

PLAKSHA UNIVERSITY

Alpha, Sector 101, IT City Road, Sahibzada Ajit Singh Nagar (Mohali), Punjab 140306, India

Website: www.plaksha.edu.in

NIT No.: PU/2026-27/NQM-001

Date: 18.05.2026

Sealed tenders under a **two-bid system (Technical Bid and Price Bid)** are invited from bona fide, resourceful and eligible manufacturers / exclusive authorized distributors / vendors for the supply, installation and commissioning of "**Customized Molecular Beam Epitaxy (MBE) System for h-BN and TMDCs with *in-situ* RHEED and UHV Preparation-cum-Load Lock Chamber**" at Plaksha University, Mohali, under the **National Quantum Mission (Quantum Materials and Devices Vertical)** funded project, as per the technical specifications given in **Annexure I**.

Part-I (Technical Bid) of the tender shall contain the technical specifications in detail as well as the commercial terms and conditions (without any price information whatsoever). **Part-II (Price Bid)** shall clearly indicate item-wise / group-wise price as required in the technical bid. The Technical Bid and the Price Bid shall be submitted in **separately sealed envelopes**, each distinctly superscripted, and both placed inside a single outer sealed envelope, also superscripted with the Tender Notice Number and Due Date. Bidders may submit bids duly signed on their own letterheads.

Completed tender bids should reach the office of the **Registrar, Plaksha University, Alpha, Sector 101, IT City Road, Sahibzada Ajit Singh Nagar (Mohali), Punjab 140306, India** on or before the scheduled date and time specified below:

Tender Notice No.	NIT No.: PU/2026-27/NQM-001 Date: 18.05.2026
Last date and time of submitting tender	10/06/2026, up to 05:30 PM (at Office of the Registrar, Plaksha University) or through registered post to the Registrar, Plaksha University Alpha, Sector 101, IT City Road, Sahibzada Ajit Singh Nagar (Mohali), Punjab 140306, India.
Pre-bid meeting (date, time & place) to discuss technical specification	29/05/2026, 11:30 AM (Hybrid mode: attendance both online and at campus; a link to join the online meeting shall be sent to all registered bidders)
Date and time of opening of Technical Bids	12/06/2026, 10:30 AM at the Office of the Registrar, Plaksha University, Mohali
Place of opening tender	Plaksha University, Alpha, Sector 101, IT City Road, Sahibzada Ajit Singh Nagar (Mohali), Punjab 140306 Venue: Office of the Registrar
Intimation to technically qualified bidders	15/06/2026 (at registered e-mail addresses of technically qualified bidders)
Date and time of opening of Price Bid	The date and time of opening of the Price Bid will be communicated separately to the technically qualified bidders at their registered e-mail addresses. The Price Bids of only those bidders who qualify the technical evaluation will be opened. The Price Bids of the remaining bidders shall stand rejected and will not be opened.
Contact for tender-related queries	Principal Investigator: Dr. Praveen Kumar E-mail: praveen.kumar@plaksha.edu.in Tel.: +91 6290260756 Procurement department e-mail: tender@plaksha.edu.in

The Technical Bids shall be opened first to evaluate the technical specifications of the quoted instrument. Thereafter, the Price Bids of only technically qualified bidders shall be opened on the date intimated separately.

Technical Bid Evaluation: The Technical Bids will be evaluated by a duly constituted Technical Evaluation Committee of Plaksha University, in the presence of the representatives of the intending bidders who wish to attend, to the extent that they may be called upon to clarify technical aspects of their bids, if any, as required by the Committee.

Opening of Price Bid: The Price Bids of only those bidders who qualify the technical evaluation shall be opened. The date of opening will be intimated to the short-listed (technically qualified) bidders at their registered e-mail addresses. Price Bids of technically disqualified bidders shall stand rejected and shall not be opened.

Minimum Qualifying Bids: If two (2) or more bids qualify at the technical evaluation stage, the tender shall proceed to opening of Price Bids and award in the normal manner. If fewer than two (2) bids qualify technically, Plaksha University reserves the right, at its sole discretion, to either: (a) proceed with evaluation and award on the basis of the single technically qualified bid, if such bid meets all requirements and the price is assessed to be reasonable; or (b) cancel the tender and re-invite bids, with or without modification of specifications, without any liability to participating bidders.

Plaksha University shall not provide any accommodation or reimburse any expenses incurred by the bidders for attending the opening of the Technical Bid or the Price Bid.

Quotations received incomplete or beyond the stipulated time shall be summarily rejected.

Bidders should submit their past experience for supplying and successful installation of similar units to other research institutes / universities / organizations in India and abroad. Documentary proof of such successful installations, along with supportive documents showing that the instruments are running satisfactorily, must be provided.

Equipment and Quantity

S. No.	Item Description	Qty.	Tender Fee	Bid Security (EMD)
1	Customized Molecular Beam Epitaxy (MBE) System for h-BN and TMDCs with <i>in-situ</i> RHEED, UHV Preparation-cum-Load Lock Chamber and allied accessories (as per Annexure I)	01	Rs. NIL	Rs. 4,50,000/- (Rupees Four Lakh fifty thousand only)

Note: Non-receipt of Bid Security (EMD) and Tender Fee (where applicable) along with the Technical Bid shall lead to rejection of the tender.

Pre-Bid Meeting (PBM)

- The objective of the PBM is to provide a platform for clarifying issues and clearing doubts, if any, about the specifications and other allied technical / commercial details of the bid document. Bidders are requested to submit their bids only after the PBM so as to take note of any changes made in the bidding document, if any.
- Prospective participants should inform their intention to participate and send written queries to tender@plaksha.edu.in (copy to praveen.kumar@plaksha.edu.in) **at least 72 hours before** the scheduled PBM, to enable the committee to prepare responses.

- Any changes to the technical specifications and terms & conditions made after pre-bid deliberations will be uploaded on the Plaksha University website. All vendors are requested to quote accordingly.

1. TECHNICAL BID

The Technical Bid shall contain technical specifications and must be placed in a separately sealed envelope duly superscripted as "**TECHNICAL BID**" on the outer cover, as already detailed above. The envelope shall additionally be marked: "**Technical Specification for Customized Molecular Beam Epitaxy (MBE) System for h-BN and TMDCs with in-situ RHEED and UHV Preparation-cum-Load Lock Chamber**".

The Technical Bid must not contain any price information. Any Technical Bid that discloses price information in any form shall be liable to summary rejection.

Documents to be submitted with the Technical Bid (in the order listed):

- Covering letter on the bidder's letterhead, duly signed and stamped.
- Proof of remittance of Bid Security (EMD) and Tender Fee, where applicable (DD / FDR / Bank Guarantee / NEFT / RTGS UTR details).
- Proof of constitution of the bidder (Certificate of Incorporation / Partnership Deed / Registration Certificate, as applicable); PAN and GSTIN (for Indian bidders).
- OEM Authorization Certificate (on OEM's letterhead) in case the bidder is not the Original Equipment Manufacturer-see format at Annexure II.
- Undertaking from OEM regarding technical support, spares availability and extended warranty obligations.
- Compliance chart for technical specifications in the format given below, cross-referenced to printed literature / technical brochures / datasheets of the quoted instrument. Documentary proof of each quoted specification must be provided.
- Price Reasonability Certificate in the format at Annexure III.
- Undertaking from the bidder regarding unconditional acceptance of all tender terms and conditions.
- Worldwide user reference list of at least five (5) successfully installed MBE systems of similar type in the past seven (7) years, with contact details of the user institutions.
- Bid validity confirmation of 180 days (or 6 months) from the date of opening of the Technical Bid.
- Signed Integrity Undertaking / Self-Declaration on non-debarment (at Annexure IV).
- Any other document required by the specifications.

Technical Compliance Chart (to be filled in by the bidder for every specification line item of **Annexure I**, add as many rows as necessary):

Sr. No.	Tender Specification	Your Offered Instrument Specification (including model no)	Extent of Compliance (Yes / No / Deviation with details)

The tender shall not be accepted if the technical compliance chart is not provided in the above format. Proof of every quoted technical specification must be provided by way of printed brochures, datasheets or OEM certificates.

2. PRICE BID

The Price Bid, indicating item-wise and group-wise prices for the equipment listed in the Technical Bid, shall be placed in a separately sealed envelope duly superscripted as "**PRICE BID**" on the outer cover, as already detailed above. Price Bids of only technically qualified bidders will be opened; the date and time of opening will be intimated at their registered e-mail addresses. The Price Bids of the remaining bidders shall stand rejected.

Price / Shipping Terms: The equipment price shall be quoted on **CIP New Delhi / Delivered at Place (DAP) Plaksha University, Mohali** (as per Incoterms 2020) for foreign bidders, with a clear bifurcation of Ex-Works → FOB → CIP values. Indian bidders shall quote on **FOR Plaksha University, Mohali** basis, inclusive of all packing, forwarding, freight, insurance and transit charges up to the site, with GST indicated separately. Optional items listed in Annexure I (Section 10–15 (Sr. Nos. 10 to 15)) shall be **mandatorily quoted** with separate prices to enable the purchaser to exercise its option.

Currency: Foreign bidders may quote in USD / EUR / GBP / JPY. Indian bidders shall quote in INR only. The Price Bid BoQ format must be used without modification.

3. BID SECURITY (EMD)

An Account Payee Demand Draft of any Scheduled Commercial Bank for **Rs. 4,50,000/- (Rupees Four Lakh Fifty Thousand Only)** drawn in favour of "**Plaksha University**", payable at Mohali, shall be furnished by the bidder along with the Technical Bid. Micro and Small Enterprises (MSEs) registered under the MSE Procurement Policy issued by the Ministry of MSME, or bidders registered with the Central Purchase Organisation / concerned Ministry / Department of the Government of India for the quoted item, may claim exemption on production of valid supporting certificates.

Alternatively, the bidder may furnish the Bid Security in the form of a Fixed Deposit Receipt, Banker's Cheque or Bank Guarantee from any Scheduled Commercial Bank in India. The Bid Security shall have a validity period of at least 90 (ninety) days beyond the final Bid Validity period.

Payment by NEFT / RTGS: Where permitted, Bid Security / Tender Fee may be remitted to the following account:

- Beneficiary: Plaksha University Punjab
- HDFC Bank Account No - 50100568600195
- Branch: Alpha IT City, Mohali, Punjab 140306
- IFSC: HDFC0001307

Bidders remitting Bid Security / Tender Fee online shall furnish, on their letterhead along with the Technical Bid, the following transaction details: name of bidder firm; tender description; UTR / Transaction ID; transaction date; amount; name and address of remitting bank.

In case of non-award of the work, the Bid Security money shall be returned to unsuccessful bidders after the award of the contract. No interest shall be payable on the Bid Security.

4. PERFORMANCE SECURITY

The successful bidder shall furnish, at the time of installation of the equipment, an Account Payee Demand Draft or an irrevocable Bank Guarantee of any Scheduled Commercial Bank in India, equivalent to **three per cent (3%) of the order value**, drawn in favour of "Plaksha University", payable at Mohali, as Performance Security. The Performance Security shall remain valid for a period of 60 (sixty) days beyond the date of completion of all contractual obligations of the supplier, including the warranty period. The Bid Security / EMD shall be refunded to the successful bidder on receipt of the Performance Security.

5. TERMS OF PAYMENT

Foreign Suppliers: Payment shall be made through an irrevocable Letter of Credit (LC) established through Plaksha University's bankers within thirty (30) Business Days of receipt of the Supplier's unconditional written order acceptance and all documents reasonably required to open the LC (including the duly executed Performance Bank Guarantee and pro forma invoice). The LC shall be established for 100% value on a milestone-linked basis as follows: **85%** shall be released on presentation of complete and clear shipping documents; **10%** shall be released after successful installation, commissioning, performance demonstration and issuance of the Performance Test Certificate by the Purchaser; and the balance **5%** shall be retained as Retention Money and released only after 12 (twelve) months from the date of written Acceptance, provided no defect or warranty claim is outstanding. No advance payment shall be made unless expressly approved by the Purchaser in writing and backed by an irrevocable, unconditional Advance Payment Bank Guarantee equal to one hundred and ten per cent (110%) of the advance amount, valid until the advance is fully adjusted against deliveries (in the format prescribed at Annexure VI - Part C).

Indian Suppliers: Payment shall be made in Indian Rupees (INR) on a milestone-linked basis as follows: **75%** on delivery against a clear delivery challan and proper invoice; **20%** on successful installation, commissioning, performance demonstration and issuance of the Performance Test Certificate, subject to submission of the Performance Security; and the balance **5%** shall be retained as Retention Money and released only after 12 (twelve) months from the date of written Acceptance, provided no defect or warranty claim is outstanding. No advance payment shall be made unless expressly approved by the Purchaser in writing and backed by an irrevocable, unconditional Advance Payment Bank Guarantee equal to one hundred and ten per cent (110%) of the advance amount, valid until the advance is fully adjusted against deliveries (in the format prescribed at Annexure VI - Part C).

6. GENERAL INSTRUCTIONS

1. Validity of tender: Tenders submitted must remain valid for a minimum of 180 days (six months) from the date of opening of the Technical Bid. Validity beyond six months may be extended by mutual consent.
2. The tender must be accompanied by the Technical Compliance Chart in the prescribed format.
3. Incomplete tenders, conditional tenders, tenders that are illegible or ambiguous, partially filled tenders, and tenders received after the due date shall be summarily rejected without assigning any reasons.
4. At any time prior to the bid due date, Plaksha University may, on its own initiative or in response to a clarification requested by a prospective bidder during the pre-bid meeting, modify the bidding documents. Amendment(s) will be notified on the University's website. Prospective bidders are advised to visit the website (www.plaksha.edu.in) periodically for any amendment.
5. Installation / Demonstration / Application Training at site: Installation, commissioning and end-user training at Plaksha University, Mohali, shall be provided by the supplier free of cost. The Supplier must complete installation, commissioning and successful performance demonstration within 90 (ninety) days of arrival of the materials at the Plaksha site (or such longer period as the Purchaser may grant in writing on reasonable cause shown), failing which the liquidated-damages clause applicable to delay in supply shall apply pro rata.
6. Service facility: The supplier must have (or commit to establishing) an after-sales service presence in India, preferably with direct engineer accessibility to the Mohali / NCR region. Details of the service set-up, the engineers responsible for after-sales support, and committed response times (preferably within 48 hours) must be provided.
7. The model number, make, country of origin and printed literature of the product must be submitted mandatorily. Absence of these particulars will render the tender liable to rejection.
8. The proposed delivery schedule must be mentioned clearly. Delivery should be given at Plaksha University, Alpha, Sector 101, IT City Road, Mohali 140306, Punjab, within a maximum of ten (10)

months from the date of opening of the Letter of Credit (for foreign suppliers) or from the date of issue of the Purchase Order (for Indian suppliers).

9. Manufacturers / exclusive distributors / vendors should have a history of supplying this type of instrument to scientific organizations. A list of such past supplies is preferred.
10. Authorized dealership certificate must be provided in case the principal manufacturing company is not quoting directly.
11. Guarantee certificate, users' manuals, operating and service documentation, and all relevant technical drawings must be handed over to the end-user after successful commissioning of the system.
12. In the event of the due date being declared a holiday for Plaksha University, the due date for submission of bids and opening of the Technical Bid will shift to the following working day at the appointed time.
13. Delayed delivery: If delivery is not made within the due date for any reason attributable to the supplier, Plaksha University shall have the right to impose liquidated damages at the rate of 0.5% of the contract value per week of delay, subject to a maximum of 10% of the contract value.
14. Risk Purchase: In the event of failure to supply the item / equipment within the stipulated delivery schedule, the purchaser reserves the right to procure the item / equipment from an alternative source at the total risk and cost of the defaulting supplier.
15. Force Majeure: The supplier shall not be liable for forfeiture of Performance Security, liquidated damages or termination for default if, and to the extent that, the delay or failure is the result of a Force Majeure event (beyond the supplier's control and not involving its fault or negligence and not foreseeable). Force Majeure events include, but are not limited to, wars or hostilities, fires, floods, epidemics, quarantine restrictions, freight embargoes and acts of sovereign authority. In such event, the supplier shall promptly notify Plaksha University in writing and shall continue to perform to the extent reasonably practical. Notwithstanding the foregoing, Force Majeure shall not excuse the supplier from: (a) its obligation to safeguard and protect any equipment already delivered to the site; (b) any refund obligation in respect of advance payments already received for milestones not yet completed; or (c) any warranty obligation in respect of milestones already completed and accepted by the Purchaser prior to the Force Majeure event.
16. Warranty: Minimum one (1) year comprehensive on-site warranty from the date of successful installation and acceptance. The supplier shall guarantee a minimum uptime of 95% during the warranty period; failure to meet this target shall constitute a breach of warranty. Additional AMC for four (4) years beyond the warranty period must also be quoted separately, with an option for the purchaser to extend. AMC rates shall be subject to a maximum annual escalation cap of 5% (year-on-year). Optionally, bidders may quote comprehensive warranty for the 3rd, 4th and 5th years. All control, acquisition and analysis software supplied with the equipment shall be provided under a perpetual / lifetime licence in the name of the Purchaser, with all firmware updates, security patches and bug-fixes made available free of charge throughout the operational life of the equipment. The OEM shall commit to availability of critical spare parts and consumables for a minimum of two (2) years from the date of Acceptance, on commercially reasonable terms; failure to do so shall be treated as a breach of warranty. A Performance Test Certificate, signed by the Purchaser's representative, is mandatory before release of any final payment; failure to meet any mandatory technical performance parameter as set out in Annexure I shall constitute non-acceptance of the Goods.
17. Right to use defective goods: If, after delivery, acceptance and installation, and within the warranty period, operation of the goods proves unsatisfactory, Plaksha University reserves the right to continue to operate or use the goods until rectification of defects, errors or omissions by repair or by partial or complete replacement is made, without interfering with Plaksha's operation.
18. Taxes and duties: The supplier shall be entirely responsible for all taxes, duties, license fees, octroi, road permits etc. incurred until delivery of the contracted goods to the purchaser. GST, if

applicable, shall be shown separately in the invoice and will be paid by Plaksha University as per the order.

19. Packing instructions: Each package shall be marked on three sides with proper paint / indelible ink with the following: item nomenclature; order / contract number; country of origin; supplier's name and address; consignee details; packing list reference number.
20. Notices: For the purposes of all notices, the address of the purchaser shall be: Office of the Registrar, Plaksha University, Alpha, Sector 101, IT City Road, Sahibzada Ajit Singh Nagar (Mohali), Punjab – 140306, India.
21. Resolution of disputes: Any dispute or difference arising between the purchaser and the supplier in respect of this tender / resulting contract shall be governed by the detailed Legal Terms and Conditions set out at Section 7 below, which shall be read as an integral part of this Tender Document.
22. Applicable law and jurisdiction: This tender, and any contract arising from it, shall be governed by and construed in accordance with the laws of India. Subject to the arbitration clause set out at Section 7, the courts at New Delhi shall have exclusive jurisdiction.
23. In case of any dispute not resolved by the arbitration mechanism, the decision of the competent authority of Plaksha University shall be final and binding on the bidders to the extent permitted by law.
24. For any clarification regarding technical specifications, please contact Dr. Praveen Kumar, Principal Investigator (praveen.kumar@plaksha.edu.in). For procurement-related queries, please contact tender@plaksha.edu.in.
25. Plaksha University reserves the right to accept or reject any or all of the tenders received, wholly or in part, without assigning any reason. Plaksha also reserves the right to split the order among multiple successful bidders or to vary the quantity at the time of award.

7. LEGAL TERMS AND CONDITIONS

The following Legal Terms and Conditions shall apply to this Tender and to any contract arising out of it and shall prevail over any inconsistent term or condition contained in the bidder's quotation, order acceptance, invoice, or other document. The supplier's participation in this tender constitutes unconditional acceptance of these terms.

7.1 Definitions and Interpretation

In these Legal Terms and Conditions, unless the context otherwise requires: "**Purchaser**" means Plaksha University, acting through its Registrar or such other officer as may be duly authorised; "**Supplier**" / "**Bidder**" / "**Contractor**" means the person, firm or company whose bid is accepted by the Purchaser; "**Contract**" means the agreement formed between the Purchaser and the Supplier upon issue of the Purchase Order / Letter of Award and the Supplier's acceptance thereof, and includes this Tender Document, Annexures, Purchase Order, the Supplier's accepted bid (excluding any inconsistent terms), and all amendments agreed in writing; "**Goods**" means the equipment, accessories, software, documentation, spares, consumables, and all other items to be supplied under the Contract; "**Services**" means the services incidental to the supply of the Goods, including installation, commissioning, performance demonstration, training, warranty support, and annual maintenance; "**Acceptance**" means the written acceptance of the Goods by the Purchaser after successful installation, commissioning, demonstration and meeting of all performance specifications. Words importing the singular include the plural and vice versa. Headings are for convenience only and do not affect interpretation.

7.2 Formation of Contract and Order of Precedence

The Contract shall be deemed to be formed on the date on which the Supplier's unconditional written acceptance of the Purchase Order is received by the Purchaser. In the event of any conflict or inconsistency between the documents forming the Contract, the order of precedence shall be: (a) any

amendment executed in writing by both parties; (b) the Purchase Order / Letter of Award; (c) this Tender Document together with its Annexures; (d) the Supplier's accepted bid; and (e) any other document forming part of the Contract.

7.3 Bid Security (EMD)-Forfeiture

In addition to Section 3 above, the Bid Security furnished by a bidder shall be liable to forfeiture, in whole or in part, in any of the following events:

- Withdrawal or modification of the bid by the bidder during the bid validity period.
- Refusal of the bidder to accept correction of errors in the bid identified by the Purchaser.
- Failure of the successful bidder to furnish the Performance Security within the period stipulated in the Purchase Order.
- Failure of the successful bidder to execute the Contract / accept the Purchase Order within the period stipulated by the Purchaser.
- Any breach by the bidder of the Code of Integrity / Integrity Undertaking (Annexure IV).
- Submission of false, forged or misleading information or documents in the bid.

The Bid Security of unsuccessful bidders shall be returned, without interest, within a reasonable time after the award of the Contract to the successful bidder. The Bid Security of the successful bidder shall be returned, without interest, upon furnishing of the Performance Security.

Withdrawal after Technical Qualification: If a bidder who has qualified the technical evaluation withdraws its bid or declines to participate in the Price Bid opening, its Bid Security (EMD) shall stand forfeited in full. In such event, Plaksha University shall have the right, at its sole discretion, to: (a) proceed with evaluation and award on the basis of the remaining technically qualified bid(s), provided the price is assessed to be fair and reasonable; or (b) cancel the tender and re-invite bids without any liability to the remaining bidder(s). The decision of Plaksha University in this regard shall be final.

7.4 Performance Bank Guarantee (PBG)

The successful bidder shall furnish a Performance Bank Guarantee (PBG) in the form of an irrevocable, unconditional bank guarantee for an amount equal to **three per cent (3%) of the total Contract value** [Note: the Performance Bank Guarantee format at Annexure VI - Part B shall be read with the amount of 3%; in the event of any inconsistency between the percentage stated in the body of this Tender and the format at Annexure VI, the percentage stated here in Section 7.4 shall prevail], to be submitted at the time of installation of the equipment, in accordance with the following:

- (a) The PBG shall be issued by (i) any Scheduled Commercial Bank in India, or (ii) for foreign suppliers, any internationally reputed bank, duly counter-guaranteed / confirmed by a Scheduled Commercial Bank in India. The PBG shall be in the format prescribed by the Purchaser or in a format acceptable to the Purchaser's banker.
- (b) The PBG shall be valid for the entire warranty period plus 60 (sixty) days. In the event of any extension of the warranty period or AMC contract, the Supplier shall extend the PBG correspondingly.
- (c) The PBG shall be payable on first written demand, without demur, protest, caveat, or reference to the Supplier, and shall not be affected by any dispute between the parties.
- (d) The Purchaser shall be entitled to invoke the PBG, in whole or in part, in any of the following events: (a) breach by the Supplier of any term of the Contract; (b) failure to complete installation, commissioning or performance demonstration within the time stipulated; (c) failure to meet warranty obligations; (d) delay attracting liquidated damages in excess of the cap; (e) any other event entitling the Purchaser to compensation under the Contract.

- (e) The PBG shall be returned to the Supplier only after successful completion of all warranty obligations and issue of a written No-Claim Certificate by the Purchaser. No interest shall be payable on the PBG amount.

7.5 Liquidated Damages for Delay

Time is of the essence of the Contract. If the Supplier fails to deliver any or all of the Goods, or perform any of the Services, within the period(s) specified in the Contract, the Purchaser shall, without prejudice to all its other rights and remedies under the Contract, deduct from the Contract price, as liquidated damages (and not as penalty), a sum equivalent to **0.5% (half per cent) of the delivered price of the delayed Goods or unperformed Services for each week or part thereof of delay, subject to a maximum deduction of 10% (ten per cent) of the total Contract value**. Once the maximum has been reached, the Purchaser may, at its sole discretion and without prejudice to any other right, terminate the Contract under Section 7.7 (Termination) and invoke the PBG under Section 7.4. The parties agree that the said liquidated damages represent a genuine pre-estimate of the loss likely to be suffered by the Purchaser by reason of delay and are not a penalty.

7.6 Risk Purchase

If the Supplier fails to deliver the Goods or perform the Services within the stipulated time or any extension thereof, or if the Supplier fails to rectify defects within a reasonable cure period, the Purchaser shall be entitled, after giving 15 (fifteen) days' written notice of its intention to do so, to procure the Goods or Services from any alternative source at the risk and cost of the Supplier. Any excess cost, loss or damage so incurred by the Purchaser shall be recoverable from the Supplier, by invoking the PBG, by deduction from any amounts due to the Supplier, or by such other means as the Purchaser may deem fit, including legal proceedings.

7.7 Termination

7.7.1 Termination for Default. The Purchaser may, without prejudice to any other remedy for breach of Contract and by written notice of default sent to the Supplier, terminate the Contract in whole or in part:

- If the Supplier fails to deliver any or all of the Goods within the period(s) specified in the Contract, or any extension granted in writing by the Purchaser; or
- If the Supplier fails to perform any other obligation under the Contract; or
- If the Supplier, in the judgement of the Purchaser, has engaged in any prohibited practice (as defined in Annexure IV - Code of Integrity) in competing for or in executing the Contract;

provided that such termination shall only follow a written cure notice of 30 (thirty) days calling upon the Supplier to remedy the breach, if remediable, and the Supplier's failure to remedy the same within the cure period.

7.7.2 Termination for Insolvency. The Purchaser may at any time terminate the Contract by giving written notice to the Supplier, without compensation, if the Supplier becomes bankrupt, insolvent, goes into liquidation (otherwise than for reconstruction or amalgamation), has a receiver appointed over all or any substantial part of its assets, or makes any composition with its creditors, provided that such termination shall not prejudice or affect any right of action or remedy which has accrued or shall accrue thereafter to the Purchaser.

7.7.3 Termination for Convenience. The Purchaser may, by written notice of not less than 30 (thirty) days sent to the Supplier, terminate the Contract in whole or in part, at any time for its convenience. The notice of termination shall specify the extent to which performance under the Contract is terminated and the date upon which such termination becomes effective. In such event, the Supplier shall be entitled to be paid for Goods actually delivered and accepted up to the date of termination, and for Services actually rendered, but shall not be entitled to any claim for loss of profits on the unperformed portion.

7.7.4 Consequences of Termination. Upon termination for default or insolvency: (a) the Purchaser may procure Goods or Services similar to those undelivered, from alternative sources, and the Supplier shall be liable for any excess costs; (b) the Purchaser may invoke the PBG in full; (c) the Supplier shall return all drawings, specifications, advance payments, and other property of the Purchaser; (d) title to Goods already delivered but not yet paid for shall remain with the Supplier, and the Purchaser may elect to return such Goods at the Supplier's cost; (e) all rights and remedies under the Contract and applicable law shall survive.

7.8 Warranty

The Supplier warrants that the Goods supplied under the Contract are new, unused, of the most recent or current models, and incorporate all recent improvements in design and materials, unless provided otherwise in the Contract. The Supplier further warrants that the Goods shall be free from defects in design, material and workmanship, shall conform to the specifications of the Contract, and shall be fit for the purposes set out in the specifications.

The warranty shall be a **comprehensive, on-site warranty for a minimum period of one (1) year from the date of successful installation, commissioning and written Acceptance of the Goods by the Purchaser.** The Supplier shall additionally quote AMC rates for four (4) years beyond the warranty period, which the Purchaser may, at its sole option, elect to avail. AMC charges shall not escalate by more than 5% (five per cent) per annum on a year-on-year basis. The Supplier guarantees a minimum equipment uptime of 95% during the warranty period and any AMC period; failure to meet this uptime commitment shall be treated as a breach of warranty. All control, acquisition and analysis software supplied with the Goods shall be provided under a perpetual / lifetime licence in the name of the Purchaser, with all firmware updates, security patches and bug-fixes made available free of charge throughout the operational life of the equipment. The OEM further undertakes to make available critical spare parts and consumables for a minimum of two (2) years from the date of written Acceptance, on commercially reasonable terms. Issuance of a Performance Test Certificate, signed by an authorised representative of the Purchaser, is a mandatory condition precedent to release of any final payment instalment; failure to meet any mandatory technical performance parameter specified in Annexure I shall constitute non-acceptance of the Goods.

During the warranty period, the Supplier shall, at its own cost and within a reasonable time of being notified by the Purchaser, repair or replace any defective Goods or parts thereof. If the Supplier fails to do so within the notified time, the Purchaser may, at its option, undertake the repair or replacement at the risk and cost of the Supplier, and recover the costs from the Supplier by invocation of the PBG or by any other means.

7.9 Intellectual Property Rights and Infringement Indemnity

The Supplier shall indemnify and hold the Purchaser, its officers, employees and agents harmless against all claims, demands, actions, suits, proceedings, liabilities, losses, damages, costs and expenses (including reasonable legal fees) arising out of or in connection with any actual or alleged infringement of any patent, trademark, copyright, trade secret, design right, or other intellectual property right of any third party by reason of the manufacture, sale, import, supply, use or operation of the Goods or Services supplied under the Contract.

The Supplier shall, at its own cost, defend or settle any such claim and pay all damages and costs finally awarded against the Purchaser. Where the use of the Goods is enjoined, the Supplier shall, at its option and at its own cost, either (a) procure for the Purchaser the right to continue using the Goods, (b) modify the Goods so as to be non-infringing while retaining substantially equivalent functionality, or (c) replace the Goods with non-infringing Goods of equivalent functionality; failing which the Supplier shall refund the full price paid and bear all incidental losses of the Purchaser.

All software supplied with the Goods shall be properly licensed in the name of the Purchaser, with perpetual rights to use for the intended research purpose. Any end-user licence agreements shall be disclosed with the bid.

7.10 Confidentiality and Data Protection

Each party shall keep confidential and shall not, without the prior written consent of the other party, disclose to any third party or use for any purpose other than the performance of the Contract, any information (whether technical, commercial, operational or otherwise) acquired from the other party in connection with the Contract. This obligation shall survive termination or expiry of the Contract for a period of five (5) years. The obligation shall not apply to information which: (a) is or becomes part of the public domain other than by breach of this clause; (b) is rightfully received from a third party without obligation of confidence; (c) is independently developed without use of the other party's information; or (d) is required to be disclosed by law, regulation, or order of a competent court or authority, provided that the party required to disclose shall, where lawful and practicable, give the other party prior notice.

The Supplier shall comply with all applicable data protection and privacy laws of India, including the Digital Personal Data Protection Act, 2023 (as amended and as brought into force), and any rules, regulations or guidelines issued thereunder, in respect of any personal data of Purchaser's personnel or students that it may process in connection with the Contract.

7.11 Indemnity

The Supplier shall indemnify, defend and hold the Purchaser, its officers, employees, students and agents harmless from and against any and all losses, liabilities, damages, costs and expenses (including reasonable legal fees) arising out of or in connection with: (a) any breach by the Supplier of any representation, warranty, covenant or obligation under the Contract; (b) any death or bodily injury to any person (including employees of the Supplier) or damage to property caused by any act, omission, negligence or wilful misconduct of the Supplier, its employees, agents or sub-contractors; (c) any breach of statutory obligations or applicable law by the Supplier; and (d) any claim by any sub-contractor, consultant or employee of the Supplier. This indemnity shall survive the termination or expiry of the Contract.

7.12 Limitation of Liability

Subject to the exceptions below, the total aggregate liability of the Supplier arising out of or in connection with the Contract, whether in contract, tort (including negligence), breach of statutory duty, or otherwise, shall not exceed the total Contract value. The following liabilities shall however be unlimited and excluded from the cap: (a) liability for death or personal injury caused by the Supplier's negligence; (b) liability for fraud or fraudulent misrepresentation; (c) liability under the IPR Infringement Indemnity (Section 7.9); (d) liability for breach of Confidentiality (Section 7.10); (e) liability arising from wilful misconduct or gross negligence; (f) liability under the Code of Integrity (Annexure IV); and (g) any liability that cannot be excluded or limited under applicable law.

7.13 Insurance

The Supplier shall, at its own cost, obtain and maintain insurance cover of an adequate amount to cover: (a) marine / air transit insurance from the point of dispatch until delivery to the Purchaser's site on an all-risks basis, for 110% of the CIP / CIF value; (b) erection-all-risks insurance during the installation and commissioning period; and (c) workmen's compensation and public liability insurance for its personnel deployed at the Purchaser's site. The Supplier shall, upon request, furnish copies of insurance certificates to the Purchaser. Failure to maintain adequate insurance shall not reduce the Supplier's liability under the Contract.

7.14 Title, Risk and Passing of Property

Title in the Goods shall pass to the Purchaser upon delivery of the Goods to the Purchaser's site at Mohali, free from all liens, charges and encumbrances. Risk in the Goods shall pass to the Purchaser upon Acceptance following successful installation and commissioning. Notwithstanding the above, in the case of any Goods lost or damaged in transit, the Supplier shall, at its own cost, replace or repair such Goods within a reasonable time.

7.15 Assignment and Sub-contracting

The Supplier shall not assign, transfer, charge or sub-contract, in whole or in part, its rights or obligations under the Contract without the prior written consent of the Purchaser. The Purchaser may withhold consent at its discretion. Any consent granted shall not relieve the Supplier of its obligations, and the Supplier shall remain fully responsible for the acts, omissions, defaults and negligence of any permitted sub-contractor, consultant or assignee as if they were its own.

7.16 Compliance with Laws, Anti-Bribery and Sanctions

The Supplier shall, in the performance of the Contract, comply with all applicable laws, statutes, regulations, rules, by-laws, codes of practice, and judicial, governmental or regulatory orders, notifications and guidelines including those relating to labour, health and safety, environment, taxation, customs and imports, foreign exchange, data protection, and anti-corruption.

Without limitation, the Supplier warrants, represents and undertakes that: (a) it shall not, directly or indirectly, pay, offer, give, promise to pay or authorise the payment of any bribe, kickback or other undue benefit to any person, including any public official, for the purpose of obtaining or retaining business in connection with the Contract, in violation of the Prevention of Corruption Act, 1988, the Foreign Contribution (Regulation) Act, 2010, or any equivalent applicable law; (b) it shall comply with all applicable export control and sanctions laws in connection with the Goods and Services; and (c) it shall notify the Purchaser immediately if any of the above representations ceases to be true during the term of the Contract.

7.17 Restrictions on Bidders from Countries Sharing a Land Border with India

Where applicable, the Supplier shall comply with the restrictions imposed under Rule 144(xi) of the General Financial Rules, 2017, issued by the Department of Expenditure, Ministry of Finance, Government of India Office Memorandum No. F.No.6/18/2019-PPD dated 23 July 2020 (as amended from time to time) and any analogous rules applicable to procurement funded through Government of India grants. A bidder from a country which shares a land border with India shall be eligible to bid in this tender only if the bidder is registered with the Competent Authority and shall submit a certificate of such registration along with the Technical Bid. The bidder shall also submit a certificate that the bidder has not been debarred and is not subject to any restriction notified by the Government of India.

7.18 Force Majeure

Neither party shall be liable for any failure or delay in performing its obligations under the Contract (other than an obligation to make payment) if and to the extent such failure or delay results from a Force Majeure event. "Force Majeure" means any event or circumstance beyond the reasonable control of the affected party, which the party could not reasonably have foreseen or avoided, including: acts of God; natural disasters (earthquakes, floods, cyclones); war, hostilities, armed conflict, terrorism; civil commotion, riots, strikes (other than involving the party's own workforce), lockouts; epidemic or pandemic (including any reasonable restriction imposed by governmental or regulatory authorities in response thereto); fires, explosions; governmental or regulatory acts or orders (other than those caused by breach on the part of the affected party); and closure or non-availability of international shipping routes.

The affected party shall give prompt written notice to the other party (within 14 days of becoming aware of the event) describing the nature and expected duration of the Force Majeure event and shall use all reasonable endeavours to mitigate its effect and resume performance. If the Force Majeure event

continues for a period exceeding 120 (one hundred and twenty) days, either party may terminate the Contract by written notice, without liability to the other (save for payment for Goods / Services already delivered and accepted). Notwithstanding anything in this Section 7.18 to the contrary, Force Majeure shall not relieve the Supplier of: (a) its obligation to take all reasonable steps to safeguard and protect any Goods already delivered to the Purchaser's site; (b) any obligation to refund advance payments received for milestones that have not been completed and accepted prior to the Force Majeure event; or (c) any warranty obligation in respect of Goods already accepted by the Purchaser prior to the occurrence of the Force Majeure event.

7.19 Notices

All notices, consents, approvals or other communications required or permitted to be given under the Contract shall be in writing, in English, and shall be delivered by hand (against signed acknowledgement), by registered post with acknowledgement due, by international courier, or by electronic mail (with read-receipt requested and a hard copy to follow by post) to the addresses specified below, or such other address as either party may notify the other from time to time:

Purchaser: The Registrar, Plaksha University, Alpha, Sector 101, IT City Road, Sahibzada Ajit Singh Nagar (Mohali), Punjab-140306, India. E-mail: registrar@plaksha.edu.in (with copy to tender@plaksha.edu.in).

Supplier: [Address and e-mail to be filled in by the Supplier at the time of bid submission / Contract execution]

Notices shall be deemed received: (a) if delivered by hand, at the time of delivery; (b) if by registered post, on the fifth working day after posting; (c) if by international courier, on the tenth working day after dispatch; (d) if by e-mail, on the date of transmission (provided no bounce-back or non-delivery report is received within 24 hours), subject to confirmation by post.

7.20 Waiver, Severability and Entire Agreement

Waiver: No waiver by either party of any breach or default of any provision of the Contract by the other party shall be effective unless in writing and signed by an authorised representative of the waiving party, and no such waiver shall be deemed to be a waiver of any subsequent breach or default.

Severability: If any provision of the Contract is held to be invalid, illegal or unenforceable by any court or competent authority, the remaining provisions shall remain in full force and effect, and the invalid, illegal or unenforceable provision shall be deemed to be modified to the minimum extent necessary to make it valid, legal and enforceable while preserving the original intent of the parties.

Entire Agreement: The Contract (as defined in Section 7.1) constitutes the entire agreement between the parties in relation to its subject matter and supersedes all prior negotiations, representations, understandings and agreements between the parties, whether oral or written. No amendment to the Contract shall be effective unless made in writing and signed by duly authorised representatives of both parties.

No Partnership or Agency: Nothing in the Contract shall constitute or be deemed to constitute a partnership, joint venture, or agency relationship between the parties. Neither party shall have authority to bind the other in any manner.

Third-Party Rights: A person who is not a party to the Contract shall have no rights under the Contract.

7.21 Publicity and Use of Name

The Supplier shall not, without the prior written consent of the Purchaser, use the name, logo, trademark or any reference to Plaksha University in any advertisement, press release, marketing material or other public communication, except as strictly required for performance of the Contract or as required by law.

7.22 Survival

The provisions of Sections 7.8 (Warranty), 7.9 (IPR Indemnity), 7.10 (Confidentiality), 7.11 (Indemnity), 7.12 (Limitation of Liability), 7.16 (Compliance with Laws), 7.23 (Dispute Resolution) and 7.24 (Governing Law and Jurisdiction), together with any other provision which by its nature is intended to survive, shall survive the termination or expiry of the Contract.

7.23 Dispute Resolution and Arbitration

7.23.1 Amicable Settlement. The parties shall first endeavour to resolve any dispute, controversy or claim arising out of or in connection with the Contract, including any question regarding its existence, validity, interpretation, performance, breach or termination (a "Dispute"), amicably through mutual discussions. Either party may initiate such discussions by written notice to the other; if the Dispute is not resolved within 30 (thirty) days of such notice (or such longer period as may be mutually agreed), the Dispute shall be referred to arbitration under Section 7.23.2.

7.23.2 Arbitration. Any Dispute not resolved amicably shall be finally settled by arbitration in accordance with the Arbitration and Conciliation Act, 1996 (as amended) and the rules framed thereunder. The arbitration shall be conducted by a sole arbitrator appointed by mutual agreement of the parties within 30 (thirty) days of a written request for arbitration by either party. Failing such mutual agreement, the sole arbitrator shall be appointed in accordance with the provisions of the said Act. The seat and venue of arbitration shall be **New Delhi**. The language of arbitration shall be English. The arbitral award shall be in writing, reasoned, final and binding on both parties. Each party shall bear its own costs of the arbitration unless the arbitrator determines otherwise. Pending resolution of the Dispute, the parties shall continue to perform their obligations under the Contract, to the extent not in dispute.

7.23.3 Interim Relief. Notwithstanding Section 7.23.2, either party may approach the courts of competent jurisdiction for interim or injunctive relief where necessary to protect its legitimate interests, including to prevent irreparable harm, pending the constitution of the arbitral tribunal or the pronouncement of the arbitral award.

7.24 Governing Law and Jurisdiction

The Contract, and any Dispute arising out of or in connection with it (including non-contractual disputes or claims), shall be governed by and construed in accordance with the **laws of India**, without regard to its conflict of laws principles. Subject to Section 7.23 (Arbitration), the **courts at New Delhi, India shall have exclusive jurisdiction** in respect of any application under the Arbitration and Conciliation Act, 1996, any proceedings for interim relief, and any matter not subject to arbitration.

7.25 Acknowledgement by Bidder

By submitting a bid in response to this Tender, the bidder acknowledges and confirms that it has read, understood and unconditionally accepts the Legal Terms and Conditions set out in this Section 7 and all other provisions of this Tender Document; that it has satisfied itself as to the nature and extent of the work and the conditions under which it shall be executed; and that no claim shall be entertained on the ground of any alleged lack of understanding of these terms.

Sd/- Registrar

Plaksha University, Mohali

ANNEXURE I

TECHNICAL SPECIFICATION FOR "Customized Molecular Beam Epitaxy (MBE) System for h-BN and TMDCs"

Plaksha University invites tender bids for a "**Customized Molecular Beam Epitaxy (MBE) based deposition system with in-situ RHEED and UHV Preparation-cum-Load Lock Chamber**" under the **National Quantum Mission (Quantum Materials and Devices Vertical)** funded project.

System Overview: The proposed customized MBE system shall comprise two chambers: the **Growth Chamber** and the **Preparation Chamber**. The two chambers must allow sample transfer using a UHV-compatible transfer arm. The Growth Chamber will allow for MBE-based growth involving deposition using effusion cells (Knudsen Cells and E-Beam), Nitrogen/Oxygen RF Plasma and thermal cracker cells. The Preparation Chamber will be used to prepare samples by heating them on a sample holder to 400 °C. The Preparation Chamber must allow introduction of substrates either manually directly from air through an appropriate flange, or optionally through a load lock chamber.

Mandatory Performance Parameters (Acceptance Criteria)

All technical specifications listed in the table below are mandatory in nature. The parameters listed under the heading "**Mandatory Performance Parameters (Acceptance Criteria)**" identify the principal performance benchmarks that the Supplier must demonstrate at the time of installation, commissioning and acceptance, and which form the subject of the Performance Test Certificate referred to in Section 6 / Section 7.8 of the main Tender Document. The remaining items in the technical specification table define the construction, configuration and accessory requirements of the system, all of which are also mandatory; minor deviations may be considered by the Purchaser at its sole discretion only where the deviation does not adversely affect the Mandatory Performance Parameters. Failure to meet any specification at the time of acceptance testing shall constitute non-acceptance of the Goods and shall entitle Plaksha University to invoke the Performance Bank Guarantee and to exercise its remedies under the Contract.

- **Base pressure (Growth Chamber):** $< 2 \times 10^{-10}$ mbar (chiller water cooling) and $< 8 \times 10^{-11}$ mbar (LN₂ cooling), achieved within 72 hours of post-bake-out vacuum recovery.
- **Base pressure (Preparation / Load-Lock Chamber):** $< 5 \times 10^{-8}$ mbar.
- **Manipulator heating:** ≥ 1450 °C with PID stability of ± 0.5 °C or better.
- **Manipulator rotation:** Motorised rotation ≥ 10 RPM, smooth and continuous.
- **RHEED:** 15 keV electron gun, software-controllable, with differential pumping.
- **Quartz Crystal Microbalance:** Thickness, rate, and frequency resolutions of $0.015 \text{ \AA} / 0.015 \text{ \AA}\cdot\text{s}^{-1} / 0.015 \text{ Hz}$, respectively, or better.
- **h-BN growth rate (using N-Plasma source):** $\geq 2.5 \text{ \mu m/h}$ sustained, with capability of exceeding 7 \mu m/h under optimised conditions.
- **Layer homogeneity:** h-BN film thickness uniformity better than 1% over a 1-inch wafer (excluding $\leq 2.5\%$ edge area), to be demonstrated at acceptance.
- **Simultaneous co-deposition:** Demonstrable simultaneous operation of (a) one valved cracker cell + one effusion cell + N-Plasma source, and (b) two effusion cells + one cracker cell, for h-BN and selenide co-deposition workflows.
- **Software & control:** Full PC-based recipe execution, continuous data logging, and remote-access integration of additional instruments at no charge for two (2) years post-delivery.

SN	Detail	No.	Make & Model No
1	UHV CHAMBER for h-BN and 2D-TMDCs growth (water cooled) for ≥ 1 inch wafer growth (made of DIN 1.4406/SS 316LN or DIN 1.404/SS 316L or equivalent)		
1.1	Dedicated View ports with manual shutter	≥ 2	

SN	Detail	No.	Make & Model No
1.2	Dedicated view port with manual shutter to see the effusion and cracker cells inside the growth chamber	≥1	
1.3	Ports in confocal arrangement for existing and future integration of N-Plasma, effusion cell and/or e-beam evaporator (e-Beam: 02; K-Cell: 02; N-Plasma: 01; Thermal Cracker: 02)	≥7	
1.4	Appropriate port for RHEED, QCM, Flux Monitor Gauge, TMP, Ion Pump, TSP, RGA, etc.	—	
1.5	Blank ports for future addition of characterization facilities	02	
2	GROWTH + ANALYSIS (including components)		
2.1	E-Beam 1 × 5cc with power supply & beam sweep for Boron	1	
2.2	Nitrogen/Oxygen RF Plasma Source	1	RIBE RF-X 50/63 or better
2.3	RHEED 15 keV with RHEED software, with differential pumping	1	
2.4	Quartz sensor on translator with SQC310C	1	
2.5	Flux Monitor Gauge for N-Plasma and K-Cells	1	
3	Pumping & Pressure management		
3.1	≥900 l/s TMP + suitable roughing pump with pump control unit	1	
3.2	Pneumatically operated VAT gate valve to separate TMP from main chamber	1	
3.3	≥200 l/s Ion Pump with controller	1	
3.4	4-filament TSP with controller	1	
3.5	Pneumatically operated VAT gate valve to separate Ion Pump and TSP from main chamber	1	
3.6	Dual-filament pressure gauge with controller (10^{-5} to 10^{-11} mbar)	1	
3.7	Pirani fore-line safety gauge (ATM to 10^{-4} mbar)	1	
3.8	VUV 40 CF full-metal vent valve	1	
4	Two-axis (Z-axis and Rotation) UHV Manipulator		
4.1	≥1 × 1 inch sample holder included	1	
4.2	Heating to ≥1450 °C (±0.5 °C or better) with PID controller	1	
4.3	Motorized rotation of at least 10 RPM	1	
4.4	Z-axis: must allow 0–100 mm motion	1	
4.5	Radiation shields to protect manipulator against material coatings	1	
4.6	Manual axial rotation for transfer	1	

SN	Detail	No.	Make & Model No
4.7	Horizontally mounted on side-wall flange	1	
4.8	Molybdenum substrate holder (sample plate) compatible with the sample manipulator	1	
4.9	Appropriate sample plate styles to handle: 1 inch wafer (2 qty), 12 mm × 12 mm (2 qty), 10 mm × 10 mm (2 qty); one blank sample plate to be provided	1	
4.10	A main shutter in front of substrate to protect substrate surface from deposition during process stabilization / flux measurement / thickness measurements, etc. The shutter must be made of tantalum.	1	
5	Baking tapes with controller (for complete MBE including growth chamber, preparation chamber and pumps)		
5.1	Aluminium foil jackets	1	
5.2	500 W fibre tapes that remain in place at all times	1	
6	Fast-Entry Preparation-cum-Load Lock equipped with (made of DIN 1.4406/SS 316LN or DIN 1.404/SS 316L or better)		
6.1	Pumping group ≥300 l/s TMP + shared dry scroll to attain base pressure 5×10^{-8} mbar	1	
6.2	Pneumatically operated VAT gate valve to separate TMP and Preparation chamber	1	
6.3	1 × Full-range cold cathode gauge (Atm to 10^{-9} mbar)	1	
6.4	1 × Pirani fore-line pressure safety gauge	1	
6.5	1 × Pump control unit with pressure display	1	
6.6	1 × Rack-and-pinion transfer rod	1	
6.7	1 × Heated sample holder to 400 °C with power supply	1	
6.8	Pneumatically operated VAT gate valve to separate load lock and growth chamber	1	
6.9	Appropriate transfer arm for transferring sample from preparation chamber to growth chamber	1	
6.10	Dedicated view port to see the sample inside while heating	1	
6.11	Ports in confocal arrangement in Preparation chamber for future integration of effusion cells	2	
6.12	A view port to see the sample and transfer inside of the chamber	1	
7	Process Control System and Computer Package		
7.1	State-of-the-art PC unit (Core i9 11th Gen Processor, 32 GB RAM, 1 TB SSD, 4 TB HDD, 12 GB RTX 3060 Graphics Card, 5G Wi-Fi / Bluetooth support, Windows 11 Pro) along with two 27-inch screens	1	

SN	Detail	No.	Make & Model No
7.2	Software control of valve cluster and modular expandable electrical terminal to interface analog and digital signals	1	
7.3	Appropriate I/O computer interface via Ethernet TCP-IP where necessary must be provided	1	
7.4	<p>Appropriate software for control exclusively from PC that should include</p> <ul style="list-style-type: none"> • For system control (venting, evacuating and bake-out) • Incl. functions like ramping, logging and conditional sequence • Graphical user interface with completely interactive elements for a best view over the system • Capable of running growth recipes and complex sequences with high time resolution through a graphical editor/ graphical user interface • Must have appropriate Continuous data logging capabilities • Complete control for devices with communication interface must be integrated <p>Note: Implementation of further instruments via remote access must be done for free within the first two years after delivery</p>	1	
8	Rack and Media Distribution		
8.1	<p>Appropriate arrangement must be provided for mounting</p> <ul style="list-style-type: none"> • Water cooling distribution • Central distribution of the different gases for the preparation chamber, pressed air etc. <p>Central distribution of the power and the thermocouple connections to the effusion cells, the manipulator heaters etc.</p>	1	
8.2	Free space for further mounting of valve banks for shutter and pneumatically operated gate valves, etc.	1	
8.3	Free space for further mounting of additional units to the media panel	1	
8.4	Appropriate rack for PID controllers, computer power supply, main switch, power distribution box, etc. There must be flexibility on positioning and layout of racks to enable optimum working practice in the laboratory.	1	
9	Utilities and Spares		

SN	Detail	No.	Make & Model No
9.1	A. Utilities: Tool case for minor maintenance work incl. helpful accessories: <ul style="list-style-type: none"> • Various suitable wrenches, screwdrivers, Allen® keys, pincers etc. • Torch light, graduated metal rule, level, glass fiber pencil etc. • High temperature grease for lubrication of air-side mechanics Set of spare sealing	1	
9.2	B. Spares: <ul style="list-style-type: none"> • Complete set of gaskets (15 no. of each type/size of flanges, Silver coated). For the upper flange of the main chamber and the preparation chamber which will rarely be opened one additional gasket should be provided. • Spare filaments (4 nos. for RGA, each ion Gauges) • Fuses (10 nos. For each type) • TSP filaments (4 nos.) 	1	
OPTIONAL ITEMS (Mandatory to Quote Separately)			
10	Valved cracker cell for Se	1	
11	Valved cracker cell for Te	1	
12	Medium-temperature effusion cell for Ga	1	
13	E-Beam 1 × 5cc with power supply & beam sweep for W	1	
14	RGA for leak testing (200 AMU)	1	
15	RHEED camera interfaced to the computer	1	

Detailed Description

1. Growth chamber must be of vertical deposition geometry with substrate facing downward during film growth.
2. Appropriate arrangement of vacuum pumps must be provided to attain base pressure $< 2 \times 10^{-10}$ mbar and $< 8 \times 10^{-11}$ mbar (Chiller water / LN₂ cooling). The vacuum levels must be achieved within 72 hours or less after system bake-out.
3. Pumping system must include: turbo molecular pump (TMP), ion getter pump (IGP) with titanium sublimation pump (TSP) or other getter pumps, and dry scroll pump. All pumps must be from Pfeiffer / Varian / Edwards or equivalent internationally reputed brands. Position of pumps must be such that it prevents flaking or contaminants falling into the pumps.

4. Vacuum Pump Protection: Appropriate cryo shroud / trap / panel / well must be provided for the turbo pump, ion pump and TSP to trap Transition Metals, N/O, B, Ga, S, Se and Te and protect the pumps. Appropriate control and safety must be interlocked with the UHV measurement system. An extra port for future integration of a cryo pump and/or cold trap must be provided.
5. Cooling Shroud (double walled): The deposition chamber must have a chiller-water-cooling shroud to isolate all effusion cells (to reduce cross-talk between high-temperature cells). The cooling shroud must surround the manipulator and encircle all effusion and cracker cells, and must be compatible with both liquid nitrogen and water cooling.
6. UHV Electron-Beam Evaporator (01 Set) for high-purity evaporation of different Boron materials by electron-beam evaporation: maximum temperature range 2700 °C or better; X-Y beam deflection; necessary power supply, controller and suitable cable to be provided; crucible size 5 cc or better; Tantalum crucible to be provided; pneumatic shutter; mountable in vertical deposition geometry.
7. Nitrogen/Oxygen RF Plasma Source (01 Set): Operating Power up to 600 W (typically 30–600 W), Frequency 13.56 MHz, with an automatic matching network to optimize power transfer. Plasma cavity / end-piece: high-purity Pyrolytic Boron Nitride (PBN) or quartz discharge cavity, optimized for reactive N₂/O₂ species; multi-hole end-piece (e.g., 1200 or 5880 apertures) to maximize molecular dissociation while minimizing ion damage (low ion current < 10 nA/cm²). Nitrogen application: capable of h-BN growth rates up to ≥2.5 μm/h, with capabilities exceeding 7 μm/h under specific conditions. Uniformity: superior concentration uniformity over large-diameter wafers (3 inch or larger). UHV compatible, with manual or pneumatic isolation valve for independent maintenance. Gas compatibility: N₂ / O₂ / Ar. Efficient water-cooled RF coil (≈0.3 l/min, >2 bar). Optional integrated Plasma Emission Monitoring (PEM) or OES for real-time monitoring. Integration with high-precision mass flow controller required.
8. OPTIONAL ITEM-Valved cracker cell (1 TCC) for Selenium (01 Set): source capacity up to 130 cm³ PBN crucible; LN₂ shroud at cracker; water-cooled reservoir; beam-shaping nozzle; mounted on DN40CF. Operating temperatures-crucible: max 650 °C; cracker (no cracking): max 1300 °C. Two thermocouples Type C (cracker & tube) and one Type K (crucible).
9. OPTIONAL ITEM: Medium-temperature effusion cell (01 Set): capacity 30 cc or better; maximum temperature 1500 °C; one Ta and one Al₂O₃ crucible; integrated pneumatically- or electrically-operated shutter with soft-acting motion controllable through software; hot lip to avoid condensation at crucible orifice; dedicated thermocouple, PID control and all necessary cables to be provided.
10. Mandatory power supplies for cell operations for co-deposition: appropriate number of power supplies, control electronics and cables must be provided such that h-BN growth and selenide co-deposition operations can be carried out.
11. Quartz Crystal Microbalance: UHV bakeable, with shutter. Thickness resolution 0.015 Å or better; rate resolution 0.015 Å/s or better; frequency resolution 0.015 Hz or better. Linear feedthrough unit to adjust sensor position inside the UHV chamber. All measurement electronics, controllers and cables to be supplied for reading data into the PC. At least 15 gold-plated quartz plates to be provided. Water-cooling unit to be provided.
12. RHEED: In-situ characterization facility with 15 keV energy gun. All associated electronic assembly packages, power supply and cables to be included. Must be controllable via computer.

Appropriate RHEED screen with manual shutter for protection against material deposition. Manufacturer: reputed brand such as Staib. CCD camera and analysis software to be quoted as optional item.

Other Required Terms & Conditions

- i. Layer growth training / material specifications as per site requirement.
- ii. The vendor must have proven capability to provide a thorough epi-layer demonstration programme. Installation and training at the user's site must be provided.
- iii. Prospective suppliers must provide training for epitaxial growth for at least three days on the fully installed instrument. Source materials and substrates for training will be provided by the purchaser.
- iv. The scientist(s) delivering the programme must be full-time employee(s) of the system vendor and fully conversant with every aspect of machine operation, functionality, and the design philosophy that led to its development. The training manager(s) must remain accessible for consultation beyond the scheduled epi-layer demonstration.
- v. Utility power: 230 V single phase or 440 V three phase, 50 Hz. Total power consumption of the system under full operation and UPS requirements must be specified.
- vi. Applications support: The vendor must provide evidence of an embedded applications culture that has evolved (and continues to evolve) with the company's technology interests. Application support that lacks heritage and pedigree will be viewed less favourably.
- vii. Worldwide user reference list must be attached. A minimum of five (5) successfully installed MBE systems of similar type worldwide in the past seven (7) years must be demonstrated.
- viii. Hard and soft copies of all relevant documentation (operating manual, service manual, run-up to epitaxy, source loading, installation) must be provided.
- ix. Warranty for minimum one (1) year after the date of successful installation; additional AMC for four (4) years beyond the warranty period must also be quoted.
- x. System functionality to be demonstrated: (a) functionality of water cooling and media distribution; (b) functionality of effusion cells, PID controllers and shutter mechanisms; (c) functionality of sputter guns; (d) functionality of sample transfer, sample heating and sample rotation; (e) achievement of vacuum levels as per tender requirement for all chambers; (f) simultaneous co-deposition functionality of effusion cells.
- xi. Layer homogeneity: Achievable h-BN film homogeneity better than 1% over a one-inch wafer must be demonstrated after meeting the vacuum specifications. A maximum of 2.5% edge area of the substrate may be excluded from this measurement. All required materials and homogeneity measurement tools for characterization will be provided by the purchaser in state-of-the-art quality. The purchaser will cover all costs for materials and characterization for the growth.

ANNEXURE II

OEM AUTHORIZATION CERTIFICATE (Manufacturer's Authorization Form)

(To be submitted on the OEM's letterhead as part of the Technical Bid)

To,
The Registrar
Plaksha University
Alpha, Sector 101, IT City Road,
Sahibzada Ajit Singh Nagar (Mohali), Punjab – 140306, India

Sub: Authorization for Tender No. **PU/2026-27/NQM-001**-Supply of Customized MBE System for h-BN and TMDCs.

Dear Sir/Madam,

1. We, M/s [OEM Name], having our registered office at [address] and factories at [address], are proven and reputed manufacturers of the tendered Goods.
2. We hereby authorize M/s [Authorized Dealer Name], having its office at [address], to submit a bid, process the same further, and enter into a contract with you against the above-referred tender for the supply of the Goods manufactured by us. Their registration number with us is [●], dated [●].
3. We further confirm that no contractor or firm or individual other than M/s [Authorized Dealer Name] is authorized by us for this purpose.
4. As principals, we commit ourselves to extend our full support for warranty obligations, as applicable per the Tender Document, for the Goods and the incidental works / services offered for supply by the above firm against this tender.
5. Our details are:
 - Name of the Company: [●]
 - Complete Postal Address: [●]
 - PIN / ZIP code: [●]
 - Telephone (with country / area codes): [●]
 - Fax / Mobile (with country / area codes): [●]
 - Contact Person / Designation: [●]
 - E-mail ID: [●]

Yours faithfully,

[Signature with date, name and designation]

For and on behalf of M/s [OEM Name]

(Seal of the Company)

ANNEXURE III

PRICE REASONABILITY CERTIFICATE

(To be submitted on the bidder's letterhead as part of the Technical Bid)

This is to certify that we have offered the maximum possible discount to Plaksha University in our Quotation No. [●] dated [●].

We further certify that the prices quoted are the minimum prices, and that we have not quoted the same item at lesser rates to any other customer, nor will we do so till the validity of the offer or the execution of the purchase order, whichever is later.

We also confirm that no unpublished commissions, discounts, rebates or benefits of any kind have been or will be offered to any employee or office-bearer of Plaksha University in connection with this tender.

Seal and Signature of the Tenderer

Date:

ANNEXURE IV

INTEGRITY UNDERTAKING AND SELF-DECLARATION ON NON-DEBARMENT

(To be submitted on the bidder's letterhead as part of the Technical Bid)

Tender Reference: NIT No. **PU/2026-27/NQM-001** Supply of Customized MBE System for h-BN and TMDCs.

Part A-Code of Integrity

We, M/s [Bidder Name], having our registered office at [address], unconditionally undertake that we shall observe the highest standard of ethics during the tender process and during the execution of any resulting contract, and shall not indulge directly or indirectly in any of the following prohibited practices at any stage:

- (a) Corrupt practice making, soliciting or accepting a bribe, reward, gift, or any material benefit in exchange for an unfair advantage in the tender process.
- (b) Fraudulent practice any omission or misrepresentation that may mislead, or attempt to mislead, so that financial or other benefits may be obtained or an obligation avoided; this includes false declarations or false information for participation in this tender or execution of any resulting contract.
- (c) Anti-competitive practice any collusion, bid-rigging or other arrangement prohibited by the Competition Act, 2002, with or without the knowledge of Plaksha University, that impairs the transparency, fairness and progress of the tender process or establishes artificial, non-competitive prices.
- (d) Coercive practice harming or threatening to harm persons or their property to influence their participation in the tender process or the execution of the contract.
- (e) Conflict of interest participating where we or our affiliates have a relationship or financial/business transaction with any official of Plaksha University that could improperly influence the tender, or where we are part of more than one bid.
- (f) Obstructive practice impeding any investigation by Plaksha University into allegations of the above practices.

Part B-Non-Debarment Declaration

We further declare that:

- We are not currently debarred, blacklisted or disqualified by any Ministry / Department of the Government of India, any State Government, any Public Sector Undertaking, or any autonomous / educational institution in India.
- No transgression of the code of integrity has occurred on our part in the last three (3) years with any public procurement entity in India that could justify our exclusion from this tender.
- We do not fall under the restrictions imposed under Rule 144(xi) of the General Financial Rules, 2017 (restrictions on procurement from bidders of countries sharing a land border with India), or where such restrictions apply we have the necessary registration with the competent authority, proof of which is enclosed.

Part C - Consequences of Breach

We acknowledge that any breach of this undertaking shall entitle Plaksha University, in addition to its other rights under the Tender Document and applicable law, to: (a) forfeit the Bid Security / Performance Security; (b) terminate any contract arising from this tender; (c) recover damages and losses; and (d) debar us from participating in future tenders of Plaksha University for a period of up to three (3) years.

Authorised Signatory

Name: [•] Designation: [•]

For and on behalf of M/s [Bidder Name]

Place: Date:

ANNEXURE V

BID PARTICULARS AND COMPLIANCE CHECKLIST

Part A -Bidder Particulars

1. Name of the Supplier: [●]
2. Address of the Supplier (with PIN): [●]
3. Country of Origin of Goods: [●]
4. GSTIN (for Indian bidders): [●]
5. PAN (for Indian bidders): [●]
6. Availability of demonstration of equipment: Yes / No
7. Tender Fee (if applicable) enclosed: Yes / No
8. Bid Security (EMD) submission information: UTR No.: [●] | Transaction Date: [●] | Amount: [●] | Bank: [●] | Branch/Address: [●]
9. Contact Officer for this tender-Name: [●] | Designation: [●] | Phone: [●] | Mobile: [●] | E-mail: [●] | Website: [●]

Part B-Compliance Checklist (Technical Bid)

Tender Ref.: NIT No. **PU/2026-27/NQM-001**

Sr. No.	Checklist of Documents / Undertakings	Yes / No	Remarks (give explanation if the answer is "No")
1	Are EMD details and Tender Fee details attached (if applicable)?		
2	Is the bidder the Original Equipment Manufacturer (OEM) or authorized dealer?		
3	If authorized dealer, is a recent dated certificate to this effect from the OEM attached (Annexure II)?		
4	Is the undertaking from the OEM regarding technical support, spares and extended warranty period attached?		
5	Is the bid validity of 180 days (6 months) confirmed?		
6	Is the Price Reasonability Certificate enclosed in the prescribed format (Annexure III)?		
7	Is the Integrity Undertaking and Non-Debarment Declaration enclosed (Annexure IV)?		
8	Is the undertaking from the bidder regarding acceptance of all tender terms & conditions enclosed?		
9	Is a list of reputed users (with contact phone / e-mail of contact persons) for the past seven (7) years specific to the instrument attached (minimum 5 installations)?		

Sr. No.	Checklist of Documents / Undertakings	Yes / No	Remarks (give explanation if the answer is "No")
10	Does the instrument comply with all the specifications detailed in Annexure I? Is the technical compliance chart attached showing compliance with each specification line item and explaining any deviation?		
11	Is free Installation, Commissioning and Application Training at Plaksha University, Mohali offered?		
12	Is comprehensive on-site warranty offered (minimum 1 year)?		
13	Is Annual Maintenance Contract (AMC) for 4 years beyond the warranty period quoted separately in the Price Bid?		
14	Are ALL optional items (Sr. No. 10–15) listed in Annexure I mandatorily quoted with separate prices in the Price Bid? (Failure to quote any optional item shall render the bid non-responsive.)		
15	Is the country of origin of goods mentioned?		
16	Are all printed literature, brochures, datasheets and technical drawings of the quoted equipment attached?		

Signature of the Tenderer with Seal

Name & Designation:

Date:

ANNEXURE VI

FORMATS OF BANK GUARANTEE

(Bid Security / Performance Security / Advance Payment)

IMPORTANT INSTRUCTIONS TO THE BIDDER / SUPPLIER AND ISSUING BANK

1. The Bank Guarantee shall be issued strictly in the format prescribed below, without any deletion, alteration or addition. Any deviation shall render the Guarantee unacceptable.
2. The Bank Guarantee shall be issued on non-judicial stamp paper of appropriate value as per the Indian Stamp Act, 1899 / the Stamp Act of the issuing State, OR shall be franked / e-stamped as per the laws applicable in the State of issue.
3. The Bank Guarantee shall be issued by a Scheduled Commercial Bank in India, OR by a foreign bank counter-guaranteed / confirmed by a Scheduled Commercial Bank in India acceptable to Plaksha University.
4. The Bank Guarantee shall be payable at a branch in New Delhi or Mohali to facilitate easy invocation.
5. Plaksha University shall verify the genuineness of the Bank Guarantee directly with the issuing bank / branch before acceptance. The Bank shall provide such written confirmation on request, on the bank's letterhead.
6. Stamp duty shall be borne by the Bidder / Supplier.
7. Each page of the Bank Guarantee must be signed and stamped by the authorised signatory of the issuing bank, with the official's name, designation, employee code, and bank seal clearly mentioned.
8. The Power of Attorney / Authority of the bank official signing the Bank Guarantee must be enclosed.
9. Multiple Bank Guarantees from one bank may be combined under a single covering letter; however, each Guarantee must be a separate executed instrument.
10. All amounts shall be expressed in figures as well as in words. In case of any discrepancy, the amount in words shall prevail.

PART A -BID SECURITY (EARNEST MONEY DEPOSIT) BANK GUARANTEE

(To be furnished along with the Technical Bid)

[On non-judicial stamp paper of appropriate value]

Bank Guarantee No.: _____ Date: _____

To,

The Registrar

Plaksha University

Alpha, Sector 101, IT City Road,

Sahibzada Ajit Singh Nagar (Mohali), Punjab -140306, India

Sub: Bank Guarantee for Bid Security / Earnest Money Deposit against Tender No. PU/2025-26/[●] dated [●] for supply of **"Customized Molecular Beam Epitaxy (MBE) System for h-BN and TMDCs with in-situ RHEED and UHV Preparation-cum-Load Lock Chamber"**.

Dear Sir/Madam,

WHEREAS M/s [Name of the Bidder], a [company / partnership firm / proprietorship / LLP] duly incorporated / constituted under the laws of [country] and having its registered office at [address] (hereinafter referred to as the **"Bidder"**, which expression shall, unless repugnant to the context, mean and include its successors and permitted assigns), has submitted its bid dated [●] (the **"Bid"**) in response to Tender Notice No. PU/2025-26/[●] dated [●] (the **"Tender"**) issued by **Plaksha University**, a private University established under the Plaksha University Act, having its principal office at Alpha, Sector 101, IT City Road, Sahibzada Ajit Singh Nagar (Mohali), Punjab – 140306 (hereinafter referred to as the **"Beneficiary"**) for the supply, installation, commissioning and warranty of the goods described in the Tender (the **"Goods"**);

AND WHEREAS under the terms of the Tender, the Bidder is required to furnish to the Beneficiary, along with the Bid, a Bid Security in the sum of **Rs. [●]- (Rupees [● in words] only)** [or, where applicable: **USD/EUR/GBP [●] (in words) only**] (hereinafter referred to as the **"Guaranteed Amount"**) to secure the performance of the Bidder's obligations under the Bid and the Tender;

AND WHEREAS the Bidder has approached us, **[Name of the Bank]**, a **Scheduled Commercial Bank constituted under the [Banking Regulation Act, 1949] / [a body corporate incorporated under the Companies Act, 2013 / Banking Companies (Acquisition and Transfer of Undertakings) Act, 1970]**, having its Registered Office at [address] and operating, inter alia, through its Branch Office at [branch address, including a branch in New Delhi or Mohali] (hereinafter referred to as the **"Bank"**, which expression shall, unless repugnant to the context, mean and include its successors and permitted assigns), to issue this Bank Guarantee in favour of the Beneficiary in lieu of cash deposit of the Bid Security;

NOW, THIS DEED WITNESSETH AS UNDER:

1. In consideration of the Beneficiary having agreed to consider the Bid of the Bidder, **we, [Name of the Bank], do hereby irrevocably and unconditionally undertake and guarantee** to pay to the Beneficiary, **on first written demand** and without any demur, protest, contestation, recourse or reference to the Bidder, an aggregate amount not exceeding the Guaranteed Amount of **Rs. [●]- (Rupees [●] only)**, merely on a written demand from the authorised signatory of the

Beneficiary stating that the said sum is due and payable by reason of the occurrence of any one or more of the events listed in Clause 2 below, and that the Bid Security has thereby become liable to forfeiture under the terms of the Tender.

2. **EVENTS OF FORFEITURE:** This Guarantee shall be liable to be invoked and the Guaranteed Amount paid by the Bank in any of the following events:
 - (a) the Bidder withdraws, modifies, or resiles from its Bid (in whole or in part) during the period of bid validity (or any extended period) after opening of the Technical Bid;
 - (b) the Bidder, having been declared the successful bidder, fails or refuses to accept the Letter of Intent / Purchase Order or to execute the Contract in accordance with its Bid;
 - (c) the successful bidder fails to furnish the Performance Security within the time stipulated in the Tender;
 - (d) the Bidder is found to have engaged in corrupt, fraudulent, coercive, collusive, anti-competitive or obstructive practices in connection with this Tender;
 - (e) the Bidder has submitted any false, forged or materially misleading declaration, certificate, document or information in connection with this Tender;
 - (f) the Bidder fails or refuses to perform any pre-contractual obligation required under the Tender; or
 - (g) any other event prescribed under the Tender or applicable law as a ground for forfeiture of the Bid Security.
3. **UNCONDITIONAL AND IRREVOCABLE:** This Guarantee is **absolute, unconditional, irrevocable, and continuing** in nature. The Bank shall pay the Guaranteed Amount (or any part thereof as demanded) to the Beneficiary **immediately on first written demand** without any demur, protest, contestation, or proof, and without reference to the Bidder. The Bank shall not be entitled to question, in any manner, the demand made by the Beneficiary, nor shall the Bank be required to be satisfied as to the existence or extent of liability of the Bidder.
4. **WAIVER OF RIGHTS:** The Bank hereby unconditionally waives any right of subrogation, surety, set-off, counter-claim, or any other defence available to it in law, equity or under any contract, against the Beneficiary. The decision of the Beneficiary as to whether any of the events of forfeiture has occurred shall be final and binding on the Bank.
5. **DISPUTES NOT TO AFFECT GUARANTEE:** Any dispute or difference between the Bidder and the Bank, or between the Bidder and the Beneficiary, or the pendency of any proceedings (whether arbitration, court or otherwise), shall not in any manner affect, suspend, delay or prejudice the obligation of the Bank to make payment under this Guarantee on the first written demand of the Beneficiary. No injunction or order of any court or tribunal restraining the Bank from making payment under this Guarantee shall be obtained by the Bidder.
6. **CONTINUING GUARANTEE:** No change in the constitution of the Bidder or of the Bank, no amendment to the terms of the Bid or the Tender, no indulgence, forbearance or extension of time granted by the Beneficiary to the Bidder, and no waiver by the Beneficiary of any breach by the Bidder, shall in any manner discharge, release, diminish or otherwise affect the obligations of the Bank under this Guarantee, whether or not notice thereof is given to the Bank.
7. **LIMITATION ON LIABILITY:** Notwithstanding anything contained herein:
 - (h) the liability of the Bank under this Guarantee is restricted to the Guaranteed Amount of **Rs. [●]/- (Rupees [●] only)**;
 - (i) this Guarantee shall remain in force up to and including **[Date-being a date not earlier than 90 (ninety) days beyond the bid validity period]** (the "**Validity Date**"), and any demand under this Guarantee must be received by the Bank in writing on or before the Validity Date;

- (j) unless a written demand is lodged with the Bank at **[branch address]** on or before the Validity Date, the Bank shall be discharged of all liability under this Guarantee, and the original Guarantee shall be returned to the Bank.
8. **EXTENSION:** The Bank shall, at the written request of the Beneficiary made before the Validity Date, extend the validity of this Guarantee for such further period(s) as may be required by the Beneficiary, without requiring the consent of the Bidder. Failure of the Bank to extend the Guarantee on such request shall, ipso facto, entitle the Beneficiary to invoke this Guarantee and the Bank shall be liable to pay the Guaranteed Amount.
9. **NOTICES:** All demands and notices under this Guarantee shall be addressed to the Bank at the following branch address: *[Bank branch address, telephone, e-mail, contact person]*. Demands by registered post / speed post / hand delivery / e-mail with delivery confirmation shall be valid modes of service.
10. **GOVERNING LAW AND JURISDICTION:** This Guarantee shall be governed by, and construed in accordance with, the **laws of India**. Any dispute or difference arising out of or in connection with this Guarantee shall be subject to the **exclusive jurisdiction of the courts at New Delhi**, and the parties hereby irrevocably submit to such jurisdiction.
11. **AUTHORITY:** We, the Bank, confirm that the official(s) signing this Guarantee are duly authorised to issue this Guarantee on behalf of the Bank. A copy of the Power of Attorney / Authority Letter / Board Resolution authorising the signatory(ies) is enclosed.

IN WITNESS WHEREOF the Bank, through its duly authorised officer, has set its hand and seal on this [●] day of [●], [●].

For and on behalf of [Name of the Bank]

Signature: _____
Name: _____
Designation: _____
Employee / Code No.: _____
Branch: _____
Branch Address & Code: _____
Telephone: _____
E-mail: _____

(Bank's Common Seal)

Witnesses:

1. _____ (Name, Address & Signature)
2. _____ (Name, Address & Signature)

PART B-PERFORMANCE BANK GUARANTEE

(To be furnished by the successful bidder within 21 days of issuance of LOI / Purchase Order)

[On non-judicial stamp paper of appropriate value]

Bank Guarantee No.: _____ Date: _____

To,

The Registrar

Plaksha University

Alpha, Sector 101, IT City Road,

Sahibzada Ajit Singh Nagar (Mohali), Punjab – 140306, India

Sub: Performance Bank Guarantee against Purchase Order No. [●] dated [●] for supply, installation and commissioning of "**Customized Molecular Beam Epitaxy (MBE) System for h-BN and TMDCs with in-situ RHEED and UHV Preparation-cum-Load Lock Chamber**".

Dear Sir/Madam,

WHEREAS M/s [Name of the Supplier], a [company / partnership / proprietorship / LLP] duly incorporated / constituted under the laws of [country] and having its registered office at [address] (hereinafter referred to as the "**Supplier**", which expression shall, unless repugnant to the context, mean and include its successors and permitted assigns), has been awarded **Purchase Order No. [●] dated [●]** by **Plaksha University** (hereinafter referred to as the "**Beneficiary**") for the supply, installation, commissioning, demonstration and warranty of "**Customized Molecular Beam Epitaxy (MBE) System for h-BN and TMDCs**" (the "**Goods**") for a total Contract value of [●] (in words: [●] only) (the "**Contract**");

AND WHEREAS under the terms of the Contract, the Supplier is required to furnish to the Beneficiary a Performance Security in the sum of [●], being three per cent (3%) of the Contract value [as specified in Section 7.4 of the main Tender Document] (hereinafter referred to as the "**Guaranteed Amount**"), to secure the due and faithful performance by the Supplier of all its obligations under the Contract, including the warranty obligations;

AND WHEREAS the Supplier has approached us, [Name of the Bank], a **Scheduled Commercial Bank constituted under [the Banking Regulation Act, 1949] / [the Banking Companies (Acquisition and Transfer of Undertakings) Act, 1970] / [the Companies Act, 2013]**, having its Registered Office at [address] and operating, inter alia, through its Branch Office at [branch address, including a branch in New Delhi or Mohali] (hereinafter referred to as the "**Bank**"), to issue this Performance Bank Guarantee in favour of the Beneficiary in lieu of cash deposit of the Performance Security;

NOW, THIS DEED WITNESSETH AS UNDER:

1. In consideration of the Beneficiary having awarded the Contract to the Supplier, **we, [Name of the Bank], do hereby irrevocably and unconditionally undertake and guarantee** to pay to the Beneficiary, **on first written demand** and without any demur, protest, contestation, recourse, or reference to the Supplier, an aggregate amount not exceeding the Guaranteed Amount of [●] (**Rupees [●] only**), merely on a written demand from the authorised signatory of the Beneficiary stating that the said sum is due and payable by reason of any breach by the Supplier of the terms of the Contract, including the occurrence of any one or more of the events listed in Clause 2 below.

2. **EVENTS OF DEFAULT / INVOCATION:** This Guarantee may be invoked, and the Guaranteed Amount paid by the Bank, in any of the following events of default by the Supplier (without any obligation on the Beneficiary to establish or prove any such event to the Bank):
 - (a) failure to deliver any or all of the Goods within the stipulated delivery schedule (subject to Force Majeure as expressly recognised by the Beneficiary in writing);
 - (b) failure to install, commission, demonstrate or obtain acceptance of the Goods within the time stipulated in the Contract;
 - (c) supply of Goods that are defective, substandard, or not in conformity with the technical specifications, drawings or warranties under the Contract;
 - (d) failure to discharge warranty obligations during the warranty period, including failure to repair or replace defective parts within the response and resolution times stipulated in the Contract;
 - (e) breach of any material term, condition or covenant of the Contract;
 - (f) violation of the Code of Integrity / Integrity Undertaking, including engagement in corrupt, fraudulent, coercive, collusive, anti-competitive or obstructive practices;
 - (g) termination of the Contract for default of the Supplier;
 - (h) any liquidated damages or other sums payable by the Supplier to the Beneficiary that remain unpaid; or
 - (i) any other ground for invocation of the Performance Security under the Contract or applicable law.
3. **UNCONDITIONAL AND IRREVOCABLE PAYMENT:** This Guarantee is **absolute, unconditional, irrevocable and continuing** in nature. The Bank shall pay the Guaranteed Amount (or any part thereof as demanded) to the Beneficiary **immediately on first written demand**, in any event **not later than five (5) Business Days from the date of receipt of such demand**, without any demur, protest, contestation, or proof of default, and without reference to the Supplier. The Bank shall not be entitled to question, examine or look behind the demand made by the Beneficiary, nor shall the Bank require the Beneficiary to establish the existence or extent of liability of the Supplier.
4. **JOINT AND SEVERAL LIABILITY:** The liability of the Bank under this Guarantee shall be **joint and several** with that of the Supplier, and the Beneficiary shall be at liberty, at its sole discretion, to proceed against the Bank under this Guarantee without first having recourse to the Supplier or to any other security or remedy.
5. **WAIVER OF DEFENCES:** The Bank hereby unconditionally and irrevocably waives any right of subrogation, surety, set-off, counter-claim, marshalling, or any other defence whatsoever (whether arising in contract, tort, equity or otherwise) that may be available to it against the Beneficiary. The decision of the Beneficiary as to whether any default has occurred and as to the amount payable under this Guarantee shall be **final, conclusive and binding** on the Bank.
6. **DISPUTES NOT TO AFFECT GUARANTEE:** Any dispute, difference or claim between the Supplier and the Bank, or between the Supplier and the Beneficiary, or the pendency of any arbitration, court or other proceedings, or any allegations of fraud or invalidity (other than fraud established by a final non-appealable decree of a competent court of which the Bank has actual notice prior to making payment), shall **not in any manner affect, delay, suspend or prejudice** the obligation of the Bank to make payment under this Guarantee on the first written demand of the Beneficiary. The Bank shall not seek any injunction or stay against payment.
7. **CONTINUING GUARANTEE-NO DISCHARGE:** It is expressly agreed that no change in the constitution, ownership, name or address of the Supplier or of the Bank; no amalgamation, merger, reconstruction or insolvency of the Supplier or of the Bank; no amendment, modification, waiver, indulgence, forbearance, or extension of time granted by the Beneficiary to the Supplier (with or without notice to the Bank); no failure or delay by the Beneficiary in enforcing any right;

no taking, release, exchange, or substitution of any other security; and no act or omission of the Beneficiary that would, but for this Clause, have the effect of discharging the Bank as a surety, shall in any manner discharge, release, diminish, prejudice or otherwise affect the obligations of the Bank under this Guarantee.

8. **LIMITATION ON LIABILITY:** Notwithstanding anything contained herein:
 - (j) the maximum liability of the Bank under this Guarantee is restricted to **[●] (Rupees [●] only)**;
 - (k) this Guarantee shall remain in force up to and including **[Date, being not earlier than 60 (sixty) days beyond the date of completion of all contractual obligations of the Supplier including the entire warranty period]** (the "Validity Date");
 - (l) any written demand under this Guarantee must be lodged with the Bank at **[branch address]** on or before the Validity Date;
 - (m) unless a written demand is so lodged on or before the Validity Date, the Bank shall be discharged of all liability under this Guarantee, and the original Guarantee shall be returned to the Bank for cancellation;
 - (n) for the avoidance of doubt, multiple demands may be made by the Beneficiary up to the Guaranteed Amount.
9. **EXTENSION:** The Bank shall, at the written request of the Beneficiary made before the Validity Date, **automatically and unconditionally extend** the validity of this Guarantee for such further period(s) as may be required by the Beneficiary (including for the period of any AMC or extended warranty contracted), without requiring the consent of the Supplier. **Failure or refusal of the Bank to so extend the Guarantee on such request shall, ipso facto and without further demand, entitle the Beneficiary to invoke this Guarantee in full**, and the Bank shall be liable to pay the Guaranteed Amount to the Beneficiary as if the events of default had occurred.
10. **PARTIAL INVOCATION AND RE-STATEMENT:** The Beneficiary may invoke this Guarantee partially as well as in full. Any partial invocation shall not exhaust the Guarantee, and the Bank shall remain liable for the balance of the Guaranteed Amount until the Validity Date.
11. **NO ASSIGNMENT BY SUPPLIER:** The Bank acknowledges that the rights of the Beneficiary under this Guarantee may be assigned by the Beneficiary to any successor entity, affiliate or funding agency (including the National Quantum Mission). The Supplier shall not assign or transfer any of its rights under this Guarantee. The Bank shall pay the Guaranteed Amount to such assignee on production of evidence of assignment.
12. **NOTICES:** All demands and notices under this Guarantee shall be addressed to the Bank at *[Bank branch address, telephone, e-mail, contact person]*. Demands by registered post / speed post / hand delivery / e-mail with delivery confirmation shall be valid modes of service. The Bank shall acknowledge receipt of any demand within twenty-four (24) hours of receipt.
13. **GOVERNING LAW AND JURISDICTION:** This Guarantee shall be governed by and construed in accordance with the **laws of India**. The **courts at New Delhi shall have exclusive jurisdiction** over any dispute, claim or proceeding arising out of or in connection with this Guarantee, and the parties hereby irrevocably submit to such jurisdiction.
14. **STAMP DUTY:** Stamp duty payable on this Guarantee shall be borne by the Supplier. The Bank confirms that this Guarantee has been duly stamped in accordance with the Indian Stamp Act, 1899 / *[applicable State Stamp Act]*.
15. **AUTHORITY OF SIGNATORY:** We, the Bank, confirm that the official(s) signing this Guarantee are duly authorised to issue this Guarantee on behalf of the Bank, and that this Guarantee is issued in accordance with the powers vested in such official(s) under *[Power of Attorney / Authority Letter / Board Resolution No. [●] dated [●]]*, a copy of which is enclosed for record. The Bank also confirms that this Guarantee has been duly entered into the Bank's records under Bank Guarantee Register Sl. No. **[●]**.

IN WITNESS WHEREOF the Bank, acting through its duly authorised officer, has set its hand and seal on this [●] day of [●], [●].

For and on behalf of [Name of the Bank]

Signature: _____

Name: _____

Designation: _____

Employee / Code No.: _____

Branch: _____

Branch Address & Code: _____

Telephone: _____

E-mail: _____

(Bank's Common Seal)

Witnesses:

1. _____ (Name, Address & Signature)

2. _____ (Name, Address & Signature)

PART C-ADVANCE PAYMENT BANK GUARANTEE

(Applicable only in exceptional cases where Plaksha University has expressly approved an advance payment.

To be furnished prior to release of any advance.)

[On non-judicial stamp paper of appropriate value]

Bank Guarantee No.: _____ **Date:** _____

To,

The Registrar

Plaksha University

Alpha, Sector 101, IT City Road,

Sahibzada Ajit Singh Nagar (Mohali), Punjab – 140306, India

Sub: Advance Payment Bank Guarantee against Purchase Order No. [●] dated [●] for supply of "**Customized Molecular Beam Epitaxy (MBE) System for h-BN and TMDCs**".

Dear Sir/Madam,

WHEREAS M/s [Name of the Supplier], having its registered office at [address] (the "**Supplier**"), has been awarded **Purchase Order No. [●] dated [●]** by **Plaksha University** (the "**Beneficiary**") for the supply, installation and commissioning of the Goods, for a total Contract value of [●] (the "**Contract**");

AND WHEREAS the Beneficiary has, at the request of the Supplier and as a special exception, agreed to release an advance payment of [●] (the "**Advance**") to the Supplier, on the express condition that the Supplier furnishes an irrevocable and unconditional Bank Guarantee equal to one hundred and ten per cent (110%) of the Advance, valid until the Advance is fully adjusted against deliveries / performance under the Contract;

AND WHEREAS at the request of the Supplier, [Name of the Bank], a **Scheduled Commercial Bank** having its branch at [address] (the "**Bank**"), has agreed to issue this Bank Guarantee;

NOW, THIS DEED WITNESSETH AS UNDER:

1. In consideration of the Beneficiary releasing the Advance to the Supplier, **we, [Name of the Bank], do hereby irrevocably and unconditionally undertake and guarantee** to pay to the Beneficiary, **on first written demand** and without any demur, protest, contestation, or reference to the Supplier, any amount up to the Guaranteed Amount of [●] (**Rupees [●] only**) merely on a written demand from the authorised signatory of the Beneficiary stating that the Supplier has failed to utilise the Advance for the purposes of the Contract, or has failed to refund the unadjusted balance of the Advance to the Beneficiary in accordance with the Contract.
2. **PARI PASSU REDUCTION:** Our liability under this Guarantee shall reduce **pari passu** with the adjustment of the Advance against deliveries / progress under the Contract, as confirmed in writing by the Beneficiary to the Bank from time to time. The reduction shall be reflected in the books of the Bank, but the original Guarantee instrument shall continue to remain in force at its full original value until the Validity Date or until cancellation by the Beneficiary, whichever is earlier.
3. **UNCONDITIONAL AND IRREVOCABLE:** This Guarantee is **absolute, unconditional, irrevocable and continuing**. The Bank shall make payment immediately on first written demand of the Beneficiary, without demur or contestation, and without reference to the Supplier. The

provisions of Clauses 4–10 of Part B (Performance Bank Guarantee) above relating to (a) waiver of defences, (b) disputes not affecting the Guarantee, (c) continuing guarantee / no discharge, (d) extension, (e) partial invocation, (f) no assignment by Supplier, (g) notices, (h) stamp duty, and (i) authority of signatory shall apply mutatis mutandis to this Guarantee.

4. **VALIDITY:** This Guarantee shall remain in force until **[Date; being a date not earlier than 60 days beyond the date by which the Advance is to be fully adjusted under the Contract]** (the "**Validity Date**"). The Bank shall extend the validity of this Guarantee on the written request of the Beneficiary made before the Validity Date.
5. **GOVERNING LAW AND JURISDICTION:** This Guarantee shall be governed by the laws of India and shall be subject to the **exclusive jurisdiction of the courts at New Delhi**.

IN WITNESS WHEREOF the Bank, through its duly authorised officer, has set its hand and seal on this **[•] day of [•], [•]**.

For and on behalf of [Name of the Bank]

Signature: _____
Name: _____
Designation: _____
Employee / Code No.: _____
Branch & Code: _____
Telephone & E-mail: _____

(Bank's Common Seal)

Witnesses:

1. _____ (Name, Address & Signature)
2. _____ (Name, Address & Signature)

ANNEXURE VI-APPENDIX

BANK CONFIRMATION OF GENUINENESS OF BANK GUARANTEE

(To be issued by the Issuing Bank on its letterhead, separately, on receipt of written request from Plaksha University)

Date: _____

To,

The Registrar

Plaksha University

Alpha, Sector 101, IT City Road, Mohali – 140306, Punjab, India

Sub: Confirmation of genuineness of Bank Guarantee No. [●] dated [●] issued in favour of Plaksha University

Dear Sir/Madam,

With reference to your letter / e-mail dated [●] seeking confirmation of the genuineness of the captioned Bank Guarantee, we, **[Name of the Bank], [Branch]**, do hereby confirm as follows:

1. Bank Guarantee No.: [●]; Date of issue: [●]; Validity up to: [●].
2. Issued in favour of: **Plaksha University, Mohali.**
3. Issued on the account of: **M/s [Supplier / Bidder Name].**
4. Guaranteed Amount: [●] (**Rupees [●] only**).
5. Type of Guarantee: **Bid Security / Performance / Advance Payment** (strike out as inapplicable).
6. The above Bank Guarantee has been duly issued by us in accordance with the powers vested in our authorised signatories, and has been duly entered into our records and accounts.
7. We confirm that the Bank Guarantee is genuine, subsisting, and in full force as on the date of this letter.
8. We confirm that we have received the requisite consideration / counter-indemnity / margin from the customer in respect of this Bank Guarantee.
9. This confirmation is issued without any liability or financial commitment on the part of the Bank beyond the express terms of the Bank Guarantee itself.

Yours faithfully,

For [Name of the Bank], [Branch]

Authorised Signatory: _____

Name & Designation: _____

Employee / Code No.: _____

(Bank's Seal)