टाटा मेमोरियल अस्पताल
केंद्रीय क्रय विभाग
TATA MEMORIAL HOSPITAL
CENTRAL PURCHASE UNIT

TMH/CPU/2026-27/EOI/007 **11/05/2026**

रुचि की अभिव्यक्ति (ईओआई) हेतु आमंत्रण 'लीनियर एक्सेलरेटर' मात्रा.01 नं. प्रत्येक विकिरण ऑन्कोलॉजी विभाग के लिए। एचबीसीएच जाटनी, बीबीसीआई गुवाहाटी और आईसीटीआरईसी, खोपोली

INVITATION FOR EXPRESSION OF INTEREST (EOI) FOR
'LINEAR ACCELERATOR' QTY.01 NO. EACH FOR RADIATION ONCOLOGY DEPT. HBCH JATNI, BBCI GUWAHATI AND ICTREC, KHOPOLI.

निदेशक, टीएमसी, डॉ. अर्नेस्ट बोर्गेस मार्ग, परेल, मुंबई-400012 ओटी विभाग, एसीटीआरईसी और एचबीसीएच और आरसी विशाखापत्तनम के लिए 'रोबोटिक सर्जरी सिस्टम' की खरीद के लिए मूल उपकरण निर्माताओं (ओईएम) या अधिकृत एजेंट/वितरक से रुचि की अभिव्यक्ति (ईओआई) आमंत्रित करते हैं।

The Director, TMC, Dr. Ernest Borges Marg, Parel, Mumbai-400012 invites **Expression of Interest (EOI)** from Original Equipment Manufacturers (OEM) or Authorized Agent/Distributor for procurement of "Linear Accelerator", Qty 01 No. each for HBCH Jatni, BBCI Guwahati and ICTREC Khopoli.

'पात्रता मानदंड', 'तकनीकी विनिर्देश' और अन्य नियम और शर्तें सीपीपी पोर्टल https://eprocure.gov.in/eprocure/app और टीएमएच वेबसाइट www.tmc.gov.in पर नोटिस उपलब्ध हैं।

The 'Eligibility Criteria' and 'Technical Specification' and other terms and conditions are available on CPP Portal https://eprocure.gov.in/eprocure/app and notice on TMH website www.tmc.gov.in.

निदेशक, टीएमसी बिना कोई कारण बताए किसी भी या सभी प्रस्तावों को अस्वीकार करने का अधिकार सुरक्षित रखते हैं।

Director, TMC reserve the right to reject any or all the proposal without assigning any reason.

ईओआई विवरण:
EOI Details:

ईओआई नंबर: **EOI Number**	TMH/TMC/2026-27/CPU/EO/0002
ईओआई दिनांक: **EOI Date**	11.05.2026
उपकरण का नाम: **Name of the Item**	"Linear Accelerator", Qty 01 No. each for HBCH Jatni, BBCI Guwahati and ICTREC Khopoli.
ईओआई दस्तावेज़ जमा करने का तरीका: **Mode of submission of EOI document**	E-Tender Single Packet
प्रोसेसिंग शुल्क: **Processing Fee**	NIL
ईएमडी: **EMD**	NIL
ईओआई दस्तावेज़ देखने और डाउनलोड के लिए: **EOI Documents for view and download**	CPPP Website https://eprocure.gov.in/eprocure/app **for viewing and download.**
ईओआई जमा करने की अंतिम तिथि और समय: **Due date and time of online submission of EOI**	**On 25.05.2026 till 12.00 a.m. and Opening on 26.05.2026 at 12.30 a.m.**
ईओआई दस्तावेज़ का प्रस्तुतीकरण Submission of EOI document	EOI have to be submitted online on CPPP portal (Link: https://eprocure.gov.in/eprocure/app). Complete document required to be submitted by the participant using above link.

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समीक्षा बैठक की तिथि और समय: Date and time for review meeting	During the meeting, interested vendors may seek technical clarifications, if any, on **02.06.2026 at 4.00 PM in HBB 13th Floor Conference Room, Tata Memorial Hospital, Parel, Mumbai-400012.** ***Note:*** *1. Participants are required to provide specifications of all models / configurations of "Linear Accelerator" by them which are available in the market. Any model / configurations which is not presented will be considered as non-existing.* *2. There will be no discussion on financial aspects.*

टाटा मेमोरियल अस्पताल किसी भी कारणवश निविदा के विलंबित अपलोड या देर से प्रस्तुतीकरण के लिए किसी भी प्रकार से उत्तरदायी नहीं होगा।

Tata Memorial Hospital shall not be responsible in any manner for whatsoever reasons, for delayed upload of the tender/ late submission of the tender.

निदेशक, टीएमसी
Director, TMC

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Introduction :

The Tata Memorial Center (TMC) is an autonomous grant-in-aid institution administered under the Department of Atomic Energy, Government of India. The TMC umbrella includes eleven cancer institutes across India, the largest and the central hub of which is the Tata Memorial Hospital (TMH) in Parel, Mumbai, is India's oldest and largest cancer institute.

The TMC mission is to provide comprehensive compassionate cancer care to all through a commitment to excellence in service, research, and education. It has spearheaded the Evidence-based Medicine (EBM) movement in oncology in India, and prioritizes Multidisciplinary Team (MDT) management through disease-specific groups, to ensure quality patient care.

TMC has expanded its outreach across the country with nodal centers established at multiple places across the country, following the 'hub and spoke' model. These together register about 120,000 new cancer patients every year. Currently (2024), TMC comprises the following centres:

- Tata Memorial Hospital, Parel, Mumbai
- ACTREC, Kharghar, Navi Mumbai
- Centre for Cancer Epidemiology (CCE), Kharghar, Navi Mumbai
- Homi Bhabha Cancer Hospital and Research Centre (HBCH&RC), Visakhapatnam, A.P.
- Homi Bhabha Cancer Hospital (HBCH), Sangrur, Punjab
- Homi Bhabha Cancer Hospital and Research Centre (HBCH&RC), Mullanpur, Punjab
- Dr. Bhubaneswar Borooah Cancer Institute (BBCI), Guwahati, Assam
- Homi Bhabha Cancer Hospital (HBCH), Varanasi, Uttar Pradesh
- Mahamana Pandit Madan Mohan Malviya Cancer Centre (MPMMCC), Varanasi, Uttar Pradesh
- Homi Bhabha Cancer Hospital & Research Centre (HBCH & RC), Muzaffarpur, Bihar
- Medicinal plant cultivation facility on forestland, Donavat, Khalapur, Raigad, Maharashtra.

Objective:

The primary objective of this Expression of Interest (EOI) is to study/identify the probable bidders in the market and collect the data sheet/brochure from them to make the technical specification generic and as per clinical requirement to serve patient care. Also to discuss and collaborate with the expertise and experiences in the field. To implement newer innovative technology available in the market to reduce turnover time in diagnostic and treatment to cancer patients at all TMC units and across India.

1. **Need for "Linear Accelerator", Qty 01 No. each for HBCH Jatni, BBCI Guwahati and ICTREC Khopoli and Scope of Work:**

The Radiation Oncology Department at HBCH Jatni, BBCI Guwahati, and ICTREC Khopoli requires a "Linear Accelerator" to strengthen and expand advanced radiotherapy treatment facilities for cancer patients. The proposed system will facilitate precise and high-quality radiation delivery for the treatment of various malignancies using modern radiotherapy techniques such as IMRT, IGRT, VMAT, SRS, and SBRT. The installation of the Linear Accelerator will significantly enhance treatment accuracy, improve patient safety, reduce treatment duration, and support advanced cancer care in line with contemporary oncology standards and clinical practices.

Scope of Work:

The scope of work under this procurement shall include the following:

• Supply, installation, testing, and commissioning of the "Linear Accelerator" with all standard accessories, treatment planning interfaces, imaging systems, immobilization accessories, QA tools, and essential components.

• Integration of the system with existing hospital network, Oncology Information System (OIS), Treatment Planning System (TPS), Record & Verify System, PACS/RIS, and other related infrastructure.

• Provision of comprehensive on-site training for radiation oncologists, medical physicists, radiotherapy technologists, biomedical engineers, and technical personnel to ensure safe, efficient, and effective operation of the system.

• Warranty, comprehensive maintenance support, and assured availability of consumables, software updates, and spare parts as per tender conditions.

• Compliance with all applicable regulatory requirements, radiation safety norms, AERB guidelines, and standards prescribed by relevant national and international authorities.

The technical specification of "Linear Accelerator", Qty 01 No. each for HBCH Jatni, BBCI Guwahati and ICTREC Khopoli are attached at Annexure A, Annexure A1, Annexure A2.

1. Eligibility Criteria:

i. Vendor should have experience of supply, installation and commissioning of **'Linear Accelerator'** at different Government/PSUs/ Autonomous Institutions in India.

ii. Local Service Support: Should have local office and service support/service engineer for attending the breakdown calls.

iii. Please submit the technical data sheet along with the brochure as a tender document with reference to the offered make & model.

iv. Must submit User List and performance report/ testimonial for existing user for the same quoted model.

Note: Documents establishing the participant's eligibility as above should be submitted along with EOI.

2. Arbitration:

If any dispute arises out of the transaction in any manner that shall be resolved by the sole arbitrator which shall be mutually appointed by both the parties. Award given by such sole arbitrator shall be final and bidding on both the parties. The arbitration shall take place in Tata Memorial Centre (Tata Memorial Hospital) and language used shall be English. The Arbitration and Conciliation Act, 1996 and the Rules framed there under shall apply.

3. Disclaimer:

TMC reserves the right to alter the scope or terms as needed. This EOI is an exploratory exercise and does not constitute a commitment to award a contract.

Director, TMC

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(USE COMPANY LETTER HEAD)

RESPONSE TO EXPRESSION OF INTEREST (EOI) FORM

To

The Director,
Dr. Ernest Borges Marg,
Parel, Mumbai-400012

Sub: Expression of Interest (EOI) for "Linear Accelerator", Qty 01 No. each for HBCH Jatni, BBCI Guwahati and ICTREC Khopoli.

Dear Sir,

Having examined the details given above in Invitation to EOI and terms set out above, we hereby submit the relevant information for considering our EOI.

i. We accept all the terms and conditions of EOI as set out above.
ii. We hereby certify that all the statements made and information supplied in the enclosed documents and accompanying statements are true and correct.
iii. We have furnished all information and details necessary for EOI. Our EOI is complete in all respects.
iv. We have submitted all necessary documents in support of our eligibility, experience

Signed of the Authorized Representative
Seal of Application

Enclosures:

1. Technical Specification (Annexure-A)
2. Vendor Capability Form (Annexure-B)
3. Check list for Response Submitted (Annexure-C)

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संलग्नक –ब
Annexure –B

विक्रेता क्षमता प्रपत्र

VENDOR CAPABILITY FORM

संदर्भ:निविदा क्रमांक : **तारीख:**
Ref: Tender No: **Date:**

1. आइटम कार्य का नाम / Name of the Item / Work	
2. निविदा बोली जमा करने की अंतिम तिथि / Due Date of the submission of the tender / Bid	
3. ईएमडी रसीद संख्या, दिनांक एवं राशि EMD Receipt No., Date & Amount	
4. बोलीदाता का नाम पदनाम / Name / Title of the Bidder	
5. पूरा पता (हाल का) Full Address (Recent)	
a. दूरभाष संख्या एवं मोबाइल नंबर Tel. No & Mobile No.	
b. फैक्स Fax	
c. ईमेल- E-Mail	
6. बोलीदाता की ओर से व्यापार करने सौंपे गए कार्य हेतु अधिकृत / व्यक्ति का नाम Name of the person authorized to deal / undertake business for and on behalf of the bidder	
d. दूरभाष संख्या एवं मोबाइल नंबर Tel. No & Mobile No.	
e. फैक्स Fax	
f. ईमेल- E-Mail	
7. बोलीदाता की कानूनी स्थिति (अन्य इकाई / कंपनी / सोसायटी / फर्म) Legal entity of the bidder whether Firm / Society / Company / Other entity	
a. पंजीकरण संख्या Registration No. b. जिस प्राधिकरण के पास पंजीकृत है Authority with whom registered	
c. जिससे अनुज्ञा लाइसेंस प्राप्त है उसका नंबर / License No. granted by	
8. बोलीदाता का मुख्य व्यवसाय निर्माता), व्यापार वितरक, थोक विक्रेता, खुदरा व्यापारी या सेवा एजेंट(Main business of the	

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bidder whether Manufacturer, Business Distributor, Wholesale Dealer, Retail trader or Service Agent	
9. भारत में अधिकृत कार्यक्षेत्र Authorized Area of operation in India	
10. भारत में कार्यरत प्रधान संस्था /कंपनी का नाम जिसकी ओर से) (कार्य किया जा रहा है Name of the Principal Organization / Company for and on behalf working in India	
11. प्रधान संस्था उत्पत्ति स्थान / कंपनी का मूल देश / Origin of the Principal Organization / Company	
12. प्रधान संस्था कंपनी का पता / Address of the Principal Organization / Company	
a. संपर्क व्यक्ति का नाम Contact Person Name:	
b. पदनाम Designation:	
c. दूरभाष संख्या एवं मोबाइल नंबर Tel. No. & Mobile No.:	
d. फैक्स Fax:	
e. ईमेल- E-Mail:	
13. बैंक विवरण (रद्द किया हुआ चेक संलग्न) Bank Details (Attached Cancelled Cheque):	
a. बैंक का नाम, शाखा एवं पता Bank Name, Branch & Address	
b. बैंक खाता संख्या Bank Account No.	
c. आईएफएससी कोड IFSC Code	
d. बैंक का एमआईसीआर कोड MICR Code of the Bank	
e. खाता प्रकार Account Type	
14. प्रधान संस्था द्वारा प्रतिनिधि बोलीदाता को प्रदान की गई प्राधिकरण अनुज्ञा संख्या एवं तिथि / प्रतिनिधित्व / Authority / Delegation / License No. & Date granted by the principal to the representative bidder	
15. पैन संख्या PAN No.	

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16. सेवा कर हेतु केंद्रीय उत्पाद शुल्क आयुक्त द्वारा प्रदत्त पंजीकरण संख्या Registration No. granted by Central Excise Commissioner for Service tax	
17. जीएसटी संख्या GST No.	
18. उत्पाद का एचएसएन और एसएसी कोड HSN & SAC code of the product:	
19. आयात निर्यात कोड संख्या / Import / Export Code No.	
आयात के लिए अनुज्ञा संख्या License No. for import	
20. बोलीदाता द्वारा नियोजित जनशक्ति की संख्या No. of manpower employed by the bidder	a.Scientific b.Technical c. Administrative d.Finance
21. सहायक सुविधा उपकरण संख्या Support facility equipment No.	
22. निविदा वस्तु से संबंधित कार्य में बोलीदाता का अनुभव। निविदाकर्ता ने इसी प्रकार के कार्य पूर्व में किए हों तथा व्यवसायिक क्षेत्र में 3 से 5 वर्षों का अनुभव होना आवश्यक है, तभी विचार किया जाएगा। Experience of the bidder in dealing with the tendered item. Tenderer must have similar job done in the line of business / experience with 3 to 5 years will be considered	
23. क्या पूर्व में टीएमसी को किसी वस्तु सेवा की आपूर्ति की गई है /; यदि हाँ, तो क्रय आदेश संख्या एवं तिथि उल्लेख करें। Whether supply of any item / service to TMC in past; if yes indicate the Purchase Order No. & Date	
24. प्रस्तुतीकरण हेतु कोई अन्य प्रासंगिक जानकारी Any other relevant information for submission	

मैं प्रमाणित करता करती हूँ कि उपरोक्त जानकारी मेरी सर्वोत्तम जानकारी और विश्वास के अनुसार सही और सत्य है। इसमें/ कुछ भी छुपाया या गलत प्रस्तुत नहीं किया गया है। यदि कोई जानकारी गलत पाई जाती है, तो इसके लिए मैं स्वयं, हस्ताक्षरकर्ता, व्यक्तिगत रूप से उत्तरदायी रहूँगारहूँगी।/

I, certify that the above information is correct & true to the best of my knowledge and belief. Nothing has been concealed and fabricated and in case any information is found incorrect then I, the under signatory will be personally responsible.

हस्ताक्षर

Signature

तारीख: **बोलीदाता के अधिकृत प्रतिनिधि का नाम (सील सहित)**
Date: **Name of authorized person for bidder with seal**

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संलग्नक –क
Annexure- C

ईओआई जांच सूची
EOI CHECK LIST

एचबीसीएच जटनी, बीबीसीआई गुवाहाटी और आईसीटीआरईसी खोपोली प्रत्येक के लिए "लीनियर एक्सेलेरेटर", मात्रा 01 नंबर की आपूर्ति, स्थापना और कमीशनिंग के लिए रुचि की अभिव्यक्ति (ईओआई) पर प्रतिक्रिया।

Response to Expression of Interest (EOI) to supply, installation and commissioning of "Linear Accelerator", Qty 01 No. each for HBCH Jatni, BBCI Guwahati and ICTREC Khopoli.

Sr. No	विवरण Particulars	उत्तर (ना लिखें/कृपया हाँ) Response (Please write Yes/No)
1.	संलग्न तकनीकी विनिर्देश)संलग्नक – अ) के अनुसार प्रौद्योगिकी का विवरण प्रस्तुत करें। Submit the details of the technology as per attached technical specification. (Annexure A, Annexure A1 & Annexure A2)	
2.	विक्रेता क्षमता प्रपत्र)संलग्नक– ब) प्रस्तुत किया गया है। Submitted the Vendor Capability Form. (Annexure B)	
3.	ईओआई चेकलिस्ट)संलग्नक– क) प्रस्तुत की गई है। Submitted the EOI Checklist (Annexure C)	
4.	भारत में विभिन्न सरकारी/पीएसयू/स्वायत्त संस्थानों में 'लीनियर एक्सेलेरेटर' की आपूर्ति, स्थापना और कमीशनिंग का अनुभव विवरण प्रस्तुत किया गया। Submitted experience details of supply, installation and commissioning of 'Linear Accelerator' at different Government/PSUs/ Autonomous Institutions in India.	
5.	स्थानीय सेवा समर्थन का विवरण प्रस्तुत किया गया है। Submitted local service support details	
6.	प्रस्तावित मेक एवं मॉडल के संदर्भ में तकनीकी डेटा शीट एवं ब्रॉशर को निविदा दस्तावेज़ के रूप में प्रस्तुत किया गया है। Submitted **technical data sheet along with the brochure** as a tender document with reference to the offered make & model.	
7.	उसी उद्धृत मॉडल के लिए वर्तमान उपयोगकर्ताओं की उपयोगकर्ता सूची तथा प्रदर्शन रिपोर्ट प्रशंसापत्र प्रस्तुत किया गया है। Submitted User List and performance report/ testimonial for existing user for the same quoted model.	

हस्ताक्षर

Signature

तारीख:
Date:

बोलीदाता के अधिकृत प्रतिनिधि का नाम (सील सहित)
Name of authorized person for bidder with seal

TATA MEMORIAL CENTRE

TATA MEMORIAL HOSPITAL

Department : Radiation Oncology, HBCH & RC, Jatni, Odisha

Technical specifications - Advanced High Energy Linear Accelerator (LA) system, Qty No.1

DPR Name: Linear Accelerator (Linac) including 2 TPS for planning and 2 TPS for contouring" Qty No.1

Please quote the model which is including the latest state of art equipment and meets the required specifications. The quoted model should be latest introduced with end of support not before 10 years from the date of installation at TMC.

Sr. No.	Technical Specifications:	Compliance		Remarks
		Yes	No	
Model Name:				
Make:				
Country of Origin:				
Year of Introduction:				
Year of Probable end of support:				
A)	**Linear Accelerator system:**			
1	**Photon Energy**			
i	FF- 6MV,10MV,15MV			
ii	FFF - 6x & 10x			
2	**Electron Energy:** Any five energies from 6 to 18 MeV			
3	**RF Source:** Magnetron / Klystron.			
4	**Waveguide Type:** Standing / Travelling wave.			
5	**Electron Gun:** Sealed / Unsealed			
6	**Treatment Modes**			
i	Normal- TSD / TAD			
ii	Rotation - CW / CCW			
iii	ARC - CW / CCW			
iv	Service mode/non clinical mode			
7	**Dose-Rate**			
i	**6,10, 15 MV FF:** Minimum 100 - 500 MU/min in steps or higher dose rates at Dmax for field size of 10x10 cm2 and TSD 100 cm.			
ii	**6 FFF**: 100 - 1000 MU/min in steps or higher dose rates at Dmax for field size of 10x10 cm2 and TSD 100 cm **10 FFF**: 100 - 2000 MU/min in steps or higher dose rates at Dmax for field size of 10x10 cm2 and TSD 100 cm			
iii	**Electrons:** 100-500 MU/ minutes at the isocentre or higher in steps or higher dose rates. High dose rate electrons for TSET, dose rate 2500 MU/Min and Higher.			
8	**Field Size (Photons)**			
i	Maximum static field size: 40 x 40 cm² (or more)			
ii	Minimum: 0.5 x 0.5 cm²			
iii	Penumbra : < 10 mm for 10 x 10 cm² field at Dmax and TSD 100 cm.			
9	**Field Size (Electrons)**			
i	Electron Applicators of 4 - 5 sizes with aperature tray to mount cerroband alloy at the end of the applicator.			
10	**Beam Flatness**			
i	**Photon FF beam** : As per IEC 60976/AERB For Field Size 5 x 5 cm2 to 30 x 30 cm² : ≤ 106 % . For Field Size > 30 x 30 cm2 : ≤ 110 % . **Electron beam:** As per IEC 60976/AERB. For all applicator size ≤ 10 mm			
11	**Beam Symmetry**			
i	Photon FF beam : As per IEC 60976/AERB For Field Size 5 x 5 cm² and above: ≤ 103%. Electron beam: As per IEC 60976/AERB For all applicator sizes ≤ 105%			
12	**Gantry**			
i	Rotation ±180° (360° total)			
ii	Read out - Digital			

Sr. No.	Technical Specifications:	Compliance		Remarks
		Yes	No	
iii	Accuracy dig-readout 0.5°			
iv	Control - Hand pendent and control-console			
v	Target - Axis Distance : 100 ± 0.2 cm			
vi	ODI Range : 75 cm to 150 cm, 0.5 cm resolution			
vii	ODI Accuracy ± 0.1 cm at TSD 100 cm			
viii	Gantry Rotation Isocentre ≤ 2 mm dia. Sphere.			
13	**Collimator**			
i	Rotation: ± 175°			
ii	Control: Hand pendent and control- console			
iii	Readout accuracy : ± 0.5°			
iv	Collimator Rotation Isocentre ≤ 2 mm dia. Sphere			
v	Virtual/ Dynamic/ Motorised Wedge			
14	**Asymmetric Collimators**			
i	**Upper Jaw:** Asymmetrical			
ii	Lower jaw/MLC : Asymmetrical			
iii	The Asymmetric collimator should be support dynamic jaw tracking.			
15	**Multi-leaf collimator (MLC)**			
i	Minimum no. of Leafs: 120 leaves.The physical leaf width at isocenter: Central 20 x 40 cm² : 5 mm or less, outer 20 x 40 cm²: 10mm or less.			
ii	Independent drives for each leaf			
iii	Capable of performing Conformal therapy (IMRT, Rotaional IMRT, SRT,SBRT) procedures.			
iv	Coincidence of light & x-ray field: For field between 5 x 5 cm² and 20 x 20 cm² ≤ 2 mm. For field size more than 20 x 20 cm² : 1% of field size			
v	Photon leakage radiation through MLC when either pair of jaws is replaced with MLC : Maximum : ≤ 2%, Average: ≤ 0.75%.Photon leakage radiation (Maximum) through MLC when MLC is used as tertiary jaws: ≤ 5%.			
vi	Max. leaf retracting position ≤ 20 cm			
vii	Over center travel of MLC leafs (≥15 cm) for IMRT treatments.			
viii	Maximum field length 40 cm.			
ix	Penumbra at Dmax ≤ 6 mm for field size 10 x 10 cm².			
x	Leaf position accuracy : ±1 mm .			
xi	Max. carriage speed: 1 cm/sec or more .			
xii	Max. leaf speed: 2.5 cm/sec or more .			
xiii	Inter-digitation of leafs should be available .			
16	**Auto Field Sequencing should be available .**			
17	**Portal Imaging & Integrated portal dosimetry feature (FF and FFF energies)**			
i	Should fully integrate with Accelerator			
ii	Should be able to take images at any Gantry angles with variable X, Y or Z movements.			
iii	Flat panel (aSi) Imaging area should be 40x40 cm² or More with all available energies, with Pixel Matrix of minimum 1024 x 1024 or more. Should be able to acquire images at highest dose rate at iso centre.			
iv	Compatible with FFF energy mode.			
v	Vendor shall mandatorily offer Integrated Portal dosimetry feature (for FF & FFF energies).			
18	**IGRT System**			
i	Retractable arms			
ii	Vendor shall offer advanced imaging features which includes 2D orthogonal imaging, fluro mode imaging, 3D CBCT, 4D CBCT, Breathhold CBCT, Intrafraction imaging feature.			
iii	Flat panel detectors of min 40 X 40 Cm or more, with Pixel Matrix of minimum 1024 X 1024 or more.			
iv	CBCT reconstruction, registration (MV-MV, KV-KV)			
v	Fully integrated with latest R & V system and TPS.			
vi	3D image data should be reconstructed from series of 2D projection images acquired as the linear accelerator gantry is rotated, Kindly mention all acquisition & review modes with ONLINE/Manual GATED CBCT. 4D-CBCT with Reconstruction.			

Sr. No.	Technical Specifications:	Compliance		Remarks
		Yes	No	
vii	QA tools supplied with equipment for kV & MV imaging as standard: 1. CT image quality phantom (Qty : 1) 2. EPID image quality test tool (Qty : 1) 3. Isocenter Verification Tool / Phantom to check KV & MV imaging isocenter. [Qty: 1]			
19	**Treatment Couch (IGRT couch)**			
i	IGRT couch made of full carbon fibre top with Indexing capability.			
ii	Range of Movements: i) Lateral : ≥± 24 cm couch top center from centerline ii)Vertical: ≥95 cm iii) Longitudinal: ≥100 cm iv) Rotational about isocenter: ±95 degrees			
iii	Electrical control of couch should be provided			
iv	(a) It should have the capability for remote controlled positional correction facility in three translational axes with respect to the shifts derived from the integrated to KV cone beam CT and Orthogonal KV images acquisition system. (b) Full Load capacity(wt.) 200 kg or More. (c) Table top sag at isocenter : ≤ 5 mm (as per IEC 60976)			
v	Mechanism to move the couch in case of power failure			
vi	Minimum height from floor ≤ 80 cm			
20	**Dosimetry System**			
i	Dose Monitoring System : Built-in chambers. Two separate sealed/ Air vented chambers			
ii	Stability : ± 1%			
iii	Proportionality/Linearity : ± 1%			
iv	Reproducibility ± 1%			
21	**Safety System as per IEC / AERB standards**			
i	Emergency switches to be provided			
ii	Door interlocks to be provided			
iii	Last Man Out(LMO) Switch, installation and electrical cabling should be under vendor's scope (Qty: 2)			
iv	Various Beam off interlocks to be provided			
22	**Leakage Radiation as per IEC / AERB standards**			
i	Maximum Photon leakage radiation in the patient plane: Maximum ≤0.2%			
ii	Average Photon leakage radiation in the patient plane: Average ≤0.01%			
iii	Maximum Neutron leakage radiation in the patient plane: Maximum ≤ 0.05%			
iv	Average Neutron leakage radiation in the patient plane : Average ≤0.02%			
v	Maximum percentage of photon leakage radiation at 1 m from the target; path of electrons between electron gun and the target or electron window in other than patient plane: ≤0.5% (Photon). ≤0.5% (Neutron)			
23	**Accessories**			
i	Mechanical Front pointer (SSD indicator)			
ii	Accessory mount - Electron tray			
iii	CCTV Camera system along with Monitors, with wide angle for room view having remote controlled with remote zoom & focus facility. (Qty: 4), two way audio communication system (Qty: 1) . Installation and electrical cabling should be under vendor's scope			
iv	In-room Colour flat Monitors LED 27” or higher (Qty : 2)			
v	Laser Alignment System (3 cross & One Line laser system set), Total Qty : 1 set			
24	**Certification (please enclose copies)**			
i	AERB type approval / NOC			
ii	FDA 510K certification/CE/ICMED/ISO 13485/BIS			
iii	If model quoted is introduced in year 2022 the above clearances shall be obtained by vendor before the installation of machine.			
iv	Enclose certification of calibration and inspection			
v	Log book with instruction for daily, weekly, monthly, quarterly and yearly maintenance check list.			
25	**Manuals / Data book:** Operator, System and Schematic manuals.			
26	**Essential Spare Parts:** Provide the list of standard spare parts supplied with the machine.			
27	**UPS (TPS Work stations):** Individual UPS with inbuilt battery for each TPS Workstation (including planning and contouring stations) 30 minutes backup			

Sr. No.	Technical Specifications:	Compliance		Remarks
		Yes	No	
28	**UPS (Equipment):** Please Provide UPS with adequte capacity for the complete systems. With 30 min back up. Complete installation and connectivity with the LINAC eqiupment (electrical cabling) should be under vendors scope.			
29	**Dosimetry and QA equipment's. (Annexure 1)**			
30	**Mould Room Equipment (Immobilization devices). (Annexure 2)**			
B)	**Treatment planning Station, Server & Networking Specifications:**			
1	**General Requirements**			
i	The vendor shall supply, install, configure, and commission all hardware and network required for server infrastructure, treatment planning, contouring, and oncology information system (OIS).			
ii	The vendor shall be responsible for i) Physical installation; ii) System configuration; iii) Initial testing and validation			
iii	All hardware shall comply with applicable medical electrical safety and IT standards.			
iv	All supplied equipment shall be the latest Hardware compatible with OIS, planning system at the time of delivery.			
v	All components must be OEM-certified and healthcare compatible. The bidder should provide the required OEM document in the bid.			
vi	The solution must support DICOM standards and healthcare interoperability.			
vii	The bidder must provide datasheets and technical specifications for all quoted items along with proposed setup Architecture diagrams.			
viii	The proposed system architecture should be setup in an isolated VLAN Network with only specific port may be allowed to communicate the HBCH&RC-Jatni network if required. The required networking equipment like switches shall be considered by bidder. The network cabling will be in the TMC scope.			
ix	**Warranty, CMC and Support:** i) All supplied hardware shall be covered under comprehensive on site warranty and CMC. ii) The vendor shall provide technical support, including hardware parts replacement and troubleshooting during the warranty and CMC period.			
2	**Server Infrastructure Specification**			
i	The vendor shall offer enterprise class rack mounted server hardware suitable for clinical applications. The quoted system shall comply with CE/FDA/ISO standards, as per OIS requirements.			
ii	The server shall be supporting 64 bit server operating system commonly used in enterprise healthcare environments and suitable with proposed system.			
iii	The sever shall be high performance multi core processors with latest generation (not end-of-life) at the time of delivery suitable for compute intensive medical applications.			
iv	The server shall have high speed RAM (DDR5 or better) with sufficient capacity as per OEM requirement or higher to support simultaneous planning, contouring, and OIS operations and expandable up to 1 TB			
v	The server storage shall provide a minimum usable capacity of 10 TB for patient data and shall be expandable beyond 10 TB within the same RAID configuration/cluster.			
vi	The storage shall be enterprise grade technology (NVMe SSD + SAS hybrid architecture) with redundancy to ensure data integrity and fault tolerance.			
vii	The proposed server shall support latest server or supported OIS Operating Systems (Windows/Linux, etc) along with compatibility for industry standard virtualization platforms			
viii	The server storage shall support RAID configurations (RAID 5/6/10) with hot spare capability.			
ix	The proposed server shall include sufficient Ethernet (T-Base) and/or Fibre Channel ports, as required for the deployment, including a dedicated server management port.			
x	A comprehensive backup solution shall be provided, supporting the following: i) Automated scheduled backups (full and incremental). ii) Restore capability for patient data and system configurations. iii) Support for disaster recovery, including offsite backup			

Sr. No.	Technical Specifications:	Compliance		Remarks
		Yes	No	
xi	The vendor shall supply a rack mounted solution, including: i) Standard server rack ii) Redundant rack PDU ii) Rack mounted UPS with minimum backup time 30 mintues to ensure safe shutdown and data protection in case of power failure.			
3	**Treatment Planning System (TPS) Hardware and Software Specifications (Qty: 2 Nos)**			
a)	**Hardware Specifications**			
i	The vendor shall quote latest workstation hardware and applicable OIS software for use with treatment planning systems.			
ii	Planning workstations shall be designed for advanced dose calculation and plan optimization			
iii	Each treatment planning system shall be equipped with: i) Latest generation high performance multi core CPU compatible with OIS ii) High speed RAM optimized for large imaging and planning datasets, as recommended by OEM. iii) Support 64 bit operating systems compatible with clinical oncology applications. iv) The display should be high resolution medical-grade monitors for contouring and plan evaluation. v) Minimum 2 TB SSD storage and/or as recommended by OEM.			
b)	**Software features**			
i	DICOM3 and full DICOM family			
ii	DICOM RT Import/export from CT/MR/PET/PACS/C-ARM etc.			
iii	Fixed field and Rotational IMRT Optimization algorithms.			
iv	Dose calculation algorithms for Photon (CCC/AAA, Accuros- XB/Monte carlo & equivalent) Electron (Monte Carlo or equivalent) Optimization algorithm for 3DCRT,IMRT Rotational IMRT, Knowledge based planning.			
v	Import /export- Image/structure set/plan/ dose etc. to all machines and integration with network. (HW/SW)			
4	**Contouring System Hardware and Software Specifications (Qty: 2 Nos)**			
a)	**Hardware Specifications**			
i	The vendor shall quote dedicated workstation hardware suitable for contouring as per system and workload requirements, upgradable for next 10 yrs			
ii	Each Contouring workstations shall include: i) Latest-generation, high performance CPU compatible with OIS. ii) Sufficient RAM to handle multimodal imaging (CT, MR, PET) iii) Graphics capability suitable for smooth visualization and segmentation iv) Support 64 bit operating systems compatible with clinical oncology applications. v) Minimum 2 TB SSD storage and/or as recommended by OEM. vi) High-resolution, medical-grade monitors for contouring and plan evaluation.			
b)	**Software features**			
i	Multi modality (CT, MR, PET etc) Image registration (rigid and deformable) should be provided.			
ii	Manual, Atlas based and knowledge based contouring both should be available.			
5	**Oncology Information System (OIS) Hardware and Software Specifications**			
i	The vendor shall provide latest generation hardware for the Oncology Information System (OIS)			
ii	The OIS hardware shall be capable of supporting: i) Patient registration and scheduling ii) Treatment workflow management iii) Clinical documentation and reporting. iv) Integration with treatment planning systems and imaging modalities, treatment machine and sever. v) Record & Verify System (latest hardware and software)			
iii	The OIS system shall real-time access to patient data and seamless integration with server infrastructure and planning systems.			
iv	Transfer of all parameters from Simulator, CT-simulators, MRI, PET-CT, USG etc & Treatment Planning System, and other TPS to the accelerator for automatic treatment setup & delivery should be provided.			

Sr. No.	Technical Specifications:	Compliance		Remarks
		Yes	No	
v	Transfer of DRR/Fluoroscopy images etc through R&V system for comparison with portal imaging.			
vi	Transfer & Execution of Conformal ,IMRT & VMAT treatment plans from Treatment Planning System should be provided.			
vii	Should be Networked with R & V. All required interfaces should be provided. Provision for future networking options should be specified in detail.			
viii	Transfer and execution of MLC position parameter for normal, IMRT & VMAT treatment including step & shoot and/or dynamic and/or rotational IMRT techniques from TPS.			
6	**Cybersecurity & IT Security Requirements**			
i	The bidder must ensure compliance with enterprise and healthcare cybersecurity standards.			
ii	**Endpoint Security:** TMC will provide a centrally managed, enterprise-grade antivirus/EDR solution with regular signature and patch updates. The bidder must install the TMC-recommended antivirus on each OIS system			
iii	**Network Security:** i) The bidder's hardware and software applications shall operate on secure communication protocols (TLS 1.2 or higher). ii) The system shall be compatible with firewall configurations and network segmentation requirements.			
iv	**Access Control:** i) The proposed system shall provide Role-Based Access Control (RBAC) for OIS applications. ii) Systems supporting Multi-Factor Authentication (MFA) will be highly preferred. iii) Use of pen drives and portable hard disks shall be strictly restricted on all hardware systems			
v	**Data Security:** i) Data on the database server shall be encrypted both at rest and in transit. ii) Audit logs and activity tracking shall be maintained for a minimum period of six (6) months. iii) The system shall comply with applicable healthcare data protection standards, including the Digital Personal Data Protection Act, 2023			
vi	**File Sharing & Remote Connectivity** i) Secure file transfer mechanisms such as SFTP/HTTPS shall be used. ii) Access shall be controlled and supported with comprehensive audit trails. iii) Remote access shall be permitted strictly on an attended basis. iv) The vendor shall disclose all remote connectivity tools and methods used.			
vii	**Compliance & Certification** The bidder shall submit the following documents: i) OEM authorization certificates. ii) Product compliance certificates (e.g., CE/FDA/ISO), where applicable. iii) Electrical and safety compliance certificates. iv) Compatibility certification with OIS/planning systems. v) Product VAPT Compliance Certificate.			
7	**Latest Network Laser Printer (Qty:1)**			
C)	**General Terms:**			
1	Should perform preventive maintenance (3 nos) during warranty and CMC (includes unlimited breakdown calls) /CMC (which will include spare replacement, breakdown calls). Vendor to submit SOPs for PMS at the time of installation/ commissioning. This is mandatory requirement.			
2	Performance certificates of IQ,OQ,PQ tests to be submitted at the time of installation/commissioning.			
3	Vendor to submit the technical data sheet, brochure etc as a tender document with reference to the quoted make & model. Please mention the reference page no., quoted model name/number against each item etc in these documents against each technical specifications in the compliance.			
4	Vendor to submit list of consumables/consumable Spares and spare parts(i.e.spares need to be replaced at regular intervals, maybe quarterly/half yearly/yearly etc.) if any.Cost of consumables to be added in the financial bid not in the technical bid.			
5	Please submit pre installation requirements [electrical, HVAC, Compressed air along with air pressure mentioned), water requirement (RO/DI/Distilled water with its pressure, flow rate per hour) ; if any of the above is essential]			
6	Vendor to provide UPS with adequate capacity, if required for the quoted equipment. If not required, vendor to mention the same.			
7	Vendor to submit details of footprint size & weight of the quoted model.			

Sr. No.	Technical Specifications:	Compliance		Remarks
		Yes	No	
8	Vendor to submit power consumption.			
9	Demo of the quoted model , will be required if so desired by the user, after the opening of the technical bid and prior to opening of financial bid. This is for technical evaluation. All technical specifications mentioned above to be mandatorily shown in the demo unit.			
10	User's/Installation list: A list of installations of the quoted model with the address and contact numbers to be provided.			
11	Predispatch inspection at factory will be required if desired by authorities.			
12	Should be CE/US FDA/BIS/ICMED approved.			
13	Vendor should provide the User manual and service manual copy during the installation of the equipment. At the time of installation, photographs of the equipment must be taken to record the model details, serial number, and initial condition (for biomedical use)			
14	Unpacking and shifting the consignment to the installation site is to be included in the vendor's scope of supply. Bidder/manufacturer/authorized service provider should take responsibility to lift /shift the consignment from unloading site to the installation site. Unloading site shall be Stores department, Jatni, Odisha. If needed ,bidder has to arrange for the labours at no charge to Jatni, Odisha. (Before submitting the quotation,bidders may visit Jatni, Odisha, to know unloading and installation site.			
15	Complete decommissioning & dismantling of existing machine with clearing the debris/scrap from the respective site will be sole responsibility of the vendor if buyback.			
16	**Training:**			
	Training at globally renowned centre with experience of installation and use of the said equipment for two Radiation Oncologist,two Medical Physicist, two Radiotherapy Technologists and two Inhouse biomedical engineers.			
17	**Penalty Clause:**			
a	The supplier and / or its Indian agent will be required to maintain the equipment and all its bought out items (including software updates and various licenses) used for the functionality of the system in good working condition during the warranty/ CMC period with 96% uptime guarantee.			
b	Equipment shall be fully functional to be considered as the uptime. In case of partial functionality, the proportion of functionality shall be determined and downtime shall be adjusted by such proportion (i.e. if the equipment is 70% functional, 30% downtime shall be applicable). In cases where it is not possible to definitely determine the proportion of functionality, the downtime shall be considered as 100%.			
c	The decision of the TMC management or its representative in determining the % of the downtime shall be final and binding.			
d	Essential period to shut down the equipment entirely or partially during warranty/CMC period shall also be included in the downtime while calculating the guaranteed uptime i.e. all features as per specifications in purchase order should be functional for uptime.			
e	The penalty applicable for downtime shall be calculated on an hourly basis and will be at the rate of 0.004% per hour (0.1% per day) of the total cost of the equipment (excluding works), during and up to the period of warranty/ CMC. There shall be a permissible down time of 360 hours per year, beyond which the down time penalty will be applicable.			
f	However, in case of the downtime exceeding seven days (i.e. 168 hrs) at a stretch, the downtime beyond these 168 hours will be considered for calculation of downtime penalty.			
g	The levy of this penalty shall be at the discretion of director TMC irrespective of the overall up time of the equipment throughout the period of the warranty or CMC.			
h	This clause is to ensure maximum uninterrupted service to patients and hence Director, TMC's decision in enforcing / invoking this clause will be final and binding for all.			
i	For CMC, W.O. issued by TMC shall be final as per D.A.E. Norms. TMC & its units shall not sign separate legal contract as per vendor's format.			
18	**Local Service Support:** Should have local office and service support/service engineer for attending the breakdown calls. Details to be submitted.			

Sr. No.	Technical Specifications:	Compliance		Remarks
		Yes	No	
19	**Response Time:** Should not be more than 06 hrs from lodging a breakdown complaint on toll free or by email.			
20	**Warranty- 2 years**			
21	**CMC- cost per annum will be considered for all bidders for 8 years after warranty**			
	Should include a) ***3*** preventive maintenance/ year and unlimited breakdown calls along with spares.b) All bought out items quoted along with the main system (local/non-local) and UPS should be covered. c) Yearly calibration/Validation/QA, Testing and measuring equipment used should be traceable to SI units through National/ International standards (as per NABL/NABH norms). d) PM kit if any. e) All upgrades/update, no seperate licence fees will be payable.			
22	Back to back assurance to be taken by the supplier from OEM to supply spares for minimum 10 years and to be submitted.			

TATA MEMORIAL CENTRE
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ANNEXURE 1

Dosimetry and QA equipment's.

Sr. No.	Description	Compliance		Remarks
		Yes	No	
1	RFA system with 2 scanning chamber (0.13 cc or less) with associated Alignment Tools, Setup Tools, Buildup Cap for all photon energies, holders for supplied dosimeters ,electrometer,Dosimetric cables (>20 m),software including all features related to RFA & Film dosimetry , hardware along with laptop It should be compatible with both C type and Ring Gantry LINAC. (Qty: 1)			
2	Solid Water Slabs Set (30 cm x 30 cm x 30 cm with 1 mm depth resolution), with adaptor plate for supplied chambers.			
3	Detectors (all Waterproof):			
i)	Farmer type ion chambers (0.6 to 0.65 cc) with buildup cap for all photon energies (Qty: 1)			
ii)	Parallel Plate ion Chamber (Roos type) (Qty: 1)			
iii)	Micro ion chamber Chamber (0.03 cc or less) (Qty: 1)			
iv)	Diode detector for small field (Qty: 1)			
4	Electrometer - Reference Class with integrated digital display (Qty 1)			
5	Universal triaxial dosimetry cables (20 meter) (Qty: 2)			
6	High pressurized ion chamber based survey meter (Qty: 1)			
7	Daily QA Device capable to measure Beam energy, Output , Beam Flateness & Symmetry etc both for FF &FFF compatible (Qty:1 No.)			
8	1D Water phantom (with 0.1 mm depth resolution), along with adapters for supplied dosimeters (Qty: 1)			
9	Laser Alignment QA tool (Qty: 1)			
10	TPR 20/10 phantom (Qty: 1)			
11	Calibrated thermometer (Qty: 2)			
12	Calibrated barometer (Qty: 1)			
13	Spirit level (Qty.1)			
14	Flatbed latest Scanner (for Film dosimetry) (Qty:1)			
15	Radiochromic films 8*10 inches (Qty:2 Box)			
16	Radiochromic films 14*17 inches (Qty:1 Box)			

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ANNEXURE 2

Mould Room Equipment (Immobilization devices)

Sr No	Description	Required quantity (Set)	Compliance		Remarks
			Yes	No	
1	Total Body carbon Fiber Base Plate with locking mechanism	2			
2	Head & Neck Immobilization devices	2			
3	Breast & Lung Immobilization devices	2			
4	Knee Immobilization device (wedge)	2			
5	Belly & Pelvis Immobilization devices	1			
6	Prone breast Immobilization devices	1			
7	Stereotactic Immobilization devices	1			
8	Shoulder Retractors	2			
9	Body Caliper	2			
10	Vacuum Station with pressure Gauge	1			
11	CT Marker Dots (Box of 500 dots)	1			
12	Gel Bolus 30 x 30 x 0.5 cm	2			
13	Gel Bolus 30 x 30 x 1.0 cm	2			
14	Water bath	1			
15	Heat gun	1			
16	Dental Base Wax (1 Box of 12 Sheets of 1.5 mm)	2			
17	Electron block mould system	1			
18	Head thermoplastic masks	30			
19	Head & Neck thermoplastic masks	100			
20	Pelvic thermoplastic masks	50			
21	Vacuum Cushions	20			

Tata Memorial Centre
Tata Memorial Hospital

Department : Radiation Oncology, BBCI, Guwahati

Technical specifications - Advanced High Energy Linear Accelerator (LA) system, Qty No.1

DPR Name: Linear Accelerator (Linac) including 2 TPS for planning and 2 TPS for contouring" Qty No.1

Please quote the model which is including the latest state of art equipment and meets the *required* specifications. The quoted model should be latest introduced with end of life not before 10 years from the date of installation at TMC.

Sr. No.	Technical Specifications:	Compliance		Remark
		Yes	No	
Model Name:				
Make:				
Country of Origin:				
Year of Introduction:				
Year of Probable end of support:				
A)	**Linear Accelerator system:**			
1	**Photon Energy**			
i	FF- 6MV,10MV,15MV			
ii	FFF - 6x & 10x			
2	**Electron Energy:** Any five energies from 6 to 18 MeV			
3	**RF Source:** Magnetron / Klystron.			
4	**Waveguide Type:** Standing / Travelling wave.			
5	**Electron Gun:** Sealed / Unsealed			
6	**Treatment Modes**			
i	Normal- TSD / TAD			
ii	Rotation - CW / CCW			
iii	ARC - CW / CCW			
iv	Service mode/non clinical mode			
7	**Dose-Rate**			
i	**6,10, 15 MV FF:** Minimum 100 - 500 MU/min in steps or higher dose rates at Dmax for field size of 10x10 cm2 and TSD 100 cm.			
ii	**6 FFF**: 100 - 1000 MU/min in steps or higher dose rates at Dmax for field size of 10x10 cm2 and TSD 100 cm **10 FFF**: 100 - 2000 MU/min in steps or higher dose rates at Dmax for field size of 10x10 cm2 and TSD 100 cm			
iii	**Electrons:** 100-500 MU/ minutes at the isocentre or higher in steps or higher dose rates. High dose rate electrons with two electron energies for TSET , dose rate 2500 MU/Min and Higher.			
8	**Field Size (Photons)**			
i	Maximum static field size: 40 x 40 cm² (or more)			
ii	Minimum: 0.5 x 0.5 cm²			
iii	Penumbra : < 10 mm for 10 x 10 cm² field at Dmax and TSD 100 cm.			
9	**Field Size (Electrons)**			
i	Electron Applicators of 4 - 5 sizes with aperature tray to mount cerroband alloy at the end of the applicator.			
10	**Beam Flatness**			
ii	**Photon FF beam** : As per IEC 60976/AERB For Field Size 5 x 5 cm2 to 30 x 30 cm² : ≤ 106 % . For Field Size > 30 x 30 cm2 : ≤ 110 % . **Electron beam:** As per IEC 60976/AERB. For all applicator size ≤ 10 mm			
11	**Beam Symmetry**			
i	Photon FF beam : As per IEC 60976/AERB For Field Size 5 x 5 cm² and above: ≤ 103%. Electron beam: As per IEC 60976/AERB For all applicator sizes ≤ 105%			
12	**Gantry**			
i	Rotation ±180° (360° total)			
ii	Read out - Digital			
iii	Accuracy dig-readout 0.5°			
iv	Control - Hand pendent and control-console			
v	Target - Axis Distance : 100 ± 0.2 cm			
vi	ODI Range : 75 cm to 150 cm, 0.5 cm resolution			
vii	ODI Accuracy ± 0.1 cm at TSD 100 cm			
viii	Gantry Rotation Isocentre ≤ 2 mm dia. Sphere.			
13	**Collimator**			
i	Rotation: ± 175°			
ii	Control: Hand pendent and control- console			

Sr. No.	Technical Specifications:	Compliance		Remark
		Yes	No	
iii	Readout accuracy : ± 0.5°			
iv	Collimator Rotation Isocentre ≤ 2 mm dia. Sphere			
v	Virtual/ Dynamic/ Motorised Wedge			
14	**Asymmetric Collimators**			
i	**Upper Jaw:** Asymmetrical			
ii	Lower jaw/MLC : Asymmetrical			
iii	The Asymmetric collimator should be support dynamic jaw tracking.			
15	**Multi-leaf collimator (MLC)**			
i	Minimum no. of Leafs: 120 leaves.The physical leaf width at isocenter: Central 20 x 40 cm² : 5 mm or less, outer 20 x 40 cm²: 10mm or less.			
ii	Independent drives for each leaf			
iii	Capable of performing Conformal therapy (IMRT, Rotaional IMRT, SRT,SBRT) procedures.			
iv	Coincidence of light & x-ray field: For field between 5 x 5 cm² and 20 x 20 cm² ≤ 2 mm. For field size more than 20 x 20 cm² : 1% of field size			
v	Photon leakage radiation through MLC when either pair of jaws is replaced with MLC : Maximum : ≤ 2%, Average: ≤ 0.75%.Photon leakage radiation (Maximum) through MLC when MLC is used as tertiary jaws: ≤ 5%.			
vi	Max. leaf retracting position ≤ 20 cm			
vii	Over center travel of MLC leafs (≥15 cm) for IMRT treatments.			
viii	Maximum field length 40 cm.			
ix	Penumbra at Dmax ≤ 6 mm for field size 10 x 10 cm².			
x	Leaf position accuracy : ±1 mm .			
xi	Max. carriage speed: 1 cm/sec or more .			
xii	Max. leaf speed: 2.5 cm/sec or more .			
xiii	Inter-digitation of leafs should be available .			
16	**Auto Field Sequencing should be available .**			
17	**Portal Imaging & Integrated portal dosimetry feature (FF and FFF energies)**			
i	Should fully integrate with Accelerator			
ii	Should be able to take images at any Gantry angles with variable X, Y or Z movements.			
iii	Flat panel (aSi) Imaging area should be 40x40 cm² or More with all available energies, with Pixel Matrix of minimum 1024 x 1024 or more. Should be able to acquire images at highest dose rate at iso centre.			
iv	Compatible with FFF energy mode.			
v	Vendor shall mandatorily offer Integrated Portal dosimetry feature (for FF & FFF energies).			
18	**IGRT System**			
i	Retractable arms			
ii	Vendor shall offer advanced imaging features which includes 2D orthogonal imaging, fluro mode imaging, 3D CBCT, 4D CBCT, Breathhold CBCT, Intrafraction imaging feature.			
iii	Flat panel detectors of min 40 X 40 Cm or more, with Pixel Matrix of minimum 1024 X 1024 or more.			
iv	CBCT reconstruction, registration (MV-MV, KV-KV)			
v	Fully integrated with latest R & V system and TPS.			
vi	3D image data should be reconstructed from series of 2D projection images acquired as the linear accelerator gantry is rotated, Kindly mention all acquisition & review modes with ONLINE/Manual GATED CBCT. 4D-CBCT with Reconstruction.			
vii	QA tools supplied with equipment for kV & MV imaging as standard: 1. CT image quality phantom (Qty : 1) 2. EPID image quality test tool (Qty : 1) 3. Isocenter Verification Tool / Phantom to check KV & MV imaging isocenter. [Qty: 1]			
19	**Treatment Couch (IGRT couch)**			
i	IGRT couch made of full carbon fibre top with Indexing capability.			
ii	Range of Movements: i) Lateral : ≥± 24 cm couch top center from centerline ii)Vertical: ≥95 cm iii) Longitudinal: ≥100 cm iv) Rotational about isocenter: ±95 degrees			
iii	Electrical control of couch should be provided			
iv	(a) It should have the capability for remote controlled robotic positional correction facility in three translational and rotational axes with respect to the shifts derived from the integrated to KV cone beam CT and Orthogonal KV images acquisition system. (b) Full Load capacity(wt.) 200 kg or More. (c) Table top sag at isocenter : ≤ 5 mm (as per IEC 60976)			
v	Mechanism to move the couch in case of power failure			
vi	Minimum height from floor ≤ 80 cm			
20	**Dosimetry System**			
i	Dose Monitoring System : Built-in chambers. Two separate sealed/ Air vented chambers			

Sr. No.	Technical Specifications:	Compliance		Remark
		Yes	No	
ii	Stability : ± 1%			
iii	Proportionality/Linearity : ± 1%			
iv	Reproducibility ± 1%			
21	**Safety System as per IEC / AERB standards**			
i	Emergency switches to be provided			
ii	Door interlocks to be provided			
iii	Last Man Out(LMO) Switch, installation and electrical cabling should be under vendor's scope (Qty: 2)			
iv	Various Beam off interlocks to be provided			
22	**Leakage Radiation as per IEC / AERB standards**			
i	Maximum Photon leakage radiation in the patient plane: Maximum ≤0.2%			
ii	Average Photon leakage radiation in the patient plane: Average ≤0.01%			
iii	Maximum Neutron leakage radiation in the patient plane: Maximum ≤ 0.05%			
iv	Average Neutron leakage radiation in the patient plane : Average ≤0.02%			
v	Maximum percentage of photon leakage radiation at 1 m from the target; path of electrons between electron gun and the target or electron window in other than patient plane: ≤0.5% (Photon). ≤0.5% (Neutron)			
23	**Accessories**			
i	Mechanical Front pointer (SSD indicator)			
ii	Accessory mount - Electron tray			
iii	CCTV Camera system along with Monitors, with wide angle for room view having remote controlled with remote zoom & focus facility. (Qty: 4), two way audio communication system (Qty: 1) . Installation and electrical cabling should be under vendor's scope			
iv	In-room Colour flat Monitors LED 27" or higher (Qty : 2)			
v	Laser Alignment System (3 cross & One Line laser system set), Total Qty : 1 set			
24	**Certification (please enclose copies)**			
i	AERB type approval / NOC			
ii	FDA 510K certification/CE/ICMED/ISO 13485/BIS			
iii	If model quoted is introduced in year 2022 the above clearances shall be obtained by vendor before the installation of machine.			
iv	Enclose certification of calibration and inspection			
v	Log book with instruction for daily, weekly, monthly, quarterly and yearly maintenance check list.			
25	**Manuals / Data book:** Operator, System and Schematic manuals.			
26	**Essential Spare Parts:** Provide the list of standard spare parts supplied with the machine.			
27	**UPS (TPS Work stations):** Individual UPS with inbuilt battery for each TPS Workstation (including planning and contouring stations) 30 minutes backup			
28	**UPS (Equipment):** Please Provide UPS with adequte capacity for the complete systems. With 30 min back up. Complete installation and connectivity with the LINAC eqiupment (electrical cabling) should be under vendors scope.			
29	**Dosimetry and QA equipments. (Annexure 1)**			
B)	**Treatment planning Station, Server & Networking Specifications:**			
1	**General Requirements**			
i	The vendor shall supply, install, configure, and commission all hardware and network required for server infrastructure, treatment planning, contouring, and oncology information system (OIS).			
ii	The vendor shall be responsible for i) Physical installation; ii) System configuration; iii) Initial testing and validation			
iii	All hardware shall comply with applicable medical electrical safety and IT standards.			
iv	All supplied equipment shall be the latest Hardware compatible with OIS, planning system at the time of delivery.			
v	All components must be OEM-certified and healthcare compatible. The bidder should provide the required OEM document in the bid.			
vi	The solution must support DICOM standards and healthcare interoperability.			
vii	The bidder must provide datasheets and technical specifications for all quoted items along with proposed setup Architecture diagrams.			
viii	The proposed system architecture should be setup in an isolated VLAN Network with only specific port may be allowed to communicate the BBCI-Guwahati network if required. The required networking equipment like switches shall be considered by bidder.All networking cabling work will be in the TMC scope.			
ix	**Warranty, CMC and Support:** i) All supplied hardware shall be covered under comprehensive on site warranty and CMC. ii) The vendor shall provide technical support, including hardware parts replacement and troubleshooting during the warranty and CMC period.			
2	**Server Infrastructure Specification**			

Sr. No.	Technical Specifications:	Compliance		Remark
		Yes	No	
i	The vendor shall offer enterprise class rack mounted server hardware suitable for clinical applications. The quoted system shall comply with CE/FDA/ISO standards, as per OIS requirements.			
ii	The server shall be supporting 64 bit server operating system commonly used in enterprise healthcare environments and suitable with proposed system.			
iii	The sever shall be high performance multi core processors with latest generation (not end-of-life) at the time of delivery suitable for compute intensive medical applications.			
iv	The server shall have high speed RAM (DDR5 or better) with sufficient capacity as per OEM requirement or higher to support simultaneous planning, contouring, and OIS operations and expandable up to 1 TB			
v	The server storage shall provide a minimum usable capacity of 10 TB for patient data and shall be expandable beyond 10 TB within the same RAID configuration/cluster.			
vi	The storage shall be enterprise grade technology (NVMe SSD + SAS hybrid architecture) with redundancy to ensure data integrity and fault tolerance.			
vii	The proposed server shall support latest server or supported OIS Operating Systems (Windows/Linux, etc) along with compatibility for industry standard virtualization platforms			
viii	The server storage shall support RAID configurations (RAID 5/6/10) with hot spare capability.			
ix	The proposed server shall include sufficient Ethernet (T-Base) and/or Fibre Channel ports, as required for the deployment, including a dedicated server management port.			
x	A comprehensive backup solution shall be provided, supporting the following: i) Automated scheduled backups (full and incremental). ii) Restore capability for patient data and system configurations. iii) Support for disaster recovery, including offsite backup			
xi	The vendor shall supply a rack mounted solution, including: i) Standard server rack ii) Redundant rack PDU ii) Rack mounted UPS with minimum backup time 30 mintues to ensure safe shutdown and data protection in case of power failure.			
3	**Treatment Planning System (TPS) Hardware and Software Specifications (Qty: 2 Nos)**			
a)	**Hardware Specifications**			
i	The vendor shall quote latest workstation hardware and applicable OIS software for use with treatment planning systems.			
ii	Planning workstations shall be designed for advanced dose calculation and plan optimization			
iii	Each treatment planning system shall be equipped with: i) Latest generation high performance multi core CPU compatible with OIS ii) High speed RAM optimized for large imaging and planning datasets, as recommended by OEM. iii) Support 64 bit operating systems compatible with clinical oncology applications. iv) The display should be high resolution medical-grade monitors for contouring and plan evaluation. v) Minimum 2 TB SSD storage and/or as recommended by OEM.			
b)	**Software features**			
i	DICOM3 and full DICOM family			
ii	DICOM RT Import/export from all existing CT/MR/PET/PACS/C-ARM etc.			
iii	Fixed field and Rotational IMRT Optimization algorithms.			
iv	Dose calculation algorithms for Photon (CCC/AAA, Accuros- XB/Monte carlo & equivalent) Electron (Monte Carlo or equivalent) Optimization algorithm for 3DCRT,IMRT Rotational IMRT, Knowledge based planning.			
v	Import /export- Image/structure set/plan/ dose etc. to all machines and integration with network. (HW/SW)			
4	**Contouring System Hardware and Software Specifications (Qty: 2 Nos)**			
a)	**Hardware Specifications**			
i	The vendor shall quote dedicated workstation hardware suitable for contouring as per system and workload requirements, upgradable for next 10 yrs			
ii	Each Contouring workstations shall include: i) Latest-generation, high performance CPU compatible with OIS. ii) Sufficient RAM to handle multimodal imaging (CT, MR, PET) iii) Graphics capability suitable for smooth visualization and segmentation iv) Support 64 bit operating systems compatible with clinical oncology applications. v) Minimum 2 TB SSD storage and/or as recommended by OEM. vi) High-resolution, medical-grade monitors for contouring and plan evaluation.			
b)	**Software features**			
i	Multi modality (CT, MR, PET etc) Image registration (rigid and deformable) should be provided.			
ii	Manual, Atlas based and knowledge based contouring both should be available.			
5	**Oncology Information System (OIS) Hardware and Software Specifications**			
i	The vendor shall provide latest generation hardware for the Oncology Information System (OIS)			

Sr. No.	Technical Specifications:	Compliance		Remark
		Yes	No	
ii	The OIS hardware shall be capable of supporting: i) Patient registration and scheduling ii) Treatment workflow management iii) Clinical documentation and reporting. iv) Integration with treatment planning systems and imaging modalities, treatment machine and sever. v) Record & Verify System (latest hardware and software)			
iii	The OIS system shall real-time access to patient data and seamless integration with server infrastructure and planning systems.			
iv	Transfer of all parameters from Simulator, CT-simulators, MRI, PET-CT, USG etc & Treatment Planning System, and other TPS to the accelerator (existing and new) for automatic treatment setup & delivery should be provided.			
v	Transfer of DRR/Fluoroscopy images etc through R&V system for comparison with portal imaging.			
vi	Transfer & Execution of Conformal ,IMRT & VMAT treatment plans from Existing and new Treatment Planning System should be provided.			
vii	Should be Networked with R & V and Existing Network System. All required interfaces should be provided. Provision for future networking options should be specified in detail.			
viii	Transfer and execution of MLC position parameter for normal, IMRT & VMAT treatment including step & shoot and/or dynamic and/or rotational IMRT techniques from TPS.			
6	**Cybersecurity & IT Security Requirements**			
i	The bidder must ensure compliance with enterprise and healthcare cybersecurity standards.			
ii	**Endpoint Security:** TMC will provide a centrally managed, enterprise-grade antivirus/EDR solution with regular signature and patch updates. The bidder must install the TMC-recommended antivirus on each OIS system			
iii	**Network Security:** i) The bidder's hardware and software applications shall operate on secure communication protocols (TLS 1.2 or higher). ii) The system shall be compatible with firewall configurations and network segmentation requirements.			
iv	**Access Control:** i) The proposed system shall provide Role-Based Access Control (RBAC) for OIS applications. ii) Systems supporting Multi-Factor Authentication (MFA) will be highly preferred. iii) Use of pen drives and portable hard disks shall be strictly restricted on all hardware systems			
v	**Data Security:** i) Data on the database server shall be encrypted both at rest and in transit. ii) Audit logs and activity tracking shall be maintained for a minimum period of six (6) months. iii) The system shall comply with applicable healthcare data protection standards, including the Digital Personal Data Protection Act, 2023			
vi	**File Sharing & Remote Connectivity** i) Secure file transfer mechanisms such as SFTP/HTTPS shall be used. ii) Access shall be controlled and supported with comprehensive audit trails. iii) Remote access shall be permitted strictly on an attended basis. iv) The vendor shall disclose all remote connectivity tools and methods used.			
vii	**Compliance & Certification** The bidder shall submit the following documents: i) OEM authorization certificates. ii) Product compliance certificates (e.g., CE/FDA/ISO), where applicable. iii) Electrical and safety compliance certificates. iv) Compatibility certification with OIS/planning systems. v) Product VAPT Compliance Certificate			
7	**Latest Network Colour Printer (Qty:1)**			
C)	**General Terms:**			
1	Should perform preventive maintenance (3nos) during warranty and CMC (includes unlimited breakdown calls) /CMC (which will include spare replacement, breakdown calls). Vendor to submit SOPs for PMS at the time of installation/ commissioning. This is mandatory requirement.			
2	Performance certificates of IQ,OQ,PQ tests to be submitted at the time of installation/commissioning.			
3	Vendor to submit the technical data sheet, brochure etc as a tender document with reference to the quoted make & model. Please mention the reference page no., quoted model name/number against each item etc in these documents against each technical specifications in the compliance.			
4	Vendor to submit list & cost of consumables/consumable Spares(i.e.spares need to be replaced at regular intervals, maybe quarterly/half yearly/yearly etc.) if any.			
5	Demo of the quoted model , will be required if so desired by the user, after the opening of the technical bid and prior to opening of financial bid. This is for technical evaluation. All technical specifications mentioned above to be mandatorily shown in the demo unit.			
6	User's/Installation list: A list of installations of the quoted model with the address and contact numbers to be provided.			
7	Predispatch inspection at factory will be required if desired by authorities.			
8	Should be CE/US FDA/BIS/ICMED approved.			

Sr. No.	Technical Specifications:	Compliance		Remark
		Yes	No	
9	Unpacking and shifting the consignment to the installation site is to be included in the vendor's scope of supply. Bidder/manufacturer/authorized service provider should take responsibility to lift /shift the consignment from unloading site to the installation site. Unloading site shall be Stores department, **BBCI, Guwahati**. If needed ,bidder has to arrange for the labours at no charge to **BBCI, Guwahati**. (Before submitting the quotation bidders may visit **BBCI, Guwahati**, to know unloading and installation site			
10	**Training:**			
	One week training at globally renowned centre with experience of installation and use of the said equipment for two Radiation Oncologists,two Medical Physicists, two Radiotherapy Technologists and two Inhouse biomedical engineers.			
11	**Penalty Clause:**			
a	The supplier and / or its Indian agent will be required to maintain the equipment and all its bought out items (including software updates and various licenses) used for the functionality of the system in good working condition during the warranty/ CMC period with 96% uptime guarantee.			
b	Equipment shall be fully functional to be considered as the uptime. In case of partial functionality, the proportion of functionality shall be determined and downtime shall be adjusted by such proportion (i.e. if the equipment is 70% functional, 30% downtime shall be applicable). In cases where it is not possible to definitely determine the proportion of functionality, the downtime shall be considered as 100%.			
c	The decision of the TMC management or its representative in determining the % of the downtime shall be final and binding.			
d	Essential period to shut down the equipment entirely or partially during warranty/CMC period shall also be included in the downtime while calculating the guaranteed uptime i.e. all features as per specifications in purchase order should be functional for uptime.			
e	The penalty applicable for downtime shall be calculated on an hourly basis and will be at the rate of 0.004% per hour (0.1% per day) of the total cost of the equipment (excluding works), during and up to the period of warranty/ CMC. There shall be a permissible down time of 360 hours per year, beyond which the down time penalty will be applicable.			
f	However, in case of the downtime exceeding seven days (i.e. 168 hrs) at a stretch, the downtime beyond these 168 hours will be considered for calculation of downtime penalty.			
g	The levy of this penalty shall be at the discretion of director TMC irrespective of the overall up time of the equipment throughout the period of the warranty or CMC.			
h	This clause is to ensure maximum uninterrupted service to patients and hence Director, TMC's decision in enforcing / invoking this clause will be final and binding for all.			
i	For CMC, W.O. issued by TMC shall be final as per D.A.E. Norms. TMC & its units shall not sign separate legal contract as per vendor's format.			
12	**Local Service Support:** Should have local office and service support/service engineer for attending the breakdown calls. Details to be submitted.			
13	**Response Time:** Should not be more than 06 hrs from lodging a breakdown complaint on toll free or by email.			
14	**Warranty- 2 years**			
	Warranty: 2 Years comprehensive-on site- factory warranty for the entire equipment system. All third party and bought out items, accessories, attachment, software, UPS etc. integrated with the system should also be covered by 2 years factory warranty from respective manufacturers. The vendor should perform 4 nos. of preventive maintenance services/ year, all breakdown visits during the warranty period.			
15	**CMC- 8 years**			
i	Quote for 8 years CMC cost after warranty in financial bid. It will include 4 Preventive maintenance/year and all breakdown visits. CMC will cover the entire system including equipment, hardware, software, third party supplies, UPS, and all brought out item used in the system. CMC should include upgrades/update costs. No separate software licence fees will be payable.			
ii	Software service Agreement (SSA) : Comprehensive for ten years for equipment, including TPS, contouring and OIS workstations, Server upgradation and upgrade of existing SW and HW for seamless integration			
16	Back to back assurance to be taken by the supplier from OEM to supply spares for minimum 10 years and to be submitted.			

Tata Memorial Centre

Tata Memorial Hospital

Sr. No.	Dosimetry and QA equipments	Compliance		Remark
		Yes	No	
1	RFA system with 2 scanning chambers (0.13 cc or less) with associated Alignment Tools, Setup Tools, Buildup Cap for all photon energies, holders for supplied dosimeters ,electrometer,Dosimetric cables (>20 m),software including all features related to RFA & Film dosimetry , hardware along with laptop. It should be comapatible with both C type and Ring Gantry LINAC. (Qty: 1)			
2	Solid Water Slabs Set (30 cm x 30 cm x 30 cm with 1 mm depth resolution), with adaptor plate for supplied chambers.			
3	Detectors (all Waterproof):			
i	Farmer type ion chambers (Reference class as per IEC 60731:volume 0.6 to 0.65 cc) with buildup cap for all photon energies (Qty: 1)			
ii	Parallel Plate ion Chamber (Roos type, Reference class as per IEC 60731) (Qty: 1)			
iii	Micro ion chamber Chamber (0.03 cc or less) (Qty: 1)			
iv	Diode detector for small field (Qty: 1)			
4	Electrometer - Reference Class with integrated digital display (Qty 1)			
5	Universal triaxial dosimetry cables (20 meter) (Qty: 2)			
6	High pressurized ion chamber based survey meter (Qty: 1)			
7	Daily QA Device capable to measure Beam energy, Output , Beam Flateness & Symmetry etc both for FF &FFF compatible (Qty:1 No.)			
8	1D Water phantom(with 0.1 mm depth resolution),along with adapters for supplied dosimeters (Qty: 1)			
9	Laser Alignment QA tool (Qty: 1)			
10	TPR 20/10 phantom (Qty: 1)			
11	Calibrated thermometer (Qty: 2)			
12	Calibrated barometer (Qty: 2)			
13	Spirit level (Qty.1)			
14	Electron density Phantom (with different inserts from lower to higher density (highest physical density should not be less than 6 g/cc) : Qty-1			
15	Head and torso phantom (universal IMRT phantom): (Qty: 1)			

TATA MEMORIAL CENTRE
TATA MEMORIAL HOSPITAL

Department : Radiation Oncology, ICTREC, KHOPOLI

Technical specifications - Advanced High Energy Linear Accelerator (LA) system, Qty No.1

DPR Name: High Energy Linear Accelerator and Treatement planning System at Radioprotection unit at ICTREC Khopoli" Qty No.1

Please quote the model which is including the latest state of art equipment and meets the *required* specifications. The quoted model should be latest introduced with end of life not before 10 years from the date of installation at TMC.

Sr. No.	Technical Specifications:	Compliance		Remarks
		Yes	No	
Model Name:				
Make:				
Country of Origin:				
Year of Introduction:				
Year of Probable end of support:				
A)	**Linear Accelerator system:**			
1	**Photon Energy**			
i	FF- 6MV,10MV,15MV			
ii	FFF - 6x & 10x			
2	**Electron Energy:** Any five energies from 6 to 18 MeV			
3	**RF Source:** Magnetron / Klystron.			
4	**Waveguide Type:** Standing / Travelling wave.			
5	**Electron Gun:** Sealed / Unsealed			
6	**Treatment Modes**			
i	Normal- TSD / TAD			
ii	Rotation - CW / CCW			
iii	ARC - CW / CCW			
iv	Service mode/non clinical mode			
7	**Dose-Rate**			
i	**6,10, 15 MV FF:** Minimum 100 - 500 MU/min in steps or higher dose rates at Dmax for field size of 10x10 cm2 and TSD 100 cm.			
ii	**6 FFF**: 100 - 1000 MU/min in steps or higher dose rates at Dmax for field size of 10x10 cm2 and TSD 100 cm **10 FFF**: 100 - 2000 MU/min in steps or higher dose rates at Dmax for field size of 10x10 cm2 and TSD 100 cm			
iii	**Electrons:** 100-500 MU/ minutes at the isocentre or higher in steps or higher dose rates. High dose rate electrons for TSET , dose rate 2500 MU/Min and Higher.			
8	**Field Size (Photons)**			
i	Maximum static field size: 40 x 40 cm² (or more)			
ii	Minimum: 0.5 x 0.5 cm²			
iii	Penumbra : < 10 mm for 10 x 10 cm² field at Dmax and TSD 100 cm.			
9	**Field Size (Electrons)**			
i	Electron Applicators of 4 - 5 sizes with aperature tray to mount cerroband alloy at the end of the applicator.			
10	**Beam Flatness**			
ii	**Photon FF beam** : As per IEC 60976/AERB For Field Size 5 x 5 cm2 to 30 x 30 cm² : ≤ 106 % . For Field Size > 30 x 30 cm2 : ≤ 110 % . **Electron beam:** As per IEC 60976/AERB. For all applicator size ≤ 10 mm			
11	**Beam Symmetry**			

Sr. No.	Technical Specifications:	Compliance		Remarks
		Yes	No	
i	Photon FF beam : As per IEC 60976/AERB For Field Size 5 x 5 cm² and above: ≤ 103%. Electron beam: As per IEC 60976/AERB For all applicator sizes ≤ 105%			
12	**Gantry**			
i	Rotation ±180° (360° total)			
ii	Read out - Digital			
iii	Accuracy dig-readout 0.5°			
iv	Control - Hand pendent and control-console			
v	Target - Axis Distance : 100 ± 0.2 cm			
vi	ODI Range : 75 cm to 150 cm, 0.5 cm resolution			
vii	ODI Accuracy ± 0.1 cm at TSD 100 cm			
viii	Gantry Rotation Isocentre ≤ 2 mm dia. Sphere.			
13	**Collimator**			
i	Rotation: ± 175°			
ii	Control: Hand pendent and control- console			
iii	Readout accuracy : ± 0.5°			
iv	Collimator Rotation Isocentre ≤ 2 mm dia. Sphere			
v	Virtual/ Dynamic/ Motorised Wedge			
14	**Asymmetric Collimators**			
i	**Upper Jaw:** Asymmetrical			
ii	Lower jaw/MLC : Asymmetrical			
iii	The Asymmetric collimator should be support dynamic jaw tracking.			
15	**Multi-leaf collimator (MLC)**			
i	Minimum no. of Leafs: 120 leaves.The physical leaf width at isocenter: Central 20 x 40 cm² : 5 mm or less, outer 20 x 40 cm²: 10mm or less.			
ii	Independent drives for each leaf			
iii	Capable of performing Conformal therapy (IMRT, Rotaional IMRT, SRT,SBRT) procedures.			
iv	Coincidence of light & x-ray field: For field between 5 x 5 cm² and 20 x 20 cm² ≤ 2 mm. For field size more than 20 x 20 cm² : 1% of field size			
v	Photon leakage radiation through MLC when either pair of jaws is replaced with MLC : Maximum : ≤ 2%, Average: ≤ 0.75%.Photon leakage radiation (Maximum) through MLC when MLC is used as tertiary jaws: ≤ 5%.			
vi	Max. leaf retracting position ≤ 20 cm			
vii	Over center travel of MLC leafs (≥15 cm) for IMRT treatments.			
viii	Maximum field length 40 cm.			
ix	Penumbra at Dmax ≤ 6 mm for field size 10 x 10 cm².			
x	Leaf position accuracy : ±1 mm .			
xi	Max. carriage speed: 1 cm/sec or more .			
xii	Max. leaf speed: 2.5 cm/sec or more .			
xiii	Inter-digitation of leafs should be available .			
16	**Auto Field Sequencing should be available .**			
17	**Portal Imaging & Integrated portal dosimetry feature (FF and FFF energies)**			
i	Should fully integrate with Accelerator			
ii	Should be able to take images at any Gantry angles with variable X, Y or Z movements.			
iii	Flat panel (aSi) Imaging area should be 40x40 cm² or More with all available energies, with Pixel Matrix of minimum 1024 x 1024 or more. Should be able to acquire images at highest dose rate at iso centre.			
iv	Compatible with FFF energy mode.			
v	Vendor shall mandatorily offer Integrated Portal dosimetry feature (for FF & FFF energies).			
18	**IGRT System**			
i	Retractable arms			
ii	Vendor shall offer advanced imaging features which includes 2D orthogonal imaging, fluro mode imaging, 3D CBCT, 4D CBCT, Breathhold CBCT, Intrafraction imaging feature.			
iii	Flat panel detectors of min 40 X 40 Cm or more, with Pixel Matrix of minimum 1024 X 1024 or more.			
iv	CBCT reconstruction, registration (MV-MV, KV-KV)			

Sr. No.	Technical Specifications:	Compliance		Remarks
		Yes	No	
v	Fully integrated with latest R & V system and TPS.			
vi	3D image data should be reconstructed from series of 2D projection images acquired as the linear accelerator gantry is rotated, Kindly mention all acquisition & review modes with ONLINE/Manual GATED CBCT. 4D-CBCT with Reconstruction.			
vii	QA tools supplied with equipment for kV & MV imaging as standard: 1. CT image quality phantom (Qty : 1) 2. EPID image quality test tool (Qty : 1) 3. Isocenter Verification Tool / Phantom to check KV & MV imaging isocenter. [Qty: 1]			
19	**Treatment Couch (IGRT couch)**			
i	IGRT couch made of full carbon fibre top with Indexing capability.			
ii	Range of Movements: i) Lateral : ≥± 24 cm couch top center from centerline ii)Vertical: ≥95 cm iii) Longitudinal: ≥100 cm iv) Rotational about isocenter: ±95 degrees			
iii	Electrical control of couch should be provided			
iv	(a) It should have the capability for remote controlled positional correction facility in three translational l axes with respect to the shifts derived from the integrated to KV cone beam CT and Orthogonal KV images acquisition system. (b) Full Load capacity(wt.) 200 kg or More. (c) Table top sag at isocenter : ≤ 5 mm (as per IEC 60976)			
v	Mechanism to move the couch in case of power failure			
vi	Minimum height from floor ≤ 80 cm			
20	**Dosimetry System**			
i	Dose Monitoring System : Built-in chambers. Two separate sealed/ Air vented chambers			
ii	Stability : ± 1%			
iii	Proportionality/Linearity : ± 1%			
iv	Reproducibility ± 1%			
21	**Safety System as per IEC / AERB standards**			
i	Emergency switches to be provided			
ii	Door interlocks to be provided			
iii	Last Man Out(LMO) Switch, installation and electrical cabling should be under vendor's scope (Qty: 2)			
iv	Various Beam off interlocks to be provided			
22	**Leakage Radiation as per IEC / AERB standards**			
i	Maximum Photon leakage radiation in the patient plane: Maximum ≤0.2%			
ii	Average Photon leakage radiation in the patient plane: Average ≤0.01%			
iii	Maximum Neutron leakage radiation in the patient plane: Maximum ≤ 0.05%			
iv	Average Neutron leakage radiation in the patient plane : Average ≤0.02%			
v	Maximum percentage of photon leakage radiation at 1 m from the target; path of electrons between electron gun and the target or electron window in other than patient plane: ≤0.5% (Photon). ≤0.5% (Neutron)			
23	**Accessories**			
i	Mechanical Front pointer (SSD indicator)			
ii	Accessory mount - Electron tray			
iii	CCTV Camera system along with Monitors, with wide angle for room view having remote controlled with remote zoom & focus facility. (Qty: 4), two way audio communication system (Qty: 1) . Installation and electrical cabling should be under vendor's scope			
iv	In-room Colour flat Monitors LED 27” or higher (Qty : 2)			
v	Laser Alignment System (3 cross & One Line laser system set), Total Qty : 1 set			
24	**Certification (please enclose copies)**			
i	AERB type approval / NOC			
ii	FDA 510K certification/CE/ICMED/ISO 13485/BIS			
iii	If model quoted is introduced in year 2022 the above clearances shall be obtained by vendor before the installation of machine.			
iv	Enclose certification of calibration and inspection			
v	Log book with instruction for daily, weekly, monthly, quarterly and yearly maintenance check list.			
25	**Manuals / Data book:** Operator, System and Schematic manuals.			

Sr. No.	Technical Specifications:	Compliance		Remarks
		Yes	No	
26	**Essential Spare Parts:** Provide the list of standard spare parts supplied with the machine.			
27	**UPS (TPS Work stations):** Individual UPS with inbuilt battery for each TPS Workstation (including planning and contouring stations) 30 minutes backup			
28	**UPS (Equipment):** Please Provide UPS with adequte capacity for the complete systems. With 30 min back up. Complete installation and connectivity with the LINAC eqiupment (electrical cabling) should be under vendors scope.			
29	**Dosimetry and QA equipments. (Annexure 1)**			
1	RFA system with 2 scanning chamber (0.13 cc or less) with associated Alignment Tools, Setup Tools, Buildup Cap for all photon energies, holders for supplied dosimeters ,electrometer,Dosimetric cables (>20 m),software including all features related to RFA & Film dosimetry , hardware along with laptop It should be comapatible with both C type and Ring Gantry LINAC. (Qty: 1)			
2	Solid Water Slabs Set (30 cm x 30 cm x 30 cm with 1 mm depth resolution), with adaptor plate for supplied chambers.			
3	**Detectors (all Waterproof);**			
i	Farmer type ion chambers(0.6 to 0.65cc)with build up cap for all photon energies (Qty: 1)			
ii	Parallel Plate ion Chamber (Roos type) (Qty: 1)			
iii	Micro ion chamber Chamber(0.03cc or less) (Qty: 1)			
iv	Diode detector for small field (Qty: 1)			
4	Electrometer - Reference Class with integrated digital display (Qty 1)			
5	Universal triaxial dosimetry cables (20 meter) (Qty: 2)			
6	High pressurized ion chamber based survey meter (Qty: 1)			
7	Daily QA Device capable to measure Beam energy, Output , Beam Flateness & Symmetry etc both for FF &FFF compatible (Qty:1 No.)			
8	1D Water phantom(with 0.1 mm depth resolution),along with adapters for supplied dosimeters (Qty: 1)			
9	Laser Alignment QA tool (Qty: 1)			
10	TPR 20/10 phantom (Qty: 1)			
11	Calibrated Thermometer (Qty: 2)			
12	Calibrated Barometer (Qty: 1)			
13	Spirit level (Qty.1)			
14	Flatbed latest Scanner (for Film dosimetry)((Qty.1)			
15	Radiochromic films 8 inches*10 inches (Qty:2 Box)			
16	Radiochromic films 14 inches*17inches (Qty:1 Box)			
B)	**Treatment planning Station, Server & Networking Specifications:**			
1	**General Requirements**			
i	The vendor shall supply, install, configure, and commission all hardware and network required for server infrastructure, treatment planning, contouring, and oncology information system (OIS).			
ii	The vendor shall be responsible for i) Physical installation; ii) System configuration; iii) Initial testing and validation			
iii	All hardware shall comply with applicable medical electrical safety and IT standards.			
iv	All supplied equipment shall be the latest Hardware compatible with OIS, planning system at the time of delivery.			
v	All components must be OEM-certified and healthcare compatible. The bidder should provide the required OEM document in the bid.			
vi	The solution must support DICOM standards and healthcare interoperability.			
vii	The bidder must provide datasheets and technical specifications for all quoted items along with proposed setup Architecture diagrams.			
viii	The proposed system architecture should be setup in an isolated VLAN Network with only specific port may be allowed to communicate the ICTREC,KHOPOLI network if required. The required networking equipment like switches shall be considered by bidder. The network cabling will be in the TMC scope.			

Sr. No.	Technical Specifications:	Compliance		Remarks
		Yes	No	
ix	**Warranty, CMC and Support:** i) All supplied hardware shall be covered under comprehensive on site warranty and CMC. ii) The vendor shall provide technical support, including hardware parts replacement and troubleshooting during the warranty and CMC period.			
2	**Server Infrastructure Specification**			
i	The vendor shall offer enterprise class rack mounted server hardware suitable for clinical applications. The quoted system shall comply with CE/FDA/ISO standards, as per OIS			
ii	The server shall be supporting 64 bit server operating system commonly used in enterprise healthcare environments and suitable with proposed system.			
iii	The sever shall be high performance multi core processors with latest generation (not end-of-life) at the time of delivery suitable for compute intensive medical applications.			
iv	The server shall have high speed RAM (DDR5 or better) with sufficient capacity as per OEM requirement or higher to support simultaneous planning, contouring, and OIS operations and expandable up to 1 TB			
v	The server storage shall provide a minimum usable capacity of 10 TB for patient data and shall be expandable beyond 10 TB within the same RAID configuration/cluster.			
vi	The storage shall be enterprise grade technology (NVMe SSD + SAS hybrid architecture) with redundancy to ensure data integrity and fault tolerance.			
vii	The proposed server shall support latest server or supported OIS Operating Systems (Windows/Linux, etc) along with compatibility for industry standard virtualization platforms			
viii	The server storage shall support RAID configurations (RAID 5/6/10) with hot spare capability.			
ix	The proposed server shall include sufficient Ethernet (T-Base) and/or Fibre Channel ports, as required for the deployment, including a dedicated server management port.			
x	A comprehensive backup solution shall be provided, supporting the following: i) Automated scheduled backups (full and incremental). ii) Restore capability for patient data and system configurations. iii) Support for disaster recovery, including offsite backup			
xi	The vendor shall supply a rack mounted solution, including: i) Standard server rack ii) Redundant rack PDU ii) Rack mounted UPS with minimum backup time 30 mintues to ensure safe shutdown and data protection in case of power failure.			
3	**Treatment Planning System (TPS) Hardware and Software Specifications (Qty: 2 Nos)**			
a)	**Hardware Specifications**			
i	The vendor shall quote latest workstation hardware and applicable OIS software for use with treatment planning systems.			
ii	Planning workstations shall be designed for advanced dose calculation and plan optimization			
iii	Each treatment planning system shall be equipped with: i) Latest generation high performance multi core CPU compatible with OIS ii) High speed RAM optimized for large imaging and planning datasets, as recommended by OEM. iii) Support 64 bit operating systems compatible with clinical oncology applications. iv) The display should be high resolution medical-grade monitors for contouring and plan evaluation. v) Minimum 2 TB SSD storage and/or as recommended by OEM.			
b)	**Software features**			
i	DICOM3 and full DICOM family			
ii	DICOM RT Import/export from CT/MR/PET/PACS/C-ARM etc.			
iii	Fixed field and Rotational IMRT Optimization algorithms.			
iv	Dose calculation algorithms for Photon (CCC/AAA, Accuros- XB/Monte carlo & equivalent) Electron (Monte Carlo or equivalent) Optimization algorithm for 3DCRT,IMRT Rotational IMRT, Knowledge based planning.			
v	Import /export- Image/structure set/plan/ dose etc. to all machines and integration with network. (HW/SW)			
4	**Contouring System Hardware and Software Specifications (Qty: 2 Nos)**			
a)	**Hardware Specifications**			

Sr. No.	Technical Specifications:	Compliance		Remarks
		Yes	No	
i	The vendor shall quote dedicated workstation hardware suitable for contouring as per system and workload requirements, upgradable for next 10 yrs			
ii	Each Contouring workstations shall include: i) Latest-generation, high performance CPU compatible with OIS. ii) Sufficient RAM to handle multimodal imaging (CT, MR, PET) iii) Graphics capability suitable for smooth visualization and segmentation iv) Support 64 bit operating systems compatible with clinical oncology applications. v) Minimum 2 TB SSD storage and/or as recommended by OEM. vi) High-resolution, medical-grade monitors for contouring and plan evaluation.			
b)	**Software features**			
i	Multi modality (CT, MR, PET etc) Image registration (rigid and deformable) should be provided.			
ii	Manual, Atlas based and knowledge based contouring both should be available.			
5	**Oncology Information System (OIS) Hardware and Software Specifications**			
i	The vendor shall provide latest generation hardware for the Oncology Information System (OIS)			
ii	The OIS hardware shall be capable of supporting: i) Patient registration and scheduling ii) Treatment workflow management iii) Clinical documentation and reporting. iv) Integration with treatment planning systems and imaging modalities, treatment machine and sever. v) Record & Verify System (latest hardware and software)			
iii	The OIS system shall real-time access to patient data and seamless integration with server infrastructure and planning systems.			
iv	Transfer of all parameters from Simulator, CT-simulators, MRI, PET-CT, USG etc & Treatment Planning System, and other TPS to the accelerator for automatic treatment setup & delivery should be provided.			
v	Transfer of DRR/Fluoroscopy images etc through R&V system for comparison with portal imaging.			
vi	Transfer & Execution of Conformal ,IMRT & VMAT treatment plans from Treatment Planning System should be provided.			
vii	Should be Networked with R & V . All required interfaces should be provided. Provision for future networking options should be specified in detail.			
viii	Transfer and execution of MLC position parameter for normal, IMRT & VMAT treatment including step & shoot and/or dynamic and/or rotational IMRT techniques from TPS.			
6	**Cybersecurity & IT Security Requirements**			
i	The bidder must ensure compliance with enterprise and healthcare cybersecurity standards.			
ii	**Endpoint Security:** TMC will provide a centrally managed, enterprise-grade antivirus/EDR solution with regular signature and patch updates. The bidder must install the TMC-recommended antivirus on each OIS system			
iii	**Network Security:** i) The bidder's hardware and software applications shall operate on secure communication protocols (TLS 1.2 or higher). ii) The system shall be compatible with firewall configurations and network segmentation requirements.			
iv	**Access Control:** i) The proposed system shall provide Role-Based Access Control (RBAC) for OIS applications. ii) Systems supporting Multi-Factor Authentication (MFA) will be highly preferred. iii) Use of pen drives and portable hard disks shall be strictly restricted on all hardware systems			

Sr. No.	Technical Specifications:	Compliance		Remarks
		Yes	No	
v	**Data Security:** i) Data on the database server shall be encrypted both at rest and in transit. ii) Audit logs and activity tracking shall be maintained for a minimum period of six (6) months. iii) The system shall comply with applicable healthcare data protection standards, including the Digital Personal Data Protection Act, 2023			
vi	**File Sharing & Remote Connectivity** i) Secure file transfer mechanisms such as SFTP/HTTPS shall be used. ii) Access shall be controlled and supported with comprehensive audit trails. iii) Remote access shall be permitted strictly on an attended basis. iv) The vendor shall disclose all remote connectivity tools and methods used.			
vii	**Compliance & Certification** The bidder shall submit the following documents: i) OEM authorization certificates. ii) Product compliance certificates (e.g., CE/FDA/ISO), where applicable. iii) Electrical and safety compliance certificates. iv) Compatibility certification with OIS/planning systems. v) Product VAPT Compliance Certificate.			
7	**Latest Network Laser Printer (Qty:1)**			
C)	**General Terms:**			
1	Should perform preventive maintenance (3nos) during warranty and CMC (includes unlimited breakdown calls) /CMC (which will include spare replacement, breakdown calls). Vendor to submit SOPs for PMS at the time of installation/ commissioning. This is mandatory requirement.			
2	Performance certificates of IQ,OQ,PQ tests to be submitted at the time of installation/commissioning.			
3	Vendor to submit the technical data sheet, brochure etc as a tender document with reference to the quoted make & model. Please mention the reference page no., quoted model name/number against each item etc in these documents against each technical specifications in the compliance.			
4	Vendor to submit list & cost of consumables/consumable Spares(i.e.spares need to be replaced at regular intervals, maybe quarterly/half yearly/yearly etc.) if any.			
5	Demo of the quoted model , will be required if so desired by the user, after the opening of the technical bid and prior to opening of financial bid. This is for technical evaluation. All technical specifications mentioned above to be mandatorily shown in the demo unit.			
6	User's/Installation list: A list of installations of the quoted model with the address and contact numbers to be provided.			
7	Predispatch inspection at factory will be required if desired by authorities.			
8	Should be CE/US FDA/BIS/ICMED approved.			
9	Unpacking and shifting the consignment to the installation site is to be included in the vendor's scope of supply. Bidder/manufacturer/authorized service provider should take responsibility to lift /shift the consignment from unloading site to the installation site. Unloading site shall be Stores department, ***ICTREC,KHOPOLI.*** If needed ,bidder has to arrange for the labours at no charge to ***ICTREC,KHOPOLI.*** (Before submitting the quotation,bidders may visit ***ICTREC,KHOPOLI,*** to know unloading and installation site.			
10	**Training:**			
	One week training at globally renowned centre with experience of installation and use of the said equipment for two Radiation Oncologist,two Medical Physicist, two Radiotherapy Technologists and two Inhouse biomedical engineers.			
11	**Penalty Clause:**			
a	The supplier and / or its Indian agent will be required to maintain the equipment and all its bought out items (including software updates and various licenses) used for the functionality of the system in good working condition during the warranty/ CMC period with 96% uptime guarantee.			

Sr. No.	Technical Specifications:	Compliance		Remarks
		Yes	No	
b	Equipment shall be fully functional to be considered as the uptime. In case of partial functionality, the proportion of functionality shall be determined and downtime shall be adjusted by such proportion (i.e. if the equipment is 70% functional, 30% downtime shall be applicable). In cases where it is not possible to definitely determine the proportion of functionality, the downtime shall be considered as 100%.			
c	The decision of the TMC management or its representative in determining the % of the downtime shall be final and binding.			
d	Essential period to shut down the equipment entirely or partially during warranty/CMC period shall also be included in the downtime while calculating the guaranteed uptime i.e. all features as per specifications in purchase order should be functional for uptime.			
e	The penalty applicable for downtime shall be calculated on an hourly basis and will be at the rate of 0.004% per hour (0.1% per day) of the total cost of the equipment (excluding works), during and up to the period of warranty/ CMC. There shall be a permissible down time of 360 hours per year, beyond which the down time penalty will be applicable.			
f	However, in case of the downtime exceeding seven days (i.e. 168 hrs) at a stretch, the downtime beyond these 168 hours will be considered for calculation of downtime penalty.			
g	The levy of this penalty shall be at the discretion of director TMC irrespective of the overall up time of the equipment throughout the period of the warranty or CMC.			
h	This clause is to ensure maximum uninterrupted service to patients and hence Director, TMC's decision in enforcing / invoking this clause will be final and binding for all.			
i	For CMC, W.O. issued by TMC shall be final as per D.A.E. Norms. TMC & its units shall not sign separate legal contract as per vendor's format.			
12	**Local Service Support:** Should have local office and service support/service engineer for attending the breakdown calls. Details to be submitted.			
13	**Response Time:** Should not be more than 06 hrs from lodging a breakdown complaint on toll free or by email.			
14	**Warranty- 2 years**			
	Warranty: 2 Years comprehensive-on site- factory warranty for the entire equipment system. All third party and bought out items, accessories, attachment, software, UPS etc. integrated with the system should also be covered by 2 years factory warranty from respective manufacturers. The vendor should perform 4 nos. of preventive maintenance services/ year, all breakdown visits during the warranty period.			
15	**CMC- 8 years**			
i	Quote for 8 years CMC cost after warranty in financial bid. It will include 4 Preventive maintenance/year and all breakdown visits. CMC will cover the entire system including equipment, hardware, software, third party supplies, UPS, and all brought out item used in the system. CMC should include upgrades/update costs. No separate software licence fees will be payable.			
ii	Software service Agreement (SSA) : Comprehensive for ten years for equipment, including TPS, contouring and OIS workstations, Server upgradation and upgrade of existing SW and HW for seamless integration			
16	Back to back assurance to be taken by the supplier from OEM to supply spares for minimum 10 years and to be submitted.			
17	**L1 Calculations:**			
i	L1 will be based on cost of the entire system and CMC cost for 8 years including accessories and other support equipment including UPS at landing cost at ICTREC, Khopoli Campus. ie. Equipment cost, applicable taxes and duties, transportation & insurance charges, installation charges along with 2 years warranty cost plus 8 years CMC cost			