods and different methods of optimization of the treatment plan and also inverse planning module, for planning of all treatment techniques like intracavitary, interstitial, intraluminal, and surface mould.
4.2 System should have input capability of receiving patient information i.e patient data through scanner, digitizer, and directly from CT, MRI, C-Arm X-ray unit through DICOM 3.0 or Radiotherapy compatible interface
4.2 The system should be capable of doing multimodality image registration and also should have the features of auto-contouring of the organs and applicator etc.
4.3 The 3D planning and viewing of dose distribution in coronal and sagital cuts and any other possible cuts should be provided.
4.4 The system should include the plan library, source and applicator library, optimization and isodose sharper tools and reporting tools etc. specify the features.
4.5 The treatment times must be automatically corrected for the decay of the radioactive source
4.6 The system should be cabable of summation of brachytherapy and external beam dose distribution and 3D viewing.
4.7 The Networking (on-line) between HDR treatment unit and TPS should be provided and it should be connected with C-arm X-ray machine and simulator and other imaging modalities.
4.8 Any other specific advantage of the system may be mentioned.
4.9 Hardware: Treatment planning system should have a latest computer with high speed with most modern graphics workstation, fast processor with RAM of maximum latest availability and should have a Hard Disk with large storing capacity of maximum available memory, Key Board, Mouse of latest configuration.
4.10 The system should have at least 21" TFT LCD Screen with high resolution for good visualization
4.11 For patient data input FILM SCANNER should be provided (offer for Flat bed & High Resolution Vider scanner should be quoted separately)
4.12 One color printer A3/A4 size for printing the treatment planning and plotting of isodose should be provided.

5. Applicators for HDR Unit

5.1 Supply the standard accessories for the application of intracavitary, intraluminal, interstitial brachytherapy of cervix, vagina, rectum and head and neck esophagus and bronchial, breast and prostate applications. Applicators to be provided for;
5.2 Gynecological applicator – 6 sets
5.3 CT / MRI compatible gynecological applicators – 2 sets
5.4 Vaginal / Rectal applicator – 2 sets
5.5 Esophagus applicator – 5 sets
5.6 Nasopharyngeal applicator – 5 sets
5.7 Breast and Prostate templates – 2 sets
5.8 Surface mould – 5 sets
5.9 All kinds of x-ray markers (two sets) for the applicators supplied (wherever relevant)
Interstitial implant needles – Total 300 numbers of needles in three different lengths

5.10 Provide the catalogues of the all the applicators. All the guide-tubes must be functional for 10 years.

6. Radiation Dosimetric, Quality Assurance (QA) and Safety System/Tools

6.1 Quote all the QA tools and radiation monitoring and measuring instrument being supplied with the unit. The detailed should be furnished.
6.2 Emergency container/ source container as per AERB norms
6.3 Brachy treatment table with all accessories
6.4 Gamma zone monitor with audio alarm
6.5 Beta, Gamma irradiation chamber survey meter
6.6 Calibrated Well-Type chamber, electrometer and phantom (attach with valid calibration certificate).
6.7 Source position simulator and source check ruler
6.8 Two online UPS with 30 min backup for total system (HDR machine and TPS)
6.9 Closed Circuit TV system along with standby camera
6.10 X-ray reconstruction jig.
6.11 X-ray marker wire for all applicators.

7. Equipment Warranty and Service:

7.1 Five years warranty to be commenced from first patient treated as per AERB norms.
7.2 CMC year-wise for all quoted machines, UPS, Battery and other accessories for next 5 years after warranty
7.3 Spare parts should be available for minimum of 10 years.
7.4 Source: (i) If Ir-192 sources is offered in that case minimum 30 sources should be supplied in 10 years. Every four months or as and when required to maintain HDR treatment delivery. (ii) If Co-60 sources is offered in that case minimum two sources to be supplied free of charge in 10 years, first with machine and second after 5 years or as and when required. Loading of new source and unloading of the decayed source, source transportation, source export and disposal will be part of the offer.
7.5 Quote the rates of consumables recommended valid for 5 years block.
7.6 Factory trained service engineer/Applications specialists should be available in Delhi to look after the installation and maintainace of the system without patient treatment interruption.

8. Training and documentations

8.1 The treatment planning system and treatment unit's operational training should be provided to one Radiation Oncologist and one Medical Physicist at a centre of repute for 1 week in the country of manufacturer and also on-site training of 1 week to staff of dept.

8.2 User / Technical / Maintenance manuals to be supplied in English
8.3 Certificate of calibration and service inspection should be provided.

Technical Specification for a CT-Simulator

Sealed tenders (Sealed separately as the "Technical Bid & the Price Bid-in duplicate) are invited directly from the manufacturers/principles for the supply of a state-of the-art and latest technology based CT-Simulator. The CT-simulator includes CT scanner, laser system and virtual simulation system. The CT scanner should be of **spiral multislice, large-bore 64 slices per rotation** model. It should be capable of integrating with standard networking and PACS systems available in the hospital**.** The offered equipment should have the following technical features.

1. CT Scanner system

1.1 The system should be of latest slip-ring technology allowing acquisition of 64 slices per rotation with true isotropic volume acquisition and sub millimeter resolution of an at least 0.4mm.

2. X-ray Generator

2.1 High frequency x-ray generator with an output of at least 50 KW or more to support continous and sustained operation. Please give details.

3. X-ray Tube

3.1 Tube current: 30-400mA or more. The mA rating at peak generator power must be mention.
3.2 The system should have mechanism for real time mA modulation for both Z axis and angular dose modulation
3.3 Tube voltage should be in the range of 90-140kV
3.4 The x-ray tube should have anode heat storage capacity of 5 MHU or more.
3.5 The anode peak heat dissipation rate should be 700 KHU/min or more angular dose modulation.
3.6 The x-ray tube should have dual focal spot (please specify the size of each focal spot). The automatic selection of focal spot should be possible.
3.7 Filter and beam limiting device: Their Al equivalent (at least 5mm) and other specific features to reduce radiation dose to the patient must be specified.

4. Gantry

4.1 Gantry aperture should be minimum 80 cm or more
4.2 Gantry tilt should be at least ±30 degree
4.4 Entire range of rotation times for full 360 degree should be specified.
4.5 Remote controlled tilt from operator table should be possible.
4.7 Laser alignment lights should define accurately actual scan of plane. It should operate over full range of gantry tilt.
4.8 Green laser patient alignment system with (gantry and external wall /ceiling mounted) stationary and mobile for radiotherapy planning should be provided.

5. Patient Table

5.1 The scanning table should be universally flat with flat table top and should be compatible with tables of linear accelerators installed. The table should have patient positioning index system on carbon fiber table top.
5.2 The table should be able to bear weight up to 200 Kg or more.
5.3 Table should have the metal free scanable range should be at least 150 cm.
5.4 Horizontal accuracy should be ±0.50 mm or less
5.5 Vertical table travel range should be specified. Minimum at least 55cm height.
5.6 Table should support the immobilization accessories for conformal and stereotactic procedures. QA phantom holder, water level phantom and laser calibration bar should be provided.
5.7 The table should have total free floating facility

5.8 All patients positioning accessories including tilt should have control both form gantry and control console

6. CT scanning parameters

6.1 The slice thickness should be users selectable which range from 1 mm to 10 mm.
6.2 Minimum scan time for full 360 degree rotation should be 0.5 seconds or less for whole body applications.
6.3 Maximum true scan field of view should be at least 50 cm or more
6.4 Extended reconstruction FOV of at least 70cm should be possible.
6.5 Gapless spiral length should be 150cm or more.
6.6 Specify single continuous spiral-on-time should be minimum 100 seconds or more.
6.7 The system should automatically optimize radiation dose and resolution for each selection.
6.8 Bolus triggered spiral acquisition should be possible. Give detail of sub millimeter resolution.
6.9 Both spiral and sequential mode acquisition should be possible for all scanning protocols.
6.10 Prospective and Retrospective respiratory compensated/gated CT to generate 4D datasets must be compatible with all commercially available hardware and software for motion management to localize the tumor in motion. Specify the details.

7. Scannograms/Topogram

7.1 Length and width: specify the range
7.2 Scan times: specify the range
7.3 Views: should be feasible in frontal and lateral views
7.4 Should be possible to interrupt acquisition manually once the desired anatomy is obtained.

8. Data Acquisition system

8.1 Detector: Please specify the number of detectors, detector design and type of detector.
8.2 Number of rows with their thickness, number of elements in each row
8.3 Mention the channels per row and number of projections
8.4 In-built mechanism for adapting the tube current during each scan. This should enable radiation dose reduction where body part thickness is less. Specify the mechanism used in the offered system.
8.5 There should be in-built pediatric protocols adapted to weight and/or age.
8.6 Specify available mechanisms to reduce the effective patient dose.

9. Image Reconstruction:

9.1 Real-time reconstruction speed: 10 images per second or more at 512x512 matrixes.
9.2 Display matrix should be minimum 1024 x 1024 or more.
9.3 Freely selectable window width and centre with organ specific preset windows be possible
9.4 Retrospective reconstruction with variable slice thickness should be possible.

10. Image Quality

10.1 High Contrast Spatial Resolution: It should be 15 lines pair per cm or better (for 50 cm FOV) maximum at 0% MTF for a slice of 1 cm thickness. Clearly specify the phantom used, scan time, mA, filter for image reconstruction, scan field, dose and MTF.
10.2 Low Contrast Detectability: The low contrast resolution for CATPHAN should be at least 5mm or less at 0.3% using 20cm CATPHAN phantom on 10mm slice thickness.
10.3 Spiral parameters: Different selection of pitch should be possible, from 0.5 to 3 in 0.1 increments. Inter scan delay in different group of spiral should not be more than 5 seconds.
10.4 CT number accuracy must be better than $\pm$ 4HU for water and $\pm$10 HU for air. All necessary phantoms to check the spatial resolution of the scanner should be provided. A phantom to check the electron density to HU relationship for different body tissues must be provided.

11. CT Control Console

11.1 It should have 20" or more TFT flat screen LCD colour monitor for display of 1024 x 1024 matrix or more.
11.2 Computer CPU systems should be running on a high-end workstation platform with UNIX/Window of latest configuration. RAM size must be a tleast 8GB or better.
11.3 All functions viz. registration, scheduling, scanning, image reconstruction, image evaluation tools, post processing tools, film documentation and transfer of images, MPR, CT, maximum intensity projection, 3D with SSD etc should be possible from main console and workstation
11.4 Image storage of 500 GB or more for at least 2, 50,000 or more images in 512 x 512 matrixes uncompressed or better (quote the latest configuration)
11.5 At least one high resolution medical grade laser color printer with latest model should be provided.
11.6 CD/DVD facility for archiving must be available.
11.7 The image reconstruction time should be less than 1.5 second for any mode.
11.8 An on-line juke-box with total storage capacity of 1.5 Terra bytes with fully loaded media for data storage should be provided.
11.9 The system should have fully DICOM complaint. DICOM compliance statement should be provided.
11.10 An integrated intercom for bi-directional speaker communication between operator and patient and also automated patient instruction (API) system should be provided.

12. Laser System

12.1 The CT-Simulator laser systems should have at least **four computer controlled moving lasers** for marking the isocenter without moving the table top. Following the isocenter localization in the CT-Simulation workstation, the isocenter coordinate will be sent directly to the computer system that is controlling the movements of the lasers. This computer in turn should drive all the lasers, so that without moving table, the laser point to the isocenter. The laser must be GREEN LASER system. Complete quality assurance tools must be provided.
12.2 In addition to the moving laser, the CT -Scanner should have conventional in-built lasers for positioning the patient
12.3 The vendor should give a complete description about the laser marking system offered and how the CT-Simulation software integrates with it.

13. CT-Simulation/Virtual Simulation System

13.1 The CT-Simulation/Virtual Simulation System should be possible to simulate all kinds of teletherapy machines in the simulation workstations without any kind of restrictions. It should support IEC, Varian, Elekta and other user defined linear accelerator conventions.
13.2 It should be possible to visualize interactively reference views in axial, coronal, sagittal, isocenter image planes and in any oblique direction with overlay of beams on digitally reconstructed radiograph (DRR).
13.3 DRR must provide fully divergent beam's eye view (BEV) 512x512 images.
13.4 The DRR and BEV/Room-eye view image should display the machine diagram to allow real-time checking of machine and patient geometry.
13.5 The system should be possible to support and define the asymmetric features in the Simulation software.
13.6 The system should be possible to support and define the multileaf collimator placement of 40 or more pairs of MLC leaves in the simulation software.
13.7 Three CT simulation workstation must be provided in addition to the CT workstation.
13.8 System should incorporate CT, MRI, PET and SPECT into localization, image fusion and registration

14. Contouring

14.1 Volume definition should be possible using volume segmentation using threshold, free hand contour tracing, contour editing, 3D anisotropic margins etc and any other advanced tools
14.2 System must be able to contour in axial, sagittal, coronal and oblique projections.
14.3 It should be possible to do manual, semi-automated, fully-automated contouring in the images by defining volume of interest.
14.4 The software should have facility for automated uniform/non-uniform margins. For example it should be possible to expand the clinical target volume (CTV) on all three dimensions by same magnitude or by different magnitude to define the planning target volume (PTV).
14.5 It should be possible to copy one organ to another with margin, and margins on a single slice, a range of slice or all slices.
14.6 Interpolate algorithm should be available to provide interactive, shape and interpolation i.e. after contouring only in selected slices. The algorithm should automatically interpolate the closely fitting contour in other slices. Interpolated contour may be edited; accepted or rejected.
14.7 Tracking of source to skin distance and contouring/extracting of wall should be possible
14.8 System should have the capability of 3D viewing and volume rendering should be possible.
14.9 The software should provide the density value (in Hounsfield Unit) of a particular point on an image. It should compute distances along straight line and curved line, angles between lines, and radius of the curvatures for curves.
14.10 Any other advanced features which may be of standard or optional, should be specified.

15. Isocenter Management

15.1 The software should support separate isocenters for multiple target volumes or general regions
15.2 Marked and final isocenters should be reported and displayed in the localization package for easy confirmation of a physical simulation session.
15.3 Hardcopy of the isocenter coordination should be possible for record of the simulation.
15.4 Isocenter positioning should be automatic.
15.5 No limit on number of isocenters per target.

16. Beam Placement and Definition

16.1 If should support extensive beam shapers (shielding blocks etc) and beam definition methods.
16.2 Manual or automatic beam placement tool.
16.3 Beam shaping should be possible in multiple ways like automatic shielding block, definition conforming to selected volume, definitions aperture or shielding manual free hand definition, automatic collimator jaw or multi leaf position definition.
16.4 It should be possible to define this asymmetric collimator feature, where both the X and Y axis are asymmetric, in the CT simulation software. Similarly the software should allow multi-leaf-collimator placement up to 40 pairs or more.

17. DRR Features

17.1 Interactive DRR calculation mode must be available.
17.2 Automatic window width/level selection for DRR.
17.3 DRR should be interactively updated when the isocenter position is modified.
17.4 Should be possible to highlight or suppress different density region in the DRR.
17.5 Printing of DRR images should be possible.DRR presets should be user defined.
17.6 Reconstruction of DRRs should be real-time or sub-second.
17.7 Real-time display of DRR as beam parameter changed should be possible.
17.8 Differential tissue weighting in DRR calculation should be possible.
17.9 Facility to display BEV on MPR with fields and blocks displayed divergently.
17.10 Any other advanced features available should be specified.

18. Data Import/Export and Connectivity

18.1 System should be able to export image, volume and plan data in DICOM 3.0 standard along with all Radiotherapy specific data and private objects, DICOM RT plans and data sets.
18.2 System should be able to import DICOM RT data to the linear accelerator of any vendor.
18.3 CT simulator system should be fully integrated with the existing TPS. The vendor should inspect and will be responsible for complete integration.
18.4 Specify clearly the DICOM-RT import and export licenses that are being offered.
18.5 The entire CT-Simulation system must be interconnected (all the workstations, laser systems, printers, etc) must be integrated to treatment machines available in the department for smooth transferring of images and DICOM-RT structures.

19. Archiving and Documentation

19.1 Should be on a Color dye sublimation printer to be supplied along with system. DICOM print should be possible.
19.2 Adobe PostScript Printing should be possible.
19.3 Archiving should be on a CD in DICOM format.
19.4 User / Technical / Maintenance manuals to be supplied in English.
19.5 Certificate of calibration and inspection
19.6 List of Equipments available for providing calibration and routine preventive maintenance support as per manufacturer documentation in service / technical manual.
19.7 List of important spare parts and accessories with their part number and costing.
19.8 Log book with instruction for daily, weekly, monthly and quarterly maintenance checklist.

20. Equipment Warranty and Service Facilities

20.1 Five years warranty to be commenced from first patient treated as per AERB norms.
20.2 CMC year-wise for quoted machine, UPS, Battery and other accessories for next 5 years after warranty period.
20.3 98% uptime warranty/guarantee during warranty and CMC period.
20.4 Spare parts should be available for minimum of 10 years.
20.5 During the warranty period, all the software updates and upgradation should be provided without asking for free of charge.
20.6 Please quote the rates of consumables recommended as well as other necessary consumables valid for 5 years block
20.7 Factory trained service engineer/Applications specialists should be available in Delhi to look after the installation and maintenance of the system without patient treatment interruption.

21. Standards, Safety and Training

21.1 Equipment standard and safety should comply with the national regulatory AERB guidelines and offered model should have AERB type approval or NOC.
21.2 Should be FDA and/or CE certified product.
21.3 The vendor should provide comprehensive training on CT-Simulator in a well advanced center in any developed country for two persons (one for Radiation Oncologist, one for Medical Physicist).The training period should be at least for two weeks.
21.4 On-site Application training should be provided for minimum two weeks for all staff members in the department.

22. General Terms & Condition

22.1 Any optional items to be quoted separately with separate prices in price bid.
22.2 The vendor shall list the number of their CT-Simulator installation/user in India.

22.3 All claims regarding meeting the specification should be duly supported by appropriate, latest technical catalogues/brochures from the manufacturer.

22.4 Penalty clause: Penalty at the rate of RS.10, 000 per day for short falling of 95% uptime guarantee. If the machine lies non-functional for a period of more than two weeks continuously, the same penalty will be imposed even if 95% uptime clause is me with.

SECTION-VII

TECHNICAL SPECIFICATIONS
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 X ray tubes, Helium for MRI, Batteries for UPS, other vacuumatic parts wherever applicable) 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.

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 X ray tubes, Helium for MRI, 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.
   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 LHMC, New Delhi. Turnkey details of Hospital is given at the end of Technical Specification. The Tenderer to quote prices indicating break-up of prices of the Machine and Turnkey Job. 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.