



TENDER DOCUMENTS

Mechanical Lab Equipment

NUTECH / SCM / Mechanical Lab Eqpt (RE) 2021 / TD-202

NATIONAL UNIVERSITY OF TECHNOLOGY

TENDER NOTICE

National University of Technology (NUTECH)

NUTECH / SCM / Mechanical Lab Eqpt (RE) 2021 / TD-202

1. Sealed bids are invited from Government / FBR Registered Firms for the procurement of Lab Equipment for NUTECH on **CPT Basis**.
2. Tender documents containing terms, conditions and detailed specifications of items (including draft contract) can be downloaded from NUTECH website "<https://nutech.edu.pk/downloads/procurement/scm-tenders/> w.e.f **29 January 2021**.
3. Quotations shall be submitted as per requirement of the tender documents.
4. Bidders will be required to submit **Bank Draft / CDR** equal to **5%** of quoted value as Bid Bond in favor of National University of Technology (NUTECH).
5. Submit Rs 1500/- as Tender fee in favor of NUTECH HBL Account (**NUTECH Tendering and Contracts, 5037-7000210755**). Please attach bank receipt with technical offer. Offers will not be entertained without payment of processing fee.
6. Details for Submission & Opening of bids for tender are as under:-

Ser	Description	Submission	Tender Opening	Completion Days
a.	Mechanical Lab Equipment (TD-202)	1030 hrs on 03 March 2021	1100 hrs on 03 March 2021	120 Days

Deputy Director (Supply Chain Management)

NATIONAL UNIVERSITY OF TECHNOLOGY, UPROAD, I-12 ISLAMABAD

Tel: 0092-51-5476768, Ext: 178

NATIONAL UNIVERSITY OF TECHNOLOGY

SUPPLY CHAIN MANAGEMENT

INVITATION TO TENDER

Tender submission time: 1030 hours, 03 March 2020

1. NUTECH desires to procure the list of item(s) / Store(s) on **CPT** basis. as per **Annexure-A**. Interested bidders are requested to send their bids through courier or deliver at NUTECH under "Single Stage – Two Envelopes" (two envelopes placed together in third envelope), marked clearly as "**Technical Offer**" and "**Commercial Offer**" respectively to the undersigned, latest by or before above mentioned due date.

2. **Conditions Governing Contracts.** The contract made as result of this IT will be in accordance with the **draft contract published on NUTECH University website** and other special conditions (Mentioned in this document) that may be added to given contract for the supply of Lab Equipment.

3. **Delivery of Tender.** The offer is to be submitted as under:-

a. **Technical Offer.** Technical Offer should contain only Annexure-A, Annexure-A-1 & Annexure B duly filled in (supported with relevant technical literature / details / catalogues etc) and receipt of tender processing fee. Copy of bid bond WITHOUT MENTIONING PRICE should be attached with technical offer. Only relevant technical details i.e literature/brochures) without mentioning the financial aspect of the offer should be enclosed in an envelope. In technical proposal, all items must have the brand names, model number, manufacturer's name, country of origin, manufacturer's warranty including parts with complete specs and brochures. Re-conditioned and re-furbished equipment shall not be acceptable. Following information will be clearly marked on the envelope:

- (1) Technical Offer
- (2) Original Performa Invoice (without price)
- (3) Tender number
- (4) Date/ time of opening

- b. **Commercial Offer.** Commercial Offer will contain Annexure-C and bid bond (Dully mentioned and placed in separate envelope. The offer indicating the quoted price (IN USD only) in figures as well as in words along would be enclosed in an envelope. Following information will be clearly marked on the envelope.
- (1) Commercial Offer
 - (2) Original Performa invoice with price
 - (3) Tender number
- c. Both the envelopes i.e. commercial offer and technical offer would be enclosed in yet another properly sealed envelope that will be marked with address of this office only. There should be clear indication that this envelope contains tender documents.
- d. The tender duly sealed will be addressed to the following:-

Deputy Director (Supply Chain Management Office)
NATIONAL UNIVERSITY OF TECHNOLOGY (NUTECH)
I J P ROAD, I-12 ISLAMABAD
Tel: 0092-51-5476768, Ext: 227

4. **Date and Time for Receipt of Tender.** Sealed bids with detailed specifications should reach SCM office latest by **1030 hours on 03 March 2020**. Delay occurring in post shall not be accepted. Tenders received after the appointed / fixed time will NOT be entertained. The appointed time will, however, fall on next working day in case of closed / forced holiday.
5. **Tender opening.** The offers shall be opened 30 minutes after submission time. Commercial offers will be opened at later stage if Technical Offer is found acceptable on examination by technical authorities. Date and time for opening of commercial offer shall intimated later. Only legitimate / registered representatives of firm will be allowed to attend tender opening.
6. **Validity of Offer.** The validity period of quotations must be indicated and should be 90 days from the date of opening of financial offer.
7. **With drawal of offer.** If the firm withdraws its offer within validity period the competent authority may place such firm under embargo for a period, which may be extended up to one year. Moreover, the Earnest Money of the firm will be confiscated.

8. **Documents.** Following information / copy of documents must be provided / attached with offer:-

- a. A copy of letter showing firm's financial capability.
- b. NTN/GST number be mentioned on the offer and copy of registration Certificate issued by Sales Tax Department, attached.
- c. Foreign supplier to provide its Registration Number issued by respective Department of Commerce authorizing export of subject stores.
- d. Annexes A, A-1, B and C and special conditions must be signed and stamped. **ATTACH ONLY RELEVANT DOCUMENTS.**
- e. Complete all Annexes as per given format. Do not use your format or letter head. Offer may be rejected if given format is not followed.
- f. OEM/principal agency agreement must be provided.

9. **Disqualification.** Offers are liable to be rejected if:-

- a. Validity of offer is not quoted as required in IT documents.
- b. Any deviation from the General/ Special / Technical Instructions.
- c. Offers are found conditional or incomplete in any respect.
- d. Copy of EM/Bid Bond & Tender processing fee (with tech offer) and original EM/Bid Bond (with fin offer) are NOT attached.
- e. Multiple rates are quoted against one item.
- f. Manufacturer's relevant brochures and technical details on major equipment assemblies are not attached in support of specifications.
- g. Offer received later than appointed / fixed date and time.
- h. Subject to restriction of export license.
- i. Offers (Commercial / technical) containing non-initialled / unauthenticated amendments / corrections / overwriting. If the validity of the agency agreement has expired. The commercial offer against FOB / CIF / C&F tender quoted in local currency.
- j. If the offer is found to be based on cartel action in connivance with other sources/participants of the tender.

10. **Earnest Money / Bid Bond.** Commercial Offer must be accompanied with a Bid Bond (CDR/Pay Order/Bank Draft) in agreement of faithful compliance of the conditions of Contract. This amount will be equivalent to 5% of the total quoted value.

The Bid Bond amount submitted by the successful bidder will however be refunded on effective termination of Contract. (The Bid Bond will be forfeited in case of default by the bidder from his commitments made through his offer). Submission of Bid Bond is mandatory; otherwise your offer will be rejected. Bid Bond will be used as performance guarantee till the delivery of stores, otherwise separate performance guarantee valued at 5 % of contract will be submitted by successful firm till stores are delivered and inspected.

11. **Return of Earnest Money/Bid Bond.**

- a. Bid Bond to the unsuccessful bidders will be returned on finalization of the lowest evaluated bidder.
- b. Bid Bond of the successful bidder/bidders will be returned on submission of Bank Guarantee/Bid bond against warranty period OR Bid bond retained for the warranty period as the case may be.

12. **Terms of Payment/ LC Charges**

(In FOB cases)

- a. All categories payment will be made through letter of credit (LC). LC opening charges in Pakistan are to be borne by NUTECH. Payment will be made through irrevocable LC in favour of Manufacturer.

In FOR cases

- b. 20% advance payment will be made to the Seller on provision of unconditional Bank Guarantee/ CDR/ DD/ Pay order. Advance BG/CDR/DD/Pay order will be submitted at the time of signing the contract.
- c. 80% payment will made to the Seller after receipt and confirming the correctness of ordered specifications, installation, commissioning OR as the case may be i.e through Inland LC.

13. **Warranty/ Bank Guarantee (BG). 2 Years** against **5% Bank Guarantee/CDR/Pay Order/Bank Draft** of the store value will be required from the successful bidders from the date of commissioning as performance bond. BG submitted shall remain valid for up to 60 days beyond completion of warranty period.

14. **Insurance:-** Insurance will be NUTECH's responsibility through NICL.
15. **Freight charges /Misc charges:** All charges such as packing, forwarding, local freight, loading and unloading, installation and commissioning, custom clearance, orientations, on job training or any other will be part of quoted price. Delivery till NUTECH will be firm's responsibility and all associated costs will be part of quotation as well.
16. **Warranty.** All goods /store offered would be brand new, from current year of production and will be governed as per warranty clause. The warranty period may be covered by BG as depending on the value /criticality of the tender equipment.
17. **Delivery Schedule.** Store will be delivered within **120 Days** from contract signing date.
18. **Force Majeure.** If non-compliance with the period of delivery or services can be proved to be due to Force Majeure, such as but not limited to mobilization, war, riot, strike, lockout or the occurrence of unforeseen events, the period shall be reasonably extended.
19. **Subletting** Suppliers are not allowed to sublet wholly or part of the contract to any other firm /company without prior permission by NUTECH. Firm found in breach of the clause will be dealt with as per purchaser's right and discretion.
20. **Arbitration.** The dispute shall referred for adjudication to a board comprising of Pro-Rector NUTECH as Chairman and two arbitrators, one to be nominated by each party. The arbitration proceeding shall be held in Pakistan under Pakistan Law. The venue of arbitration shall be the place from which the contract is issued or such other place as the purchaser at his discretion may determine. Arbitration award so given will be firm and final.
21. **Export License/Permit /End User Cert.** It shall be the responsibility of the Supplier to obtain from the Government concerned all permits and export licenses, etc required to enable each consignment to be shipped immediately as per the delivery schedule. In case the supplier fails to arrange export license within 30 days of signing the contract the purchaser reserves the right to cancel the contract on the risk and expense of the supplier without prior notice. The purchaser will provide End

User Certificate for acquisition of export license to the supplier (format to be provided by the supplier for respective country within 10 day of signing of the contract).

22. **Technical Specification:** The supplier will provide OEM certificate, quality certificate /inspection document to the purchaser confirming the quality of the product being supplied under this contract .Store must bear the manufacturer's identification marking /monogram.

23. **Inspection /Testing of Store:** Inspection testing will be carried out at NUTECH by the concerned inspection team as detailed by the respective department in accordance with the laid down Acceptance Criteria. (Acceptance Test Procedure (ATPs)/Drawing /Test standard and specification). **The supplier will provide ATPs with technical offer.** Mutually agreed/approved ATPs will form part of contract to govern the inspection of store subsequently.

24. **Requirement of Samples.** The requirement of tender sample will be included in the case if required for evaluation by technical authorities'. Beside this advance sample if required will be also made part of the IT as well as the contract.

25. **Change In Specification / Mfr / Model.** No alternation marked/brand and quality of store will be entertained after the tender have been opened.

26. **Checking of Store at Consignee End.** All stores will be checked at Consignee's end in the presence of the supplier's representative. If for some reason, the supplier decides not to nominate his representative for such checking, an advance written notice to this effect will be given by the supplier to the consignee prior to immediately on shipment of store. In such an event the supplier will clearly undertake that decision of consignee with regard to quantities and description of consignment will be taken as final and discrepancy found will be accordingly made up by supplier. In all other cases the consignee will inform the supplier about arrival of consignment immediately on receipt of store through registered email/letter and telephone. If no response from the supplier is received within 15 days from initiation letter the consignee will have the right to proceed with the checking without supplier's representative .Consignee's report on checking of the stores will be binding on the supplier in such cases.

27. **Packing /Marking.** The supplier shall be responsible for proper packing of the Store in standard export packing worthy of transportation by sea /air /road rail so as to ensure their content being free from lose or damages due to faulty packing on arrival at the ultimate destination. Packing of stores will be done at the expenses of the supplier. All packing cases, containers and other packing material shall become the property of the NUTECH on receipt. Any loss occurred /demurrage paid due to wrong marking will be made good by the supplier

28. **Original Performa Invoice:** Original Performa invoice must have following components incorporated:-

- a. HS Code
- b. Incoterm
- c. Payment Terms
- d. Origin of good
- e. Port of shipment
- f. Address of OEM
- g. Seller acceptance (on Performa Invoice)
- h. Invoice Date
- i. Latest date of shipment
- j. Seller complete bank detail

Note: Performa Invoice in the name of NUTECH in case of FOB cases & in the name of local partner in case of FOR cases.

29. **General Instructions:** Following must be noted:-

- a. The firm should provide point to point acceptance of each clause of IT and special instructions attached with IT.
- b. Firm will render a certificate with technical offer that firm is neither defaulter nor blacklisted by any Government / semi Government organization directly or indirectly. (On Judicial Paper)
- c. Rates should be quoted on Free Delivery basis at NUTECH Islamabad.
- d. The stipulated delivery period should be strictly adhered to. Any anticipated delay that is beyond the control of Seller will be informed (in writing) well in advance of the expiry of the due date of the activity along with reasons thereof, requesting for the grant of extension in

delivery period. If the Seller fails to do so, or the Buyer is not convinced with the rationale provided by the Seller, Liquidated Damages up to/at 2% per month or part thereof, will be imposed. However, the maximum limit of the Liquidated Damages will not exceed 10% of the delayed store value.

- e. If even after applicability of 10% LD, the Seller fails to deliver the required stores, the Buyer will be at liberty to Cancel the contract, and /or procure the stores from an alternate source, on the Seller's "Risk & Cost/Expense". In that case, the Seller will be bound to make payment to the new source through NUTECH. The purchaser's decision under this clause shall NOT be subjected to arbitration.
- f. NUTECH reserves the right to cancel the Contract without assigning any reason whatsoever during its currency / execution / after placement, if the firm is found to be involved in any dubious activity, litigation, lacking to meet contractual obligations with the purchaser or is blacklisted with any other Public procurement agency. No claims / loss /damage of whatsoever nature shall be entertained and NUTECH's decision in this regard will be final / binding on the Seller.
- g. An appropriate amount may be paid for mobilization against Bank Guarantee/CDR/Demand Draft/Pay Order.
- h. Firms with previous pending/outstanding projects/business and unsatisfactory performance with NUTECH may not be considered for award of any further business.

Deputy Director
Supply Chain Management Office

Annex-A**Technical Specifications****NUTECH / SCM / Mechanical Lab Eqpt (RE) 2021 / TD-202**

Ser	Part No	Items	Description	A/U	Country of Origin	Qty Req	Bidder Compliance	
							Yes	No
1		Nozzle Performance Test Unit with DAQ System and Software	<ul style="list-style-type: none"> • Equipment designed to allow students to investigate and study the performance of a nozzle (kinetic energy and thrust). • A floor standing or Bench top unit. • Anodized aluminum structure and panels of painted steel. • Main metallic elements of stainless steel • Demonstration of the thermodynamics of the adiabatic expansion of air through subsonic and supersonic nozzles • Chamber made of stainless steel or equivalent • Chamber Dia: Approx. 220mm • Height: Approx. 420mm • Nozzle Kit containing 4-6 nozzles with minimum five nozzles of 2 mm of nominal throat minimum <ul style="list-style-type: none"> ○ Convergent Nozzles: Min. 1 nozzle with approx. ratio of 1 ○ Convergent/Divergent Nozzle: 3-4 nozzles with approx. 1.3, 1.5, 1.7 and 2.1 ratio. • A pressure regulator to maintain the pressure in the chamber. Range: 0-12bar approx. • Min. 2 pressure sensors to measure the pressure at inlet and outlet • Min 2 temperature sensors “J” or “K” type to measure the temperature inside the chamber • Flow sensors with range of approx. 0-600 	No	Europe /North America	1		

		<p>l/min to measure the flow rate in the chamber</p> <ul style="list-style-type: none"> • Adjustable on/off valves to direct the air • Force sensors ranging approx. 4N • Orifice dia: approx. 60mm • Compatible and requisite air compressor for supply of compressed air during operation of equipment • DAQ System for instant recording of multiple readings and automatic calculations • DAQ System must be based upon National Instruments Data Acquisition Board for <ul style="list-style-type: none"> ○ Real time curves representation about system responses ○ Real time PID control for parameters involved in the process ○ Analog input with 16 channels and Sampling rate up to: 250 KS/s (kilo samples per second) ○ Analog output with 2 Channels and Maximum output rate up to: 900 KS/s ○ Digital Input / Output with 24 channels <p>Experimental Capabilities:-</p> <ul style="list-style-type: none"> • The phenomenon of choked flow corresponding to sonic velocity at a nozzle throat • Determination of jet reaction and specific thrust at a variety of inlet and back pressure. • Determination of inlet pressure effect on mass flow rate, for a given back pressure. • Comparison of actual mass flow rate with the theoretical value. • Determination of the back pressure effect on 					
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			<p>the mass flow rate.</p> <ul style="list-style-type: none"> • Nozzle efficiency calculation. • Determination of the jet velocity and the nozzle efficiency. • Determination of the jet reaction and the specific pushing • Measurement of mass flow rate and coefficient of discharge. <p>Or Equivalent</p> <p>Ranges and values are approximate and close values will be acceptable</p>					
2		Forces in Truss Apparatus with DAQ	<ul style="list-style-type: none"> • Bench top redundant truss structure with frame and DAQ • Trusses to be made of stainless steel • Bonded into joint pieces/bosses • Effective truss length to be 140mm approximate • Two of the trusses are to specially designed so that one of the trusses can act as the redundant truss and can be added or taken out • Each truss member to have full bridge (i.e, 4 off) strain gauges attached, comprising 2 longitudinal (to relieve the effect of bending) and 2 transverse gauges (to negate temperature effect). • Each strain gauge to produce a response of approximate 2.6 of the true strain • Vertical and Horizontal Members: approximate 400mm centres • Acrylic Truss Members: 25(H) x 10(W) mm • Loading Mechanism: 0...500N Minimum 	No	Europe /North America	1		

		<ul style="list-style-type: none"> • Digital Dial Gauge: Approximate 12.7mm travel; 0.01mm resolution • Half Bridge Strain Gauging • Accessories container • Instruction manual • With complete supporting accessories • Fully automatic DAQ System with software • Software to do two things: display and collect data, and allow 'virtual' simulated experiments • Interface unit links to load cells and other instruments in the Structures range to send data to a suitable computer • Required Services, Assembly and Installation, Interface and Control Software, Starting-up, Safety, Maintenance, Calibration & Practices Manuals. <p>Or Equivalent</p> <p>Ranges and values are approximate and close values will be acceptable</p>					
3	General Mechanics Laboratory-Base Panel with following six modules	<ul style="list-style-type: none"> • Base support structure to mount the elements of modules in order to undertake the experiments. • The panel should be pierced with equidistant holes that to take measurements during the experiments. • Bench-top unit. • Anodized aluminum frame and panels made of painted steel. • The holes on the base panel to be accurately spaced at around 20-30 mm centers. • Supports, brackets and elements should be required to work with any of the modules in 	No	Europe /North America	2		

			the base panel. Or Equivalent					
	3a	Static Experiments Module	<ul style="list-style-type: none"> • Compatible with item at Sr. No. 3 • Center of gravity of various shaped plates: Rectangle. Circle. Triangle. T. Kite. Irregular. • Drawing panel. • Three to five cords and ring. • Beam balance. • Two forces equality divided. • The simple pendulum. • Pivot screw. • Adjustable hooks. • Set of weights: <ul style="list-style-type: none"> ○ 10 weights of 0.01 N. ○ 4 weights of 0.05 N. ○ 10 weights of 0.1 N. ○ 2 weights of 0.5 N. ○ 4 weights of 1 N. ○ 2 weights of 2 N. ○ 1 weight of 5 N. • Weight hooks. • Pulleys. • Screws and Knurled nuts. • Large ext. spring and small ext. spring. • Dynamometer. • Spare rope. Or Equivalent	No	Europe /North America	1		
	3b	Load Elevation Mechanism Experiments Module	<ul style="list-style-type: none"> • Compatible with item at Sr. No. 3 • Three pulley blocks. • Two pulley blocks. 	No	Europe /North America	1		

		<ul style="list-style-type: none"> • Wheel and axle set. • Weston differential chain block. • Screw jack. • Support screw. • Adjustable hooks. • Set of weights: <ul style="list-style-type: none"> ○ 10 weights of 0.01 N. ○ 4 weights of 0.05 N. ○ 10 weights of 0.1 N. ○ 2 weights of 0.5 N. ○ 4 weights of 1 N. ○ 2 weights of 2 N. ○ 1 weight of 5 N. • Weight hooks. • Pulleys. • Adjustable pulley. • Single pulley block. • Knurled nuts. • Dynamometer. • Spare rope. • Screws. <p>Or Equivalent</p>						
	3c	Transmission Experiments Module	<ul style="list-style-type: none"> • Compatible with item at Sr. No. 3 • System of belt drive (includes flat belt, round belt and leather strip). • Chain drive. • Simple gear train. • Bevel gears. • Worm gear. • Universal coupling. • Support screw. • Adjustable screws. 	No	Europe /North America	1		

			<ul style="list-style-type: none"> • Set of weights: <ul style="list-style-type: none"> ○ 10 weights of 0.01 N. ○ 4 weights of 0.05 N. ○ 10 weights of 0.1 N. ○ 2 weights of 0.5 N. ○ 4 weights of 1 N. ○ 2 weights of 2 N. ○ 1 weight of 5 N. • Weight hooks. • Pulley. • Screws and knurled nuts. • Dynamometers. • Spare rope. <p>Or Equivalent</p>					
	3d	Dynamic Experiments Module	<ul style="list-style-type: none"> • Compatible with item at Sr. No. 3 • The spring balance. • Wheel. • Centrifugal force system. • The simple pendulum. • Adjustable screw. • Set of weights: <ul style="list-style-type: none"> ○ 10 weights of 0.01 N. ○ 4 weights of 0.05 N. ○ 10 weights of 0.1 N. ○ 2 weights of 0.5 N. ○ 4 weights of 1 N. ○ 2 weights of 2 N. ○ 1 weight of 5 N. • Weight hooks. • Adjustable pulley. • Screws and knurled nuts. • Small ext. spring and large ext. spring. 	No	Europe /North America	1		

			<ul style="list-style-type: none"> • Dynamometer. • Spare rope. <p>Or Equivalent</p>					
	3e	Friction Experiments Module	<ul style="list-style-type: none"> • Compatible with item at Sr. No. 3 • Friction equipment. • Friction with roar. • Foils of friction. • Roller. • Block of wheels with roar. • Set of rollers in a marc. • Principle of wedge. • Bearings. • The simple pendulum. • Set of weights: <ul style="list-style-type: none"> ○ 10 weights of 0.01 N. ○ 4 weights of 0.05 N. ○ 10 weights of 0.1 N. ○ 2 weights of 0.5 N. ○ 4 weights of 1 N. ○ 2 weights of 2 N. ○ 1 weight of 5 N. • Weight hooks. • Pulley. • Adjustable pulley. • Single pulley block. • Screws and knurled nuts. • Dynamometer. • Spare rope. <p>Or Equivalent</p>	No	Europe /North America	1		

	3f	Special Mechanism Module	<ul style="list-style-type: none"> • Compatible with item at Sr. No. 3 • The cam and roller mechanisms (included two cams). • Geneva mechanism. • The ratchet mechanisms. • Scotch yoke. • Crank mechanism. • Quick return mechanism. • Adjustable hooks. • Set of weights: <ul style="list-style-type: none"> ○ 10 weights of 0.01 N. ○ 4 weights of 0.05 N. ○ 10 weights of 0.1 N. ○ 2 weights of 0.5 N. ○ 4 weights of 1 N. ○ 2 weights of 2 N. ○ 1 weight of 5 N. • Weight hooks. • Adjustable pulley. • Screws and knurled nuts. • Dynamometer. <p>Or Equivalent</p>	No	Europe /North America	1		
4		Hertzian Contact Apparatus	<ul style="list-style-type: none"> • Unit to demonstrate the shape of the occurring contact area under Hertzian pressure • Two Pads of silicon rubber or equivalent with curved contact surfaces. • Transparent plastic plate with grid lines makes it easier to measure the contact area • The lower pad (silicon rubber or equivalent) should have a simple radius. • A hand operated hydraulic pump and cylinder 	No	Europe /North America	1		

			<p>force the two pads together.</p> <ul style="list-style-type: none"> • A pointer to show the angle of rotation. • A transparent scale to measure the contact shape and angle. • Locknuts on threads of the pump work to limit the maximum pressure, preventing damage to the equipment. • Maximum Pressure: 9 bar with contact angle of 90 or better. • 8 bar with contact angle of 0 or better. • Hydraulic Oil • SL Hydraulic Oil 5 <p>Experimental Capabilities:-</p> <ul style="list-style-type: none"> • The effect of varied pressure with constant angle. • The effect of varied angle (different relative curvature) with constant pressure. • Resulting shape of the contact area under point contact with different radii of curvature <p>Or Equivalent</p> <p>Ranges and values are approximate and close values will be acceptable</p>					
5		Computer Controlled Universal Testing Machine	<ul style="list-style-type: none"> • Computer controlled electro-mechanical universal testing machine for testing: tension, compression, bending, folding, shearing and creep etc. <p>Main Parts:</p> <ul style="list-style-type: none"> ○ Ball Screw ○ Dust Cover ○ Load Sensor 	No	Any	1		

			<ul style="list-style-type: none"> ○ Upper Fixture ○ Lower Fixture ○ Transmission System ○ Servo Motor ○ Upper Beam ○ Compression Plate ○ Middle Beam ○ Connecting Shaft ○ Limiter ○ Workbench ○ Base <ul style="list-style-type: none"> ● Tests on metallic and non-metallic pieces ● Min Load capacity: 250 kN. ● Load accuracy: Class 0.5 ● Deformation accuracy: $\leq \pm 0.5$ ● Load Range: 0.2% to 100% ● Sensor: USA Brand ● Motor: Japanese ● Load resolution 1/300000 approx. ● Resolution of deformation: 0.04um approx. ● Accuracy of displacement: Within $\pm 0.6\%$ of indicating load ● Resolution of displacement: 0.01mm approx. ● Speed: 0.0 1 mm /min ~ 60 0mm/min ● Speed accuracy: within $\pm 1\%$ / $\pm 0.5\%$ of set speed approx. ● E-Tensile space: 650 mm approx. ● E-Compression space: 650 mm approx. ● Test width: 700 mm approx. ● Beam travel distance: 1200 mm approx. ● Workbench thickness: 120 mm approx ● Base height: 650 mm <p>Standards:</p> <ul style="list-style-type: none"> ● ASTM A370, ASTM E4, ASTM E8, ASTM E9, 					
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		<p>ISO6892, ISO7438, ISO7500-1, EN10002-4, GB/T228-2002, GB 16491-2008, HGT 3844-2008 QBT 11130-1991, GB13-22-1991, HGT 3849-2008, GB6349-1986, GB/T 1040.2-2006, ASTM C165, EN826, EN1606, EN1607, EN12430 etc.</p> <p>Standard Accessories</p> <ul style="list-style-type: none"> • Mechanical wedge grip 1 set <ul style="list-style-type: none"> ○ Inserts for round specimen Φ 9 ~Φ 26 mm 1 set ○ Inserts for flat specimen 0~20mm 1 set • Compression test attachment <ul style="list-style-type: none"> ○ Dia 100mm and 200mm 1 set for each • Bending test attachment 1 set • High precision load cell 1 set 250 kN, Tensile & Compression type • Photoelectric encoder 1 set • Extensometer for normal temperature • Servo motor and Control system 1 set • High temperature furnace with following Specifications: <ul style="list-style-type: none"> • Temperature Range: 300-450°C • Soaking zone: 150 mm • Fluctuation of temperature: \pm2-3°C • Inner size of the chamber: ϕ90mm x380mm • Outer size of the chamber: ϕ280mm x450mm <p>Should include</p> <ul style="list-style-type: none"> • High temperature Chamber, • High temperature Pull rod, • High temperature Grip, • bracket or moving chart, • Temperature controller and 					
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		<ul style="list-style-type: none"> • thermal couple • High temperature extensometer USA or European Brand <p>Testing Software and Data Analysis:</p> <ul style="list-style-type: none"> • Test force, peak value, deformation and resolution should be calibrated automatically. • Curve choice: can choose Stress - strain, force - displacement, force - time, displacement - time, and other curves to display and print • Can switch at any time to observe, zoom in and zoom out, horizontal or vertical movement, real-time high speed sampling. • Accurate and perfect data analysis function • Test standard: Integrated with about 40 kinds of national standard or test method • The system should automatically analyze the test curve and mark the mark points on the test curve. • At the same time, the analysis result should be sent to the data board. <p>Optional Accessories</p> <ul style="list-style-type: none"> (a) Shear grip for metal (b) 3 point bend grip for metal (c) belt tensile grip (d) mortar tensile grip (e) pneumatic grip (f) hydraulic system for pneumatic grip (g) large range extensometer (h) rubber tensile grip (j) plastic film tensile grip (k) glass fiber tensile grip (l) wooden sheet bend grip 					
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			Note: Optional accessories should be quoted separately					
6		Accelerated Temperature Controlled Concrete Curing Tank	<ul style="list-style-type: none"> • Specimen temperature controlled curing tank (preferably steam controlled) • Standards ASTM C684, BS 1881:12 • Fully insulated double wall tank with cover • Outer wall made of Stainless steel • Intermediate layer of insulating mineral wool • Inner wall made of Stainless-steel perforated platform for circulation of water • Supports to hold the concrete specimens • Circulation pump to provide the hot water at any point within the tank. • Heating system with temperature range; from ambient to 100 °C • Sample holding capacities (Minimum) • 16 pieces 150 mm cube moulds • or 16 pieces 150 mm cylinder moulds • or 8 pieces 200 mm cube moulds • Thermoregulator with timer for temperature control • The Digital Control Panel for display of temperature <p>Or Equivalent</p> <p>Ranges and values are approximate and close values will be acceptable</p>	No	Any	1		

Firm Name:	_____
Signature:	_____
Name:	_____
Designation:	_____

Instl/Assy/Commissioning Req	Yes ✓	No	Contract with OEM/Supplier	Yes ✓	No	
Performance Bond Req	Yes ✓	No	Offer Req for Package Deal	Yes	No ✓	
Note: (a) Warranty (2 Years) Required.			Warranty req and Duration	Yes ✓	No	
Maint Spare Req	Yes ✓	No	Essentially Running spare req	Yes	No ✓	
Pub/Lit Req	Yes ✓	No	Req of Cert for test data results	Yes ✓	No	
Trg Req	Yes ✓	No	Req of Calibration	Yes ✓	No	
Note: Item at Ser 3 including parts are interlinked.						

Annex A-1**Special Instructions**

Description	Bidder		Tech Scrutiny to be done by User		
	Yes	No	Accepted	Rejected	Reasons of Rejection
Environment Conditions (a) Temperature range: 05°C to +40°C (b) Relative humidity: 0-70% non-condensing					
Warranty period As per IT clause 13.					
Training Notes Supplier will provide a set of handouts for training on operation and maintenance of the equipment					
Publications Supplier is to provide hard and soft copies (CD) of following manuals. (a) Operational / Maintenance manual: - Qty 01 with Equipment and additional Qty 02 for record purposes and should consist of following sections:- (1) Equipment Description /Operation:- (a)Specifications (b)Description (c)Operation (2) Servicing:- (a)Maintenance Schedule (b)Adjustment / test (c)Removal / Installation procedure (d)Tools Required (3) Trouble shooting guide (4) Cleaning requirements (b) Full parts description along with detailed diagrams (exploded view). (c) Experimental manuals which must contain the list and procedure of the experiments that equipment can perform. (d) Recorded video lectures of the equipment explaining use / functions / maximum possible experiments.					

<p>Spares / Technical Support</p> <p>(a) Supplier to have in-country spares / technical support and ensure spares and technical support / assistance for next 10 years</p> <p>(b) Comprehensive list of spares required for scheduled maintenance of Equipment is to be provided</p> <p>(c) Any software provided must have its license</p> <p>(d) Software upgrade support must be provided free of cost for 10 x years with renewed license at every upgrade</p> <p>(e) Supplier must also provide calibration service for at least 5 years after commissioning</p>					
<p>Additional Spare / Replaceable parts.</p> <p>(a) Replaceable spare / parts during scheduled inspections are to be identified and provided as per requirement along with equipment sufficient to cater five years consumption.</p> <p>(b) All specialized / standard tools required for inspection / repair / servicing must be supplied along with equipment.</p>					
<p>Physical Inspection Criteria: 100% physical inspection of store will be carried out before commissioning of the equipment for following details:-</p> <p>(a) For physical damage, scratches and deformity.</p> <p>(b) Accessories /components as per contractual specifications.</p> <p>(c) Technical Manuals (Operation manual, user guide).</p> <p>(d) Quality certificate and calibration certificate by the OEM</p> <p>(e) OEM certificate and verifiable documents by the supplier that store has been procured from certified source and is factory new and from latest production.</p> <p>(f) Brand name and country of origin.</p>					
<p>Commissioning</p> <p>(a) Commissioning by OEM rep at his own cost and risk at designated place at NUTECH.</p> <p>(b) Any special requirement for installation, operation and commissioning must be specified in the offer by the supplier.</p>					

<p>Training 01 week operational/ maintenance training at NUTECH by rep of OEM (local suppliers)</p>					
<p>Improvement and Safety Measures Any improvement and safety measures suggested by NUTECH during commissioning are to be resolved by the supplier / manufacturer at no extra cost.</p>					
<p>Liability of Supplier (a) OEM certificate of authorized dealership Supplier is to provide original OEM certificate of subject equipment bought directly from the manufacturer and being an authorized dealer. (b) Incase the equipment supplied is not compatible with specifications, the supplier will be obliged to call his representatives at his own cost for consultation and corrective action</p>					
<p>Special Notes (a) Additional requirements for the maintenance of equipment (if any) must be intimated by the supplier in technical offer. (b) Supplier must provide the list of organizations using same equipment in Pakistan (if any). (c) Equipment must be a standard product of OEM available at web address of OEM. (d) In case of premature failure of the equipment, OEM has to replace / rectify the item free of cost. Required transportation charges would be borne by the supplier.</p>					
<p>Note: Item at Ser 3 including parts are interlinked.</p>					

<p>Firm Name: _____</p> <p>Signature: _____</p> <p>Name: _____</p> <p>Designation: _____</p>
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**TECHNICAL OFFER****NUTECH / SCM / Mechanical Lab Eqpt (RE) 2021 / TD-202****Fill in following essential parameters:-**

1. Validity of Offer: _____ Days (Should not be less than **120 days**)
2. Delivery period: _____ Days (After placement of order)
3. Country of Origin: _____
4. Warranty Period: _____

General

1. GST Number: _____ (Enclose Copy)
2. NTN / CNIC: _____ (if exempted, provide valid exemption certificate)

Payment Terms (In continuation of IT Document clause 12)

1. 80 % through LC on sight.
2. 20% after delivery, installation / commissioning, user satisfaction certificate.

Details of Foreign Principal Information with account details)

1. Name / Title: _____
2. Address: _____

OEM Name:	Firm Name:	Signature:
OEM Focal Person:	Firm Focal Person:	Official Seal:
OEM Phone Number:	Firm Phone Number:	Name:
OEM Email Id:	Firm Email Id:	Designation:

Annex CFINANCIAL OFFERNUTECH / SCM / Mechanical Lab Eqpt (RE) 2021 / TD-202

Ser	Part No	Item Name/Size	Specification	A/U	Qty Req	Price Per Unit (USD)	Total Price (USD)
1		Nozzle Performance Test Unit with DAQ System and Software	<ul style="list-style-type: none"> • Equipment designed to allow students to investigate and study the performance of a nozzle (kinetic energy and thrust). • A floor standing or Bench top unit. • Anodized aluminum structure and panels of painted steel. • Main metallic elements of stainless steel • Demonstration of the thermodynamics of the adiabatic expansion of air through subsonic and supersonic nozzles • Chamber made of stainless steel or equivalent • Chamber Dia: Approx. 220mm • Height: Approx. 420mm • Nozzle Kit containing 4-6 nozzles with minimum five nozzles of 2 mm of nominal throat minimum <ul style="list-style-type: none"> ○ Convergent Nozzles: Min. 1 nozzle with approx. ratio of 1 ○ Convergent/Divergent Nozzle: 3-4 nozzles with approx. 1.3, 1,.5, 1,7 and 2.1 ratio. • A pressure regulator to maintain the pressure in the chamber. Range: 0-12bar approx. • Min. 2 pressure sensors to measure the pressure at inlet and outlet • Min 2 temperature sensors “J” or “K” type to measure the temperature inside the chamber 	No	1		

		<ul style="list-style-type: none"> • Flow sensors with range of approx. 0-600 l/min to measure the flow rate in the chamber • Adjustable on/off valves to direct the air • Force sensors ranging approx. 4N • Orifice dia: approx. 60mm • Compatible and requisite air compressor for supply of compressed air during operation of equipment • DAQ System for instant recording of multiple readings and automatic calculations • DAQ System must be based upon National Instruments Data Acquisition Board for <ul style="list-style-type: none"> ○ Real time curves representation about system responses ○ Real time PID control for parameters involved in the process ○ Analog input with 16 channels and Sampling rate up to: 250 KS/s (kilo samples per second) ○ Analog output with 2 Channels and Maximum output rate up to: 900 KS/s ○ Digital Input / Output with 24 channels <p>Experimental Capabilities:-</p> <ul style="list-style-type: none"> • The phenomenon of choked flow corresponding to sonic velocity at a nozzle throat • Determination of jet reaction and specific thrust at a variety of inlet and back pressure. • Determination of inlet pressure effect on mass flow rate, for a given back pressure. • Comparison of actual mass flow rate with the theoretical value. • Determination of the back pressure effect on the mass 				
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			<p>flow rate.</p> <ul style="list-style-type: none"> • Nozzle efficiency calculation. • Determination of the jet velocity and the nozzle efficiency. • Determination of the jet reaction and the specific pushing • Measurement of mass flow rate and coefficient of discharge. <p>Or Equivalent</p> <p>Ranges and values are approximate and close values will be acceptable</p>				
2		Forces in Truss Apparatus with DAQ	<ul style="list-style-type: none"> • Bench top redundant truss structure with frame and DAQ • Trusses to be made of stainless steel • Bonded into joint pieces/bosses • Effective truss length to be 140mm approximate • Two of the trusses are to specially designed so that one of the trusses can act as the redundant truss and can be added or taken out • Each truss member to have full bridge (i.e, 4 off) strain gauges attached, comprising 2 longitudinal (to relieve the effect of bending) and 2 transverse gauges (to negate temperature effect). • Each strain gauge to produce a response of approximate 2.6 of the true strain • Vertical and Horizontal Members: approximate 400mm centres • Acrylic Truss Members: 25(H) x 10(W) mm • Loading Mechanism: 0...500N Minimum • Digital Dial Gauge: Approximate 12.7mm travel; 	No	1		

			<p>0.01mm resolution</p> <ul style="list-style-type: none"> • Half Bridge Strain Gauging • Accessories container • Instruction manual • With complete supporting accessories • Fully automatic DAQ System with software • Software to do two things: display and collect data, and allow 'virtual' simulated experiments • Interface unit links to load cells and other instruments in the Structures range to send data to a suitable computer • Required Services, Assembly and Installation, Interface and Control Software, Starting-up, Safety, Maintenance, Calibration & Practices Manuals. <p>Or Equivalent</p> <p>Ranges and values are approximate and close values will be acceptable</p>				
3		General Mechanics Laboratory-Base Panel with following six modules	<ul style="list-style-type: none"> • Base support structure to mount the elements of modules in order to undertake the experiments. • The panel should be pierced with equidistant holes that to take measurements during the experiments. • Bench-top unit. • Anodized aluminum frame and panels made of painted steel. • The holes on the base panel to be accurately spaced at around 20-30 mm centers. • Supports, brackets and elements should be required to work with any of the modules in the base panel. <p>Or Equivalent</p>	No	2		

	3a	Static Experiments Module	<ul style="list-style-type: none"> • Compatible with item at Sr. No. 3 • Center of gravity of various shaped plates: Rectangle. Circle. Triangle. T. Kite. Irregular. • Drawing panel. • Three to five cords and ring. • Beam balance. • Two forces equality divided. • The simple pendulum. • Pivot screw. • Adjustable hooks. • Set of weights: <ul style="list-style-type: none"> ○ 10 weights of 0.01 N. ○ 4 weights of 0.05 N. ○ 10 weights of 0.1 N. ○ 2 weights of 0.5 N. ○ 4 weights of 1 N. ○ 2 weights of 2 N. ○ 1 weight of 5 N. • Weight hooks. • Pulleys. • Screws and Knurled nuts. • Large ext. spring and small ext. spring. • Dynamometer. • Spare rope. <p>Or Equivalent</p>	No	1		
	3b	Load Elevation Mechanism	<ul style="list-style-type: none"> • Compatible with item at Sr. No. 3 • Three pulley blocks. 	No	1		

		Experiments Module <ul style="list-style-type: none"> • Two pulley blocks. • Wheel and axle set. • Weston differential chain block. • Screw jack. • Support screw. • Adjustable hooks. • Set of weights: <ul style="list-style-type: none"> ○ 10 weights of 0.01 N. ○ 4 weights of 0.05 N. ○ 10 weights of 0.1 N. ○ 2 weights of 0.5 N. ○ 4 weights of 1 N. ○ 2 weights of 2 N. ○ 1 weight of 5 N. • Weight hooks. • Pulleys. • Adjustable pulley. • Single pulley block. • Knurled nuts. • Dynamometer. • Spare rope. • Screws. <p>Or Equivalent</p>				
	3c	Transmission Experiments Module <ul style="list-style-type: none"> • Compatible with item at Sr. No. 3 • System of belt drive (includes flat belt, round belt and leather strip). • Chain drive. • Simple gear train. • Bevel gears. • Worm gear. 	No	1		

			<ul style="list-style-type: none"> • Universal coupling. • Support screw. • Adjustable screws. • Set of weights: <ul style="list-style-type: none"> ○ 10 weights of 0.01 N. ○ 4 weights of 0.05 N. ○ 10 weights of 0.1 N. ○ 2 weights of 0.5 N. ○ 4 weights of 1 N. ○ 2 weights of 2 N. ○ 1 weight of 5 N. • Weight hooks. • Pulley. • Screws and knurled nuts. • Dynamometers. • Spare rope. <p>Or Equivalent</p>				
	3d	Dynamic Experiments Module	<ul style="list-style-type: none"> • Compatible with item at Sr. No. 3 • The spring balance. • Wheel. • Centrifugal force system. • The simple pendulum. • Adjustable screw. • Set of weights: <ul style="list-style-type: none"> ○ 10 weights of 0.01 N. ○ 4 weights of 0.05 N. ○ 10 weights of 0.1 N. ○ 2 weights of 0.5 N. ○ 4 weights of 1 N. ○ 2 weights of 2 N. 	No	1		

			<ul style="list-style-type: none"> ○ 1 weight of 5 N. ● Weight hooks. ● Adjustable pulley. ● Screws and knurled nuts. ● Small ext. spring and large ext. spring. ● Dynamometer. ● Spare rope. <p>Or Equivalent</p>				
	3e	Friction Experiments Module	<ul style="list-style-type: none"> ● Compatible with item at Sr. No. 3 ● Friction equipment. ● Friction with roar. ● Foils of friction. ● Roller. ● Block of wheels with roar. ● Set of rollers in a marc. ● Principle of wedge. ● Bearings. ● The simple pendulum. ● Set of weights: <ul style="list-style-type: none"> ○ 10 weights of 0.01 N. ○ 4 weights of 0.05 N. ○ 10 weights of 0.1 N. ○ 2 weights of 0.5 N. ○ 4 weights of 1 N. ○ 2 weights of 2 N. ○ 1 weight of 5 N. ● Weight hooks. ● Pulley. ● Adjustable pulley. ● Single pulley block. 	No	1		

			<ul style="list-style-type: none"> • Screws and knurled nuts. • Dynamometer. • Spare rope. <p>Or Equivalent</p>				
	3f	Special Mechanism Module	<ul style="list-style-type: none"> • Compatible with item at Sr. No. 3 • The cam and roller mechanisms (included two cams). • Geneva mechanism. • The ratchet mechanisms. • Scotch yoke. • Crank mechanism. • Quick return mechanism. • Adjustable hooks. • Set of weights: <ul style="list-style-type: none"> ○ 10 weights of 0.01 N. ○ 4 weights of 0.05 N. ○ 10 weights of 0.1 N. ○ 2 weights of 0.5 N. ○ 4 weights of 1 N. ○ 2 weights of 2 N. ○ 1 weight of 5 N. • Weight hooks. • Adjustable pulley. • Screws and knurled nuts. • Dynamometer. <p>Or Equivalent</p>	No	1		
4		Hertzian Contact Apparatus	<ul style="list-style-type: none"> • Unit to demonstrate the shape of the occurring contact area under Hertzian pressure • Two Pads of silicon rubber or equivalent with curved 	No	1		

		<p>contact surfaces.</p> <ul style="list-style-type: none"> • Transparent plastic plate with grid lines makes it easier to measure the contact area • The lower pad (silicon rubber or equivalent) should have a simple radius. • A hand operated hydraulic pump and cylinder force the two pads together. • A pointer to show the angle of rotation. • A transparent scale to measure the contact shape and angle. • Locknuts on threads of the pump work to limit the maximum pressure, preventing damage to the equipment. • Maximum Pressure: 9 bar with contact angle of 90 or better. • 8 bar with contact angle of 0 or better. • Hydraulic Oil • SL Hydraulic Oil 5 <p>Experimental Capabilities:-</p> <ul style="list-style-type: none"> • The effect of varied pressure with constant angle. • The effect of varied angle (different relative curvature) with constant pressure. • Resulting shape of the contact area under point contact with different radii of curvature <p>Or Equivalent</p> <p>Ranges and values are approximate and close values will be acceptable</p>				
5	Computer Controlled	<ul style="list-style-type: none"> • Computer controlled electro-mechanical universal testing machine for testing: tension, compression, bending, 	No	1		

		Universal Testing Machine	<p>folding, shearing and creep etc.</p> <p>Main Parts:</p> <ul style="list-style-type: none"> ○ Ball Screw ○ Dust Cover ○ Load Sensor ○ Upper Fixture ○ Lower Fixture ○ Transmission System ○ Servo Motor ○ Upper Beam ○ Compression Plate ○ Middle Beam ○ Connecting Shaft ○ Limiter ○ Workbench ○ Base <ul style="list-style-type: none"> ● Tests on metallic and non-metallic pieces ● Min Load capacity: 250 kN. ● Load accuracy: Class 0.5 ● Deformation accuracy: $\leq \pm 0.5$ ● Load Range: 0.2% to 100% ● Sensor: USA Brand ● Motor: Japanese ● Load resolution 1/300000 approx. ● Resolution of deformation: 0.04um approx. ● Accuracy of displacement: Within $\pm 0.6\%$ of indicating load ● Resolution of displacement: 0.01mm approx. ● Speed: 0.0 1 mm /min ~ 60 0mm/min ● Speed accuracy: within $\pm 1\%$ / $\pm 0.5\%$ of set speed approx. ● E-Tensile space: 650 mm approx. ● E-Compression space: 650 mm approx. 				
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		<ul style="list-style-type: none"> • Test width: 700 mm approx. • Beam travel distance: 1200 mm approx. • Workbench thickness: 120 mm approx • Base height: 650 mm <p>Standards:</p> <ul style="list-style-type: none"> • ASTM A370, ASTM E4, ASTM E8, ASTM E9, ISO 6892, ISO 7438, ISO 7500-1, EN 10002-4, GB/T 228-2002, GB 16491-2008, HGT 3844-2008 QBT 11130-1991, GB 13-22-1991, HGT 3849-2008, GB 6349-1986, GB/T 1040.2-2006, ASTM C165, EN 826, EN 1606, EN 1607, EN 12430 etc. <p>Standard Accessories</p> <ul style="list-style-type: none"> • Mechanical wedge grip 1 set <ul style="list-style-type: none"> ○ Inserts for round specimen Φ 9 ~ Φ 26 mm 1 set ○ Inserts for flat specimen 0~20mm 1 set • Compression test attachment <ul style="list-style-type: none"> ○ Dia 100mm and 200mm 1 set for each • Bending test attachment 1 set • High precision load cell 1 set 250 kN, Tensile & Compression type • Photoelectric encoder 1 set • Extensometer for normal temperature • Servo motor and Control system 1 set • High temperature furnace with following Specifications: <ul style="list-style-type: none"> • Temperature Range: 300-450°C • Soaking zone: 150 mm • Fluctuation of temperature: \pm2-3°C • Inner size of the chamber: ϕ90mm x380mm • Outer size of the chamber: ϕ280mm x450mm <p>Should include</p> <ul style="list-style-type: none"> • High temperature Chamber, • High temperature Pull rod, 				
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			<ul style="list-style-type: none"> • High temperature Grip, • bracket or moving chart, • Temperature controller and • thermal couple • High temperature extensometer USA or European Brand <p>Testing Software and Data Analysis:</p> <ul style="list-style-type: none"> • Test force, peak value, deformation and resolution should be calibrated automatically. • Curve choice: can choose Stress - strain, force - displacement, force - time, displacement - time, and other curves to display and print • Can switch at any time to observe, zoom in and zoom out, horizontal or vertical movement, real-time high speed sampling. • Accurate and perfect data analysis function • Test standard: Integrated with about 40 kinds of national standard or test method • The system should automatically analyze the test curve and mark the mark points on the test curve. • At the same time, the analysis result should be sent to the data board. <p>Optional Accessories</p> <ul style="list-style-type: none"> (i) Shear grip for metal (j) 3 point bend grip for metal (k) belt tensile grip (l) mortar tensile grip (m) pneumatic grip (n) hydraulic system for pneumatic grip (o) large range extensometer (p) rubber tensile grip (m) plastic film tensile grip 				
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			(n) glass fiber tensile grip (o) wooden sheet bend grip Note: Optional accessories should be quoted separately					
6		Accelerated Temperature Controlled Concrete Curing Tank	<ul style="list-style-type: none"> • Specimen temperature controlled curing tank (preferably steam controlled) • Standards ASTM C684, BS 1881:12 • Fully insulated double wall tank with cover • Outer wall made of Stainless steel • Intermediate layer of insulating mineral wool • Inner wall made of Stainless-steel perforated platform for circulation of water • Supports to hold the concrete specimens • Circulation pump to provide the hot water at any point within the tank. • Heating system with temperature range; from ambient to 100 °C • Sample holding capacities (Minimum) <ul style="list-style-type: none"> • 16 pieces 150 mm cube moulds • or 16 pieces 150 mm cylinder moulds • or 8 pieces 200 mm cube moulds • Thermoregulator with timer for temperature control • The Digital Control Panel for display of temperature <p>Or Equivalent</p> <p>Ranges and values are approximate and close values will be acceptable</p>	No	1			
Total Amount								

Firm Name: _____
Signature: _____
Name: _____
Designation: _____

Tender No _____
Name of the Firm _____
Firm Address _____
Date _____
Telephone No _____
E-Mail _____

To,

DD SCM Office
NUTECH University
I-12, Main IJP Road,
Islamabad.

Dear Sir

1. I / We hereby offer to supply to the NUTECH University the stores detailed in schedule to the tender inquiry or such portion thereof as you may specify in the acceptance of tender at the price offered against the said schedule and further agree that this offer will remain valid up to 90 days after opening of Financial offer and will not be withdrawn or altered in terms of rates quoted and the conditions already stated therein or on before this date. I / we shall be bound by a communication of acceptance to be dispatched within the prescribed time.

2. I / we have understood the instructions to Tenders and General Conditions Governing Contract available at NUTECH website and have thoroughly examined the specifications / drawing and / or patterns quoted in the schedule here to and am/are fully aware of the nature of the stores required and my/ our offer is to supply stores strictly in accordance with the requirements.

Yours Faithfully.

(Signature of Tenderer)

Designation

Date:

Individual signing tender and / or other documents connected with a contract must be signed by principal authorized rep/ OEM rep/ Authorized partner firm rep.

SPECIMEN FOR "ADVANCE PAYMENT BANK GUARANTEE"

Guarantee No: _____ Date _____ Amount: _____ Valid upto: _____

In Favour of:

National University of Technology (NUTECH), IJP Road, I-12, Islamabad

Subject: **Advance Payment Bank Guarantee**

Contract No: _____ DATED. _____

Dear Sir,

1. We [Name of Guarantor] understand that you have entered into contract with M/S [Name of Firm] (hereinafter called Our Client), for provision of [Name of Stores]. And as per the above mentioned Contract, you are liable to pay to Our Client an amount of [Amount of Guarantee] in advance, which shall be released against a Bank Guarantee.
2. Bank & seller firm shall inform your office regarding termination of the validity of this bank Guarantee one clear month before the actual expiry date of this Bank Guarantee.
3. Now, we hereby irrevocably undertake to immediately make payment on to your orders, merely upon receipt of your first written notice, an amount not exceeding [Amount of Guarantee] that may be claimed by you at your own discretion without it being necessary for you to prove or even assert to the Bank any default whatsoever of Our Client under the Contract.
4. Claims against this Guarantee shall be lodged on us through written request/s on your proper Letter Head. Unless claims are not presented on or before the Validity Date, all rights and benefits under this guarantee shall be forfeited and we shall be released from all claims, demands or liabilities of any kind whatsoever.
5. This Guarantee shall remain in force up to the above mentioned Validity Date which can however, be extended upon request of Our Client.

Yours faithfully,

Signature: _____

Name: _____

Designation: _____

Bank Stamp:

BANK GUARANTEE AGAINST
"SPECIMEN FOR PERFORMANCE/WARRANTY
GUARANTEE"

Guarantee No: _____ Date _____ Amount: _____ Valid upto: _____

In Favour of:

National University of Technology (NUTECH), IJP Road, I-12, Islamabad

Subject: **In compliance with terms of Performance/Warranty Guarantee**
Bank Guarantee

Contract No: _____ dated _____

Dear Sir,

1. Whereas your good-self have entered into Contract No: _____ dated _____ with M/s [Firm Name] Located at [Firm Address], Herein after referred to as our customer and that one of the conditions of the Contract is submission of Bank Guarantee by our customer to your good-self for a sum of [Amount].
2. Incompliance with this stipulation of subj contract, we hereby agree and undertake as under:-
 - a. To pay to you unconditionally on demand and / or without any reference to our Customer an amount not exceeding the sum of [Amount] as would be mentioned in your written Demand Notice.
 - b. To keep this Guarantee in force till [Validity Date].
 - c. That the validity of this Bank guarantee shall be kept two clear year ahead of the original / extended delivery period or the warrantee of the stores which so ever is later in duration on receipt of information from your office. Our liability under this Bank Guarantee shall cease on the closing of banking hours on the last date of validity of this Bank Guarantee. Claim received there after shall not been entertained by us whether you suffer a loss or not. On receipt of payment under this Guarantee, this

documents i.e., Bank Guarantee must be clearly cancelled, discharged and returned to us.

- d. That we shall inform your office regarding termination of the validity of this bank Guarantee on clear month before the actual expiry date of this Bank Guarantee.
- e. That with the consent of our customer you may amend / alter any term / cause of the contractor add / delete any term / clause to / from this contract without making any reference to us. We do not reserve any right to receive any such amendment / alternation or addition / deletion provided such like actions do not increase our monetary liability under this Bank Guarantee which shall be limited only [Amount.....].
- f. That the bank guarantee herein before given shall not be affected by any change in the constitution of the Bank or Customer / Supplier or Vendor.
- g. That this is an unconditional Bank guarantee, which shall be cashed on sight on presentation without any reference to our Customer / Supplier or Vendor.

Signature_____

Name_____

Desig_____

Bank Stamp_____

Note: No changes in the above given BG format shall be accepted.

"SELLER'S WARRANTY CERTIFICATE"

(To be provided on stamp paper)

Contract No: _____ Dated: _____

Validity ____ years from the date of final acceptance of the Stores.

We hereby guarantee that we are the genuine and original Source of provisioning the Stores to our Buyer. We also undertake that nothing in the manufacturing of these Stores has been obtained through unauthorized means.

1. We hereby warrant and undertake that the Stores and all the associated spares/ accessories supplied under the terms and conditions of the above Contract, are:

- a. brand new, complete in all respects, possessing good quality and standard workmanship; and
- b. liable for replacement/rectification free of charge, if during the Warranty period the same are found defective before or under normal use or these do not remain within the limits and tolerances stated under the specifications or in any way not in accordance with the terms of this Contract. All expenses incurred in removal, re-provisioning and reinstallation of such defective Stores or their parts shall also be borne by us.

2. The Warranty shall remain valid for a period of ____ years from the date of final acceptance of the Stores.

Signature & Stamp _____

Name & CNIC _____

Designation: _____

Date: _____

**Sellers warranty must be provided by the Seller (firm) on Rs 100 stamp paper along with bank guarantee/CDR/Pay Order without changing a word. BG with additional clauses will be rejected.

CHECK LIST**(This checked list must be attached with your technical offer, duly filled and****Signed by authorized signatory)**

Tender No _____

Date _____

1	Tender Processing Fee	a. Tender processing fee ref no _____ b. Bank _____ c. Amount _____		
2	EM/ Bid Bond	a. EM/ Bid Bond ref no _____ b. Bank _____		
3	Form Annex A, A-1, B and C signed by Authorized Signatory		Yes	No
4	Offering specification of items as per IT		Yes	No
5	Accounting unit/Qty as per IT		Yes	No
6	Delivery Schedule as per IT		Yes	No
7	Country of origin of store _____			
8	Name of OEM:- _____			
9	Original Performa invoice (Mandatory)		Yes	No
10	Certified that there is no Deviation from IT conditions/ there is deviation from IT condition as per fol details		Yes	No
11	Blacklisting certificate on stamp paper. it is certified that our firm is neither default nor black listed by any govt organization directly or indirectly		Yes	No

Note: Fill and/or mark Yes/No where required

Signature of Firm Auth Signatory