



NOTES AND ORDERS

Ref:

Date: 18-09-2026

Subject: Request for approval: Call for tender of Twin-screw extruder

Respected Sir,

Under the Department of Biotechnology Project, Sanction No. 102/IFD/SAN/2999/2026-27, I am writing to request your approval to proceed with issuing a call for tender for the procurement of Twin-screw extruder as per the technical specifications attached herewith. As this procurement process falls within the purview of University regulations and requires administrative authorization.

Co-Principal Investigator

Head (Food Science and Technology)

Dean Projects

Registrar

Hon'ble Vice Chancellor for Approval



NOTES AND ORDERS

Ref.:

Date: 18-09-2026

Subject: Request for approval: Call for tender of Rheometer

Respected Sir,

I am writing to request your approval to proceed with issuing a call for tender for the procurement of rheometer as per the technical specifications attached herewith. As this procurement process falls within the purview of University regulations and requires administrative authorization.


Co-Principal Investigator


Head (Food Science and Technology)


Dean Projects

 03/10/2026
Registrar


Hon'ble Vice-Chancellor for Approval

Graphic Era (Deemed to be University)
Accredited by NAAC with Grade A+
Bell Road, Clement Town, Dehradun
Tel.: 0135-2644183,2642799
Website: www.geu.ac.in Email: registrar@geu.ac.in

Tender Notice No. GEU/2026/DBT-01

TENDER DOCUMENT

Procurement of Equipment Twin Screw Extruder and Rheometer

NOTICE INVITING e- TENDER (OPEN)

Tender in two bid systems (Technical and Financial) for Purchase of **Twin Screw Extruder and Rheometer** are invited on behalf of Graphic Era (Deemed to be) University, Bell Road, Clement Town, Dehradun. The last date of submission of tender (in two bid system) is 21st October, 2024 upto 17:00 hrs in the office of Registrar, Graphic Era (Deemed to be University), Bell Road, Clement Town, Dehradun, Uttarakhand.

The Graphic Era University requires the equipment Rheometer and Twin Screw extruder for the evaluation of food ingredients and development of various food products including meat analogue.

Interested parties are invited to bid the tender as per the terms and conditions attached with the tender document.

The invitation to tender is subject to fulfillment of instructions and conditions as per schedules below. Bidder should carefully read all the terms & conditions before submitting their offers.

Chapter	Please refer for details as :
1.	INSTRUCTIONS TO BIDDERS



2.	CONDITIONS OF CONTRACT
3.	TECHNICAL SPECIFICATIONS, SCHEDULE OF REQUIREMENTS AND ELIGIBILITY CRITERIA
4.	GENERAL TERMS & CONDITIONS
5.	FINANCIAL BID PROFORMA BOQ

This Invitation of Tenders is being issued with no financial commitment and the Graphic Era (Deemed to be) University, Dehradun reserves the right to change or vary any part thereof at any stage. University also reserves the right to withdraw the tender, should it become necessary at any stage.


Registrar
Graphic Era (Deemed to be) University



Chapter-1 Instructions to Bidders

1. The complete tender in pdf format can be downloaded from the Graphic Era (Deemed to be) University website www.geu.ac.in. Following documents are required to be submitted along with bids.
 - i. The Technical Bid and Financial Bid are to be submitted in a separate sealed envelope and both the sealed envelope should be kept in a third envelope superscribing "Tender for Procurement of Equipment Twin Screw Extruder and Rheometer, Graphic Era (Deemed to be) University. Financial offers should not be attached with the Technical Bid. In case, financial offer is found with the technical bid, the offer will be summarily rejected.
2. The bidders who are desirous of participating in tender shall submit their Technical bids in the prescribed format. The bidders should sign all statements, documents etc. owning full responsibility of the correctness/authenticity. The same could be verified with the originals by the University at any point of time.
3. Bidders are advised to submit their valid address, email address and mobile numbers. These would be used for any communication.
4. **Signing of Tender:** A person digitally signing the tender documents forming part of the tender on behalf of another person should have an authority to participate in the bid on behalf of such other person and if, on enquiry, it appears that the persons so signing had no authority to do so, the University **without prejudices would have every right to cancel such a bid.**
5. The Tender is to be submitted under "**TWO BID**" system i.e. Technical Bid and Financial/Commercial Bid in two separate sealed envelope and both the sealed envelope should be kept in a third envelope.
6. On the day of Tender opening only Technical bids will be opened. Price/Financial bid will be opened on a fixed later date for the successful technical bidders. The date of opening of Price Bid will be intimated to the successful technical bidders only.
7. No query or complain from bidder will be entertained after completion of bid opening in regard to bid opening or content of other's bid.
8. The Graphic Era (Deemed to be) University reserves the right to accept or reject any tender or the whole tender process at any time without assigning any reason what so ever.
9. **Rejection of Bids:** Canvassing by the Bidder in any form, unsolicited letter and post- tender correction may invoke summarily rejection.
10. Conditional tender i.e. tenders submitted incorporating bidder's own imposed condition(s) will be summarily rejected.

11. AMMENDMENT TO THE TENDER ENQUIRY/ TENDER SCHEDULE



At any time prior to the last date for receipt (submission) of bids, Graphic Era (Deemed to be) University may, for any reason, whether at its own initiative or in response to a clarification requested by a prospective bidder, modify the tender document by issuing an amendment and the amendment will be notified in website of the University which can be accessed by any prospective bidders and will be binding on them. In order to afford prospective bidders reasonable time to take the amendment into account in preparing their bids, Graphic Era (Deemed to be) University may, at its discretion, extend the last date for the Submission of Bids and Opening of Tenders.

12. The Tender Enquiry (or Tender Schedule) and Purchase order (or resultant contract) will be interpreted under Indian Laws.
13. **An undertaking** for UNDERSTANDING, compliance and fulfillment of T&C as well as eligibility criteria/technical parameters as mentioned in this Tender Enquiry is **to be furnished along with the TECHNICAL BID**. A proforma of undertaking to be furnished by the bidder is attached as **Annexure-I**.
14. **Clarification regarding contents of the Bids:** During evaluation and comparison of bids, the University may, at its discretion, ask the bidder for clarification of his bid. The request for clarification will be given in writing and no change in prices of the bid will be sought, offered or permitted.
15. **Preliminary Scrutiny:** Prior to the detailed evaluation, the University will determine the substantial responsiveness of each offer to the tender documents. For the purposes of these Clauses, a substantially responsive bid is one that conforms to all the terms and conditions of this Tender enquiry without material deviations. The University's determination of an offer's responsiveness is to be based on the contents of the tender offer itself without recourse to extrinsic evidence. The University will scrutinize the offers to determine whether they are complete, whether required technical documentations have been furnished, whether the documents have been properly signed, and whether the offers are in order. Price bids of the technically disqualified firms shall not be opened.
16. **Short-listing of Bidders:** The Graphic Era (Deemed to be) University will short-list technically qualified Bidders on the basis of technical parameters as given in **Chapter 3** of this tender. Only those firms shall be evaluated which are found to be fulfilling all the eligibility and qualifying requirement.
17. **The technical bids will be opened on 22nd October, 2026 at 11:00 hrs in the office of Registrar, Graphic Era (Deemed to be) University, Dehradun.** The Commercial Offers of short listed technically qualified Bidders will only be opened. The lowest bidder shall be considered for placement of supply order after complete clarifications and price negotiation as applicable.
18. **Technical Evaluation:** The Committee constituted by the Graphic Era (Deemed to be) University, will do the Technical Evaluation of the offers.



19. **Evaluation of Financial Bids:** The Financial bids of only technically successful bidders will be opened and ranking of the Bidders will be done according to the price quoted and comparison of rates will be made accordingly as per Financial Bid Proforma given in the Tender Document (**Chapter 5**).
20. **No commitment to accept lowest or any tender:** Will shall be under no obligation to accept the lowest or any other quotation received in response to this tender enquiry and shall be entitled to reject any or all offers including those received late or incomplete offers without assigning any reason whatsoever.
21. **Graphic Era (Deemed to be) University right to accept any offer and to reject any or all offers:** The GEU reserves the right to accept or reject any tender or reject all tenders at any time prior to award of contract, without thereby incurring any liability towards the affected Bidder(s) or any obligation to inform the affected Bidder(s) on the grounds for the University's action. Further, Graphic Era (Deemed to be) University, Dehradun reserves the right to place order for full quantity or part thereof, as considered necessary.
22. In the event any of the job quoted by the supplier in their tenders are covered under any services and liable for GST, in such cases specific indication about providing such taxable services and percentage/amount of GST chargeable thereon must be mentioned in the tender and such GST must be deposited in the Government treasury as per extant GST rules of Government of India and a proof of which shall be submitted by the Bidder to the University.
23. Any statutory **Certificate/Permission/License** required for supply of Equipment has to be procured by the firm at their own cost.
24. **Pre-bid conference:** If considered necessary by the University, a pre-bid conference for clarifying issues and clearing doubts, if any about the tender requirement and other allied technical parameters will be done by the University on a date as decided by the University at the Graphic Era (Deemed to be) University, Dehradun. The bidder may depute authorized representatives (competent to take on the spot decisions) for such discussions/ negotiations whenever called for.
25. **Option Clause:** The University can exercise an option to procure an additional or less quantity in accordance with the same terms and conditions as given in this tender document.
26. **Repeat Clause:** The University may procure the equipment on repeat order basis on the same cost, terms and conditions within a period of six months from the date of its original supply order.
27. **Inspection:** The inspection of the equipment will be carried out by the University's Purchase Committee in the premises of the manufacturer to ensure the quality of the material/equipment, before the supply is made by the agency.



On receipt of the equipment, inspection will be carried out by the Committee of the University. In case it is found that the equipment ordered are not meeting the requirement and not found to be conforming to the laid down specifications and are defective, the same shall not be accepted by the University.

28. **Delivery of equipment will be subjected to the acceptance, testing of the equipment after its installation/commissioning.**



Chapter-2

CONDITIONS OF CONTRACT

1. Graphic Era (Deemed to be) University, Dehradun, Uttarakhand intends to procure the equipment from the eligible, reputed and qualified firm/agency.
2. **Offer Validity Period:** The tender offer should be valid for a minimum period of **six months** from the date of opening of the technical bid/tender.
3. **Opening of Tenders:** Technical bids of the offers received with hard copy of the tender document along with all certificates will be opened on the date as specified in the tender. All tenders received without hard copy of the tender by the due date and time as mentioned above will be rejected. Further, if the same i.e. eligibility criteria given in the technical bid, will not comply to our tendered specifications/eligibility criteria shall be summarily rejected. The Financial Bids of the technically qualified/successful bidders i.e. who will technically qualify the tendered specifications in case of those firms that meet the technical specifications/parameters, will be considered for opening of their financial bids at a later date, which will be communicated to concerned suppliers/agencies before opening their Financial Bids.
4. **Payment Terms:**
 - a. The payment will be released after successful supply of equipment and its acceptance.
 - b. 80% will be released after the acceptance of the equipment by the University and training of the staff. Balance 20% payment shall be released against the Bank Guarantee (to be provided by the firm/agency) to cover the warranty obligation. The warranty required is for a period of two years after successful installation of the equipment.
5. **Time Period of Supply of Equipment:** The entire supply will have to be completed in all respect as per the stipulated time frame mentioned in the supply order, failing which action as per the penalty clause given in the supply order will be invoked.
6. At any time prior to the deadline for submission of bids, the University may, for any reason, whether at its own initiative or in response to a clarification requested by a prospective bidder, modify the Bid Document by amendment. Such amendments shall form an integral part of bid documents and it shall amount to an amendment of relevant clauses of the Bid Document.
7. **Evaluation & Comparison of Bids:** For the bids surviving the technical evaluation which have been found to be responsive the evaluation & comparison shall be made in accordance with the price quoted and comparison of rates will be made as per financial bid proforma given in the tender document (**Chapter-5**). The financial quote should only be submitted as per prescribed format; failing which their offer will be rejected. Conditional Bid shall not be accepted.



8. Sub-contracting of the supply order to any other firm is not allowed.

9. Force Majeure

- a) However, the agency/firm shall not be liable for forfeiture of its performance security, liquidated damages or termination for default, if and to the extent that, it's delay in performance or other failure to perform its obligations under the Contract is the result of an event of Force Majeure.
 - b) For purposes of this Clause, "Force Majeure" means an event beyond the control of the Supplier and not involving the Supplier's fault or negligence and not foreseeable. Such events may include, but are not limited to, acts of the University either in its sovereign or contractual capacity, wars or revolutions, fires, floods, epidemics, quarantine restrictions and freight embargoes.
 - c) If a Force Majeure situation arises, the agency/firm shall promptly notify the University in writing of such conditions and the cause thereof. Unless otherwise directed by the University in writing, the Service Provider shall continue to perform its obligations under the Contract as far as is reasonably practical, and shall seek all reasonable alternative means for performance not prevented by the Force Majeure event.
10. **Resolution of Disputes:** All disagreements, disputes, difference that may arise between the Graphic Era (Deemed to be) University and the agency/firm which cannot be resolved through mutual negotiations shall be referred to an Arbitrator appointed in accordance with the provisions of relevant Indian or International Law as the case may be. The venue of the proceedings and arbitration shall be Dehradun, Uttarakhand, India.
11. **Jurisdiction:** The obligations and liabilities arising out of this contract shall be construed in accordance with the laws of Union of India. The Court in Dehradun, Uttarakhand, India shall have the exclusive jurisdiction to try all or any of the dispute.
12. **Notices:** Any notice given by one party to the other pursuant to this contract/order shall be sent to the other party in writing or by e-mail and confirmed in writing to the other party's address specified in the contract. A notice shall be effective when delivered or on the notice's effective date, whichever is later.
13. Tenders which do not fulfill any or all of the above conditions or incomplete, are liable for rejection.
14. The bid, which is received by e-mail or in open envelop will not be considered and shall be summarily rejected.



Chapter-3

Technical Specification, Schedule of Requirement and Eligibility Criteria

The details of equipment with specifications and quantity required are given below:

Sl. No.	Item with technical parameters	Quantity Required
1	Laboratory-scale Twin Screw Extruder • Type: Laboratory-scale co-rotating twin-screw extruder, suitable for cereals, pulses, plant proteins, texturized proteins/meat analogues, snacks and encapsulation. • Barrel: Horizontal, modular/split, food-grade stainless steel; length 500–600 mm or more; screw diameter >20 mm; minimum 4 independently controlled heating/cooling zones. • Screw: Modular/interchangeable screw elements with provision for different configurations; complete set of conveying, mixing and kneading elements. • Screw speed: Variable, up to 1000 rpm or better. • Drive: Heavy-duty motor, preferably ≥11 kW; torque ≥30 Nm. • Throughput: Approximately 5–30 kg/h, with minimum feed requirement of 1 kg or less. • Feeder: Stainless-steel volumetric feeder with agitator and variable-speed screw; suitable for solid and liquid feeding. • Liquid feeding: Dedicated liquid injection port with digital peristaltic/metering pump, approximately 0.30 kW, pressure 8–10 bar. • Temperature: Operating temperature up to ≥200°C, with precision zonal temperature control and thermocouples. • Pressure: Suitable for high-pressure operation, preferably ≥250 bar, with pressure transducer. • Dies: Interchangeable standard, slit and thread dies; minimum 8–10 different die configurations, including	01 No.



	dies for breakfast cereals, texturized protein and encapsulation, with 2–3 blank dies. • Die cutter: Variable-speed die-face cutter, approximately ≥ 0.50 kW, 500–2000 rpm. • Pelletizer: Variable speed and adjustable length • Chiller: Cooling range approximately -10°C to $+75^{\circ}\text{C}$, with cooling capacity around 9 kW or better; integrated stainless-steel cooling circuits. • Control: Digital/PLC-based control of screw speed, temperature, pressure, torque, feeder rate, liquid feed and cutter speed, with safety interlocks and emergency stop. • Accessories: All necessary electrical accessories, cables, tools, fittings, thermocouples, pressure sensors, die holders and feeding/cooling accessories to be included. • Optional: Roller/sheeter for preparation of extruded sheets to be quoted separately. • Construction: All product-contact parts shall be food-grade stainless steel and corrosion/wear resistant. • Warranty: 2 years comprehensive warranty; additional 3-year AMC to be quoted. • Installation & Training: Complete installation, commissioning, demonstration and operator training to be included. • Manufacturer: International manufacturer will be preferably considered • Documentation: Technical catalogue, detailed compliance statement, operation/maintenance manuals, calibration certificates and list of reference installations to be provided. • Software	
2.	Rheometer	01 No.



- Type: Advanced rotational rheometer with controlled-stress and controlled-shear-rate operating modes.
- Measurement modes: Steady-state flow, controlled-stress, controlled-rate, oscillatory, creep, recovery, stress relaxation and thixotropy/structural recovery.
- Torque range: Wide dynamic torque range with high torque sensitivity, suitable for both low-viscosity liquids and highly structured food/polymer systems.
- Angular velocity range: Minimum approximately 10^{-7} to 300 rad/s or better.
- Shear-rate range: Minimum approximately 10^{-6} to 10^3 s⁻¹ or better.
- Frequency range: Minimum approximately 10^{-7} to 100 Hz or better for oscillatory measurements.
- Oscillation measurements: Capability for determination of storage modulus (G'), loss modulus (G''), tan δ and complex viscosity.
- Strain/stress control: Capability for amplitude/strain sweep and stress sweep measurements for determination of the linear viscoelastic region (LVR).
- Temperature control: Integrated temperature-controlled measuring system, preferably -20 to 200 °C or better.
- Temperature accuracy/stability: ± 0.1 °C or better.
- Temperature ramping: Programmable heating/cooling ramps for temperature sweep, gelation, melting and structural-transition studies.
- Normal-force measurement: Integrated normal-force measurement system for characterization of structured and viscoelastic materials.
- Gap control: Motorized/automatic gap adjustment with high positional accuracy and automatic zero-gap functionality.
- Bearing system: High-sensitivity, low-friction bearing system suitable for measurement of low-viscosity and weakly structured samples.
- Motor: High-performance motor capable of controlled-stress, controlled-rate and oscillatory operation.
- Data acquisition: Real-time acquisition of torque, shear stress, shear rate, viscosity, strain, frequency, temperature, G' and G''.



	• Software: Dedicated Windows-based rheology software for instrument control, method development, data acquisition, analysis, data export and report generation. • Data analysis: Capability to determine flow curves, apparent viscosity, yield stress, power-law parameters, G', G'', $\tan \delta$, complex viscosity, creep compliance, recovery and thixotropic parameters. All accessories required for analysis of food material must be provided	
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Eligibility criteria for bidder:

- 1) Technical Bid must be received by the due date and time of receipt of technical bid; failing which their offer will not be considered by the University.
- 2) Firms should have a minimum **average annual turnover of at least Rs. 05 crores** in the past 03 years. A copy of balance sheet & profit & loss A/c of past three years certified by the Chartered Accountant should be attached with the technical bid. Copy of IT Return (FY 2023-24, 2024-25 and 2025-26) should be attached with the technical bid; failing which their offer will not be considered by the University.
- 3) The bidding firm/agency should be Original Equipment Manufacturer (OEM) of the equipment OR their authorized Distributor/Dealer in India. An authorization certificate to this effect should be attached with the Technical Bid; failing which their offer will not be considered by the University.
- 4) The bidding firm/agency should have a minimum of three (03) years of experience in supply of similar equipment to the Government/PSU/Autonomous bodies and reputed Universities/Institutions; documentary evidence should be attached with the Technical Bid; failing which their offer will not be considered by the University.
- 5) Certificate of registration of the company/agency should be attached with the technical bid.
- 6) The bidder should also have a full-fledged office in any part of the country and should have adequate number of qualified personnel on the payroll / establishment of the company, a declaration duly signed & stamped should be submitted with the technical offer.
- 7) The agency will be required to make a Presentation of their equipment before the University's Committee, if required for which a separate communication will be given to the bidding agency/firm. A consent letter for the same should be attached with the Technical Bid; failing which their offer will not be considered by



the University.

Note: If any of the parameters/eligibility criteria mentioned above does not meet the tendered specifications/parameters, their offer will not be considered and shall be rejected. The financial bid of those firms will only be opened who qualify in technical parameters given above.



Chapter-4

GENERAL TERMS & CONDITIONS

- (1) The Financial offer shall be in accordance with the proforma given in **Chapter-5**
 - (2) **TDS** will be deducted as per prevailing Income Tax Laws and certificate to this effect shall be provided to the Bidder by the University. The responsibility of paying the GST as per prevailing rates and as claimed in the bill amount, will be of the Bidder. The Bidder will be required to furnish proof of such deposit to the University.
 - (3) **Evaluation of Technical Bids:** The agency who submit their tender document by the due date and time. The Technical Bids will be evaluated by the University's Committee and Financial Bids of shortlisted agencies only will be opened by the University.
 - (4) **Evaluation of Financial Bids:** The agencies are required to quote their rates in the financialbid proforma (Chapter-5) only as given in the Tender document, failing which their offer will not be considered by the University.
 - (5) **Supply Order:** The supply order will be given to the lowest bidder.
 - (6) Number of corrections and or alterations in the tender must be specifically mentioned. All the corrections and alterations made in the tender/quotations must be duly countersigned by the authorized signatory, without which tender will not be considered.
 - (7) The University's determination of an offer's responsiveness is to be based on the contents of the tender offer itself without recourse to extrinsic evidence. The University will scrutinize the offers to determine whether they are complete, whether required technical documentations have been furnished, whether the documents have been properly signed, and whether the offers are in order. Price bids of the technically disqualified firms shall not be considered and opened.
 - (8) Conditional offer giving discount on payment terms, etc. will not be considered.
 - (9) Each Bidder should clearly specify that the Bidder agrees to **abide by the conditions** of this tender document on their **printed letter head** with telephone/fax numbers and e-mail, etc. should be attached with the technical bid.
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Chapter -5

FINANCIAL BID PROFORMA

(Rates should be quoted in this Proforma only)

Sl. No.	Item with technical parameters	Quantity Required	Amount (In Rupees)
1	Laboratory-scale Twin Screw Extruder • Type: Laboratory-scale co-rotating twin-screw extruder, suitable for cereals, pulses, plant proteins, texturized proteins/meat analogues, snacks and encapsulation. • Barrel: Horizontal, modular/split, food-grade stainless steel; length 500–600 mm or more; screw diameter >20 mm; minimum 4 independently controlled heating/cooling zones. • Screw: Modular/interchangeable screw elements with provision for different configurations; complete set of conveying, mixing and kneading elements. • Screw speed: Variable, up to 1000 rpm or better. • Drive: Heavy-duty motor, preferably ≥11 kW; torque ≥30 Nm. • Throughput: Approximately 5–30 kg/h, with minimum feed requirement of 1 kg or less. • Feeder: Stainless-steel volumetric feeder with agitator and variable-speed screw; suitable for solid and liquid feeding. • Liquid feeding: Dedicated liquid injection port with digital peristaltic/metering pump, approximately 0.30 kW, pressure 8–10 bar.	01 No.	



- **Temperature:** Operating temperature up to $\geq 200^{\circ}\text{C}$, with precision zonal temperature control and thermocouples.
- **Pressure:** Suitable for high-pressure operation, preferably ≥ 250 bar, with pressure transducer.
- **Dies:** Interchangeable standard, slit and thread dies; minimum **8–10 different die configurations**, including dies for breakfast cereals, texturized protein and encapsulation, with 2–3 blank dies.
- **Die cutter:** Variable-speed die-face cutter, approximately ≥ 0.50 kW, 500–2000 rpm.
- **Pelletizer:** Variable speed and adjustable length
- **Chiller:** Cooling range approximately -10°C to $+75^{\circ}\text{C}$, with cooling capacity around **9 kW or better**; integrated stainless-steel cooling circuits.
- **Control:** Digital/PLC-based control of screw speed, temperature, pressure, torque, feeder rate, liquid feed and cutter speed, with safety interlocks and emergency stop.
- **Accessories:** All necessary electrical accessories, cables, tools, fittings, thermocouples, pressure sensors, die holders and feeding/cooling accessories to be included.
- **Optional:** Roller/sheeter for preparation of extruded sheets to be quoted separately.
- **Construction:** All product-contact parts shall be food-grade stainless steel and corrosion/wear resistant.



	• Warranty: 2 years comprehensive warranty; additional 3-year AMC to be quoted. • Installation & Training: Complete installation, commissioning, demonstration and operator training to be included. • Manufacturer: International manufacturer will be preferably considered • Documentation: Technical catalogue, detailed compliance statement, operation/maintenance manuals, calibration certificates and list of reference installations to be provided. • Software		
2.	Rheometer • Type: Advanced rotational rheometer with controlled-stress and controlled-shear-rate operating modes. • Measurement modes: Steady-state flow, controlled-stress, controlled-rate, oscillatory, creep, recovery, stress relaxation and thixotropy/structural recovery. • Torque range: Wide dynamic torque range with high torque sensitivity, suitable for both low-viscosity liquids and highly structured food/polymer systems. • Angular velocity range: Minimum approximately 10^{-7} to 300 rad/s or better. • Shear-rate range: Minimum approximately 10^{-6} to 10^3 s⁻¹ or better. • Frequency range: Minimum approximately 10^{-7} to 100 Hz or better for oscillatory measurements.	1 No.	



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| | <ul style="list-style-type: none"> • Oscillation measurements: Capability for determination of storage modulus (G'), loss modulus (G''), $\tan \delta$ and complex viscosity. • Strain/stress control: Capability for amplitude/strain sweep and stress sweep measurements for determination of the linear viscoelastic region (LVR). • Temperature control: Integrated temperature-controlled measuring system, preferably -20 to 200 $^{\circ}\text{C}$ or better. • Temperature accuracy/stability: ± 0.1 $^{\circ}\text{C}$ or better. • Temperature ramping: Programmable heating/cooling ramps for temperature sweep, gelation, melting and structural-transition studies. • Normal-force measurement: Integrated normal-force measurement system for characterization of structured and viscoelastic materials. • Gap control: Motorized/automatic gap adjustment with high positional accuracy and automatic zero-gap functionality. • Bearing system: High-sensitivity, low-friction bearing system suitable for measurement of low-viscosity and weakly structured samples. • Motor: High-performance motor capable of controlled-stress, controlled-rate and oscillatory operation. • Data acquisition: Real-time acquisition of torque, shear stress, shear rate, viscosity, strain, frequency, temperature, G' and G''. • Software: Dedicated Windows-based rheology software for instrument control, method development, data acquisition, analysis, data export and report generation. • Data analysis: Capability to determine flow curves, apparent viscosity, yield stress, power-law parameters, G', G'', $\tan \delta$. | | |
|--|--|--|--|



	complex viscosity, creep compliance, recovery and thixotropic parameters. All accessories required for analysis of food material must be provided		
2.	Discount, if any		
3.	Taxes if any.		
4.	Total net amount		
5.	Rates for AMC after the warranty period is over (These rates will not form part of financial evaluation and deciding the lowest bidder).		

Note:

The firm will be required to give hands on training of one week to the designated staff of University at its premises after the equipment have been installed.

The firm will give warranty for a period of two years after the installation of equipment. Firm may separately quote for Annual Maintenance Charges (AMC) separately after the warranty period is over. The rates quoted for AMC will not form part of Financial Bid evaluation and deciding the lowest bidder.

The agency is required to clearly mention about the warranty obligation and items covered during warranty and AMC.



**UNDERTAKING TO BE SUBMITTED BY THE FIRM/BIDDER
(To be given on Company Letter Head)**

The points/conditions mentioned in University's tender notice No.

_____ have been taken into consideration while submitting this Tender/quotation in sealed cover. We declare that all terms conditions mentioned in Tender Notice are acceptable to us and will abide. We also declare that we have never been blacklisted by any Government Department/UTs/PSU/University etc.

Signature:

Name & Designation of the person:

Name of the Firm Agency with Address:

Telephone number/Email ID:

Stamp of the Firm/Agency:

