



**TENDER DOCUMENTS**

**Mechanical Lab Equipment**

**NUTECH/SCM/Mechanical Lab Eqpt (PSDP) 2020 / TD-149**

**NATIONAL UNIVERSITY OF TECHNOLOGY**

**TENDER NOTICE****National University of Technology (NUTECH)****NUTECH/SCM/Civil Lab Eqpt (PSDP) 2020/TD-147,****NUTECH/SCM/Computer Lab Eqpt (PSDP) 2020/TD-148,****NUTECH/SCM/Mechanical Lab Eqpt (PSDP) 2020/TD-149 &****NUTECH/SCM/Electrical Lab Eqpt (PSDP) 2020/TD-150**

1. Sealed bids are invited from Government / FBR Registered Firms for the procurement of **Lab Equipment** for NUTECH on **FOR 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 June 2020**.
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 each tender are as under:-

Ser	Description	Submission	Tender Opening	Completion Days
a.	Civil Lab Equipment (TD-147)	1200 hrs on 20 July 2020	1230 hrs on 20 July 2020	120 Days
b.	Computer Lab Equipment (TD-148)	1200 hrs on 21 July 2020	1230 hrs on 21 July 2020	90 Days
c.	Mechanical Lab Equipment (TD-149)	1200 hrs on 22 July 2020	1230 hrs on 22 July 2020	120 Days
d.	Electrical Lab Equipment (TD-150)	1200 hrs on 23 July 2020	1230 hrs on 23 July 2020	120 Days

**Deputy Director (Supply Chain Management)****NATIONAL UNIVERSITY OF TECHNOLOGY, JPROAD,I-12,ISLAMABAD****Tel: 0092-51-5476768, Ext: 227**

**NATIONAL UNIVERSITY OF TECHNOLOGY**  
**SUPPLY CHAIN MANAGEMENT**  
**INVITATION TO TENDER**

**Tender submission time: 1200 hours, 22 July 2020**

1. NUTECH desires to procure the list of item(s) / Store(s) on **F O R b a s i s** . 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 in DUPLICATE 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 FE/Local Currency (in Local Currency for

FOR cases & in FE for FOB cases) in figures as well as in words 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)  
IJ P ROAD, I12, 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 **1200 hours on 22 July 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. **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 **(in FOB cases)**.

- 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.
8. **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/items 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.
9. **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.

10. **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.
  
11. **Terms of Payment/ LC Charges**
  - a. **In FOB cases** (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.
  - b. **In FOR cases** 20% advance payment will be made to the Seller on provision of unconditional Bank Guarantee/ CDR/ DD/ Pay order. 80% payment will be made to the Seller after receipt and confirming the correctness of ordered specifications, installation, commissioning OR as the case may be ie through Inland LC.
  
12. **Bank Guarantee (BG).**In case where equipment is backed by warranty, the BG submitted equal to 05% of FOB/FOR/CPT etc value shall remain valid for up to 60 days beyond completion of warranty period.
  
13. **Taxes/ Duties/ Custom clearance** All taxes /duties /import Licenses Fee as applicable under government laws in Pakistan as well as country of supplier shall be on Seller (**in FOR Case**). NUTECH will provide applicable exemption certificates and documents (**In FOB Cases only**).
  
14. **Insurance:-** Insurance will be NUTECH's responsibility through NICL (**in FOB Cases**).
  
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 seller'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.** Will be as under:-

"All Claims ,disputes ,controversies, differences arising out of or in connection with this contract ,including any question regarding its existence, validity, interpretation performance, breach or termination ,shall be referred to and shall finally be solved by binding arbitration. An Arbitration Committee Shall be constituted comprising Rector NUTECH and two Arbitration to be nominated on mutual agreement by each party. The venue of the Arbitration shall be the place of issuance of this contract or as Rector NUTECH may determine. In case of any difference, the clauses of Arbitration Act 1940, Rules and Regulation made thereof for time being enforce shall prevail. The award shall be final and binding on both parties.

a. Provided that written record of any such arbitration and its award shall be arranged properly. An award of such arbitration may be confirmed in a court of competent jurisdiction at Islamabad.

b. Provided further that incase of any other question /dispute not covered under this clause, the decision of Rector NUTECH shall be final."

21. **Redress Of Grievance.** In case of dispute, case shall be reviewed by 'NUTECH Redress of grievance committee and decision of NUTECH shall be final and binding on both parties.

22. **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).

23. **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.

24. **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.

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/User 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. User/Consignee's report on checking of the stores will be binding on the seller 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.
- c. Rates should be quoted on Free Delivery basis at NUTECH Islamabad.
- d. **2 Years** against **5% Bank Guarantee** of the store value will be required from the successful bidders from the date of commissioning as performance bond.

- e. 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.
- f. 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.
- g. 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.
- h. An appropriate amount may be paid for mobilization against Bank Guarantee/CDR/Demand Draft/Pay Order.
- i. Firms with previous pending/outstanding projects/business with NUTECH may not be considered for award of this tender.

Deputy Director  
Supply Chain Management Office

**Annex-A****Technical Specifications****NUTECH / SCM /Mechanical Lab Eqpt (PSDP) 2020/ TD-149**

Ser	Items	Description	Country of Origin	A/U	Qty Req	Bidder Compliance		Tech Scrutiny to be done by user	
						Yes	No	Accepted	Rejected
						Reason of Rejection			
1.	<b>Winch Mechanism</b>	<ul style="list-style-type: none"> <li>○ Investigate lift velocity and load transmission of winch</li> <li>○ Provide the parameters to calculate the efficiency and load transmission of winch mechanism</li> <li>○ Anodized aluminium frame</li> <li>○ Safety element to prevent reversal of direction of rotation</li> <li>○ A horizontal shaft running through the heart of the unit and a pulley high strength cord wrapped around its periphery with attached to its end, which terminates with a weight holder</li> <li>○ The unit should include: <ul style="list-style-type: none"> <li>• 2 Gear wheels with Small gear comprising 14 teeth and large gear having 70 teeth</li> <li>• Pulleys should be made of Aluminium and should consist of Driving pulley of min 250 mm diameter, Driven pulley of max 125 mm diameter</li> <li>• Suitable Set of weights and holders not less than : <ul style="list-style-type: none"> <li>• Driving pulley: <ul style="list-style-type: none"> <li>• 1 x 5N.</li> <li>• 4 x 2N.</li> <li>• 2 x 1N.</li> <li>• 2 x 0.5N.</li> <li>• 0.5 N weights holder.</li> </ul> </li> <li>• Driven pulley:</li> </ul> </li> </ul> </li> </ul>	USA/ EU		1				

		<ul style="list-style-type: none"> <li>• 1 x 50N.</li> <li>• 2 x 20N.</li> <li>• 1 x 10N.</li> <li>• 1 x 5N.</li> <li>• 5 N weights holder</li> </ul> <p><b><u>Experimental Capabilities</u></b></p> <ul style="list-style-type: none"> <li>○ Investigating the velocity ratios</li> <li>○ Investigating transmission ratio</li> <li>○ Investigating unwinding rate</li> <li>○ Investigating angular velocity</li> <li>○ Investigating efficiency of winch</li> <li>○ Determination of behaviour of winch</li> <li>○ Estimation of the velocity ratio.</li> <li>○ Study of the behavior of a winch, especially noting the characteristics of the unit with increasing load</li> <li>○ Examination of the safety features of the winch.</li> </ul>						
2.	<b>Bench Grinder</b>	<ul style="list-style-type: none"> <li>○ Cast iron base mounted unit</li> <li>○ Wheel covers with in-built task lights</li> <li>○ Incorporation of one eye-shield for close work</li> <li>○ Induction motor for high speed material removal</li> <li>○ Wheel Dia: 150-250mm</li> <li>○ Hole Dia: 10-20mm</li> <li>○ No load speed: 2500-4000rpm</li> </ul> <p><b><u>Experimental Capabilities</u></b></p> <ul style="list-style-type: none"> <li>○ Should be able to grind the item it encounters</li> <li>○ Shape, sharpen, buff, polish or clean the metal object</li> </ul>	Any		2			
3.	<b>Portable Hand Drilling Machine</b>	<ul style="list-style-type: none"> <li>○ 1000-2000W small electric hand drilling machine specifications.</li> <li>○ Drilling dia:100-150mm</li> <li>○ Rated voltage: 110V/220~240V</li> </ul>	Any		4			

		<ul style="list-style-type: none"> <li>○ Rated frequency: 50-60HZ Rated input power: 1000-2000W</li> <li>○ No-load speed: 2200-2800 r/min</li> <li>○ Waterproof manner: Copper tube sealing</li> <li>○ Portable core drill.</li> <li>○ Picture attached as “<b>Picture A</b>”</li> </ul>					
4.	<b>Reciprocating Compressor (On Base) – Manual</b>	<ul style="list-style-type: none"> <li>○ Trainer for recording the characteristic curve of a two-stage compressor</li> <li>○ Two cylinders with V-arrangement</li> <li>○ Intake vessel, with orifice meter to measure the airflow rate</li> <li>○ pressure sensor and additional gauges of temperature</li> <li>○ pressure gauges for analogue display</li> <li>○ Intercooler between first and second stage</li> <li>○ Safety valve, control valve and outlet silencer</li> <li>○ power consumption: 3-5kW</li> <li>○ speed: 500-1000min-1</li> <li>○ intake capacity: 200-300L/min</li> <li>○ quantity delivered: 180-220L/min</li> <li>○ Operating pressure: 8-13bar, max. 35bar</li> <li>○ Intake vessel: 18-25L</li> <li>○ Digital display of Torque, speed and power</li> <li>○ Low Pressure Cylinder: Bore 90-100mm; Stroke 40-60mm</li> <li>○ High Pressure Cylinder: Bore 40-60mm; Stroke 40-60mm</li> </ul> <p><b><u>Experimental Capabilities</u></b></p> <ul style="list-style-type: none"> <li>○ Understanding different components of functions of compressor</li> <li>○ Measurement of efficiencies</li> <li>○ Measurement of velocities</li> <li>○ Measurement of air flow rate</li> <li>○ Investigation of temperature at different stages of compression</li> <li>○ Comparison of volumetric and thermal efficiencies</li> </ul>	Any		1		

		<ul style="list-style-type: none"> <li>○ Determination of compressor performance</li> <li>Showing compression process on P-V diagram</li> </ul>					
5.	<b>Tool Kit 142 Tools or more</b>	<ul style="list-style-type: none"> <li>○ 1/2 inches Hexagonal Socket, Star Socket, Dr. Flex handle, ratchet wrench, Extension bar, dr Universal joint, Spark plug socket</li> <li>○ 1/2 inches (F) x 3/8 inches (M) three way adaptor</li> <li>○ 1/2 inches x 10 inches L handle</li> <li>○ 3/8 inches, 12 pt. socket, ratchet wrench, Extension bar, dr Universal joint</li> <li>○ 1/4 inches x 25 mm Bit socket</li> <li>○ Bit Holder</li> <li>○ 1/4 inches Hexagonal Socket, Star Socket, ratchet wrench, Extension bar, dr. universal joint</li> <li>○ 3/8 inches(F) x 1/4 inches (M) three way adaptor</li> <li>○ 1/4 inches x 150 mm Spinner handle</li> <li>○ 1/4 inches x 150 mm Flexible extension bar</li> <li>○ Combination spanner</li> <li>○ Flare nut spanner</li> <li>○ Hex key</li> <li>○ 300 g Machinist hammer</li> <li>○ 7 inches Combination Pliers</li> <li>○ 10 inches Curved jaw lock wrench</li> <li>○ S2 Slotted, Phillips screwdriver</li> <li>○ Stubby screwdriver</li> </ul>	Any		3		
6.	<b>Sand Casting Unit For Spark Plugs</b>	<ul style="list-style-type: none"> <li>○ Unit should be bench mounted</li> <li>○ Frame of unit should be metal based but aluminium based would be preferred</li> <li>○ Cleaning of the spark plugs should be based on sand blasting mechanisms</li> <li>○ Picture attached in “<b>Picture B</b>”</li> </ul> <p><b><u>Experimental Capabilities</u></b></p> <ul style="list-style-type: none"> <li>○ Demonstration of the cleaning of spark plugs</li> <li>○ Demonstration of spark plug effectiveness after sand blasting</li> </ul>	Any		1		
7.	<b>Spark Plugs Of All Types</b>	<ul style="list-style-type: none"> <li>○ Spark plugs containing:</li> <li>○ flash ribs</li> </ul>	Any		25		

		<ul style="list-style-type: none"> <li>○ insulator</li> <li>○ caulking</li> <li>○ hex</li> <li>○ shell</li> <li>○ gasket</li> <li>○ thread</li> <li>○ centre electrode</li> <li>○ ground electrode</li> <li>○ copper core</li> <li>○ insulator tip</li> <li>○ Copper/Nickel spark plugs</li> <li>○ Single Platinum spark plugs</li> <li>○ Double Platinum spark plugs</li> <li>○ Iridium spark plugs</li> <li>○ Silver spark plugs</li> <li>○ Gapping spark plugs</li> </ul>					
8.	<b>Cutaway Model: 4 Stroke Petrol And 2 Stroke Diesel Engines</b>	<p><b>4 stroke Petrol engine</b></p> <ul style="list-style-type: none"> <li>○ Sectioning of actual hardware.</li> <li>○ Color-coding of the engines using contrast colours</li> <li>○ Complete with sectioned carburettor and coil ignition, cooling system, distribution system, spark coil, etc</li> <li>○ Indication for combustion phase to simulate the mixture ignition</li> <li>○ The engine is operated manually through a crank handle.</li> <li>○ Model should be mounted on suitable base of wood or metal approximately 4-6 inches high.</li> </ul> <p><b>2 stroke Diesel Engines</b></p> <ul style="list-style-type: none"> <li>○ Sectioning of actual hardware.</li> <li>○ Color-coding of the engines using contrast colours</li> <li>○ Direct injection, complete with injection pump, injector, volumetric compressor, cooling system, etc</li> <li>○ The engine is operated manually through a crank handle.</li> <li>○ Indication for active stage of the cycle through a small bulb during the expansion phase</li> <li>○ Pictures attached in “<b>Picture C &amp; D</b>”</li> </ul>	Any	1 each			

9.	<b>Air Compressor (On Base) – Manual</b>	<ul style="list-style-type: none"> <li>○ Investigating intake and delivery pressure airflow rate compressor</li> <li>○ Two cylinders</li> <li>○ Air flow rate sensor</li> <li>○ Pressure sensor</li> <li>○ Temperature sensor</li> <li>○ Speed control sensor</li> <li>○ Manometers</li> <li>○ Inlet and outlet silencers</li> <li>○ Safety valve</li> <li>○ Control valve</li> <li>○ Clean, dry air</li> <li>○ Pressure: 5-15 bar</li> <li>○ Air connection: 3/4"</li> <li>○ Intake vessel</li> <li>○ Pressure vessel</li> </ul> <p><b><u>Experimental Capabilities</u></b></p> <ul style="list-style-type: none"> <li>○ Demonstration and availability of pressurized air</li> <li>○ Air pressure comparison over screw and reciprocating compressors</li> </ul>	Any		1			
10	<b>Thermostatic Expansion Valve Cutaway</b>	<ul style="list-style-type: none"> <li>○ Sectioning of actual hardware.</li> <li>○ Color-coding of the valve components valve body, internal surfaces, seat, and closure devices using contrast colours.</li> <li>○ Model should be mounted on suitable base of wood or metal approximately 4-6 inches high.</li> <li>○ Pic attached at "<b>Picture E</b>"</li> </ul>	Any		1			
11.	<b>Cutaway: Screw Compressor (On Base)</b>	<ul style="list-style-type: none"> <li>○ Sectioning of actual hardware.</li> <li>○ Color-coding of the compressor components, and flow paths using contrast colours</li> <li>○ Model should be mounted on suitable base of wood or metal approximately 4-6 inches high.</li> <li>○ Picture attached as "<b>Picture F</b>"</li> </ul>	Any		1			
12.	<b>Hydraulic Brake Training Bench</b>	<ul style="list-style-type: none"> <li>○ Model should be mounted on suitable metal frame with dimensions</li> <li>○ Unit should consist of minimum of two sets of hydraulics brakes</li> <li>○ Pressure distribution systems to brakes should be</li> </ul>	USA/ EU		1			



		<p>visible to students</p> <ul style="list-style-type: none"> <li>○ Pressure sensors/meters should be places to acquire the actual hydraulic pressures to brakes</li> <li>○ Motor for driving the wheels to from 0...300 revolutions per min</li> <li>○ Pic attached at “<b>Picture G</b>”</li> </ul> <p><b><u>Experimental Capabilities</u></b></p> <ul style="list-style-type: none"> <li>○ Demonstration of pressure applying on disc brakes</li> <li>○ Demonstration and predictions of disc brakes effects over high speeds</li> <li>○ Demonstration of frictional effects over disc brakes</li> <li>○ Hydraulic pressure applying on brakes</li> </ul>					
13.	<b>Electrical Wiring Trainer</b>	<ul style="list-style-type: none"> <li>○ Low voltage pushbutton “doorbell” switch</li> <li>○ Pilot light to indicate low voltage “ON”</li> <li>○ A low voltage buzzer</li> <li>○ Two standard duplex receptacles</li> <li>○ GFI duplex receptacles</li> <li>○ Two lamp sockets</li> <li>○ Pilot light to indicate 120 VAC is “ON”</li> <li>○ Two three-way toggle light switches</li> <li>○ Standard residential 4 circuit breaker panel</li> <li>○ Dual 24 VAC, 5 Amp pre-test panel with breaker</li> <li>○ Three wire grounding AC 120V cord</li> <li>○ Starter quantity of wire for trainer</li> </ul> <p><b><u>Experimental Capabilities</u></b></p> <ul style="list-style-type: none"> <li>○ Demonstration of residential wiring demonstrator</li> <li>○ Demonstration of wiring and electrical distribution</li> <li>○ Wiring instructions along with practice text</li> <li>○ Demonstration of wiring needs over different areas and requirements with respect to current</li> </ul>	USA/ EU		1		
14.	<b>Air-Fuel Mixture Measuring Apparatus</b>	<ul style="list-style-type: none"> <li>○ Portable air fuel mixture testing unit</li> <li>○ Measure the air fuel ratio of car/motorcycle in a running conditions</li> <li>○ Unit should be operate-able on petrol engines</li> <li>○ Identify and set the proportions of petrol fuel and air quantity before entering into the combustion chamber</li> </ul>	USA/ EU		1		

		<p><b><u>Experimental Capabilities</u></b></p> <ul style="list-style-type: none"> <li>○ Analysis of air-fuel ratios in petrol engine over throttling conditions</li> <li>○ Calculations of optimum air-fuel ratios for a petrol engine</li> </ul>					
15.	<p><b>Hooks Universal Joint</b></p>	<ul style="list-style-type: none"> <li>• Bench Mounted Unit</li> <li>• Demonstrates the advantages and disadvantages of universal coupling</li> <li>• Using a manually rotated frame with a low-friction cantilever linkage</li> <li>• Adjustable masses and a spring to apply force</li> <li>• -Weight hangers and weights</li> <li>• Chain Drive, Belt Drive</li> </ul> <p><b><u>Experimental Capabilities</u></b></p> <ul style="list-style-type: none"> <li>• Power transfer, efficiency and direction in a belt drive</li> <li>• Power transfer and efficiency in a chain drive</li> <li>• Input and output relationships of a universal coupling</li> <li>• Friction and angle of lap on a pulley</li> </ul>	USA/ EU		1		

<p><b>Firm Name:</b> _____</p> <p><b>Signature:</b> _____</p> <p><b>Name:</b> _____</p> <p><b>Designation:</b> _____</p>
--

**Annex A-1****Special Instructions**

Description	Bidder			Tech Scrutiny to be done by User		
	Yes	No	Alternate Offer	Accepted	Rejected	Reasons of Rejection
<b>Environment Conditions</b> (a) Temperature range: 02°C to +60°C (b) Relative humidity: 0-70% non-condensing						
<b>Warranty period</b> Two years from the date of commissioning. A warranty sticker is to be pasted on each imported item by the Supplier / OEM highlighting Name of Firm, Contract No and date, Description of Store and Warranty validity						
<b>Training Notes</b> Supplier will provide a set of handouts for training on operation and maintenance of the equipment						
<b>Publications</b> Supplier is to provide hard and soft copies (CD) of following manuals. (a) <b>Operational / Maintenance manual:</b> - Qty 01 with Equipment and additional Qty 02 for record purposes and should consist of following sections:- (1) <b>Equipment Description /Operation:-</b> (a)Specifications (b)Description (c)Operation (2) <b>Servicing:-</b> (a)Maintenance Schedule (b )Adjustment / test (c)Removal / Installation procedure (d)Tools Used (3) Trouble shooting guide (4) Cleaning requirements (5) Shipping and receiving (6) Storage requirements (b) <b>IPB</b> (Illustrated Parts Breakdown Manual) should have full parts description along with detailed diagrams (exploded view).						

(c) <b>Experimental manuals</b> which must contain the list and procedure of the experiments that equipment can perform.					
<b>Spares / Technical Support</b> (a) Supplier to have in-country spares / technical support and ensure spares and technical support / assistance for next 10 years (b) Comprehensive list of spares required for scheduled maintenance of Equipment is to be provided (c) Any software provided must have its license (d) Software upgrade support must be provided free of cost for 10 x years with renewed license at every upgrade (e) Supplier must also provide calibration service for at least 5 x years after commissioning					
<b>Additional Spare / Replaceable parts.</b> (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. (b) All specialized / standard tools required for inspection / repair / servicing must be supplied along with equipment.					
<b>Physical Inspection Criteria:</b> 100% physical inspection of store will be carried out before commissioning of the equipment for following details:- (a) For physical damage, scratches and deformity. (b) Accessories /components as per contractual specifications. (c) Technical Manuals (Operation manual, user guide, IPBs). (d) Quality certificate and calibration certificate by the					

<p>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><b>Commissioning</b></p> <p>(a) Commissioning of the equipment will be carried out 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><b>Training:</b> 01 week OEM operational/ maintaince training at NUTECH</p>					
<p><b>Improvement and Safety Measures:</b> Any improvement and safety measures suggested by NUTECH during commissioning are to be resolved by the supplier / manufacturer at no extra cost.</p>					
<p><b>Liability of Supplier</b></p> <p>(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.</p> <p>(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><b>Special Notes</b></p> <p>(a) Additional requirements for the maintenance of equipment (if any) must be intimated by the supplier in technical offer.</p> <p>(b) Supplier must provide the list of organizations using same equipment in Pakistan (if any).</p> <p>(c) Equipment must be a standard product of OEM available at web address of OEM.</p> <p>(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><b>Firm Name:</b> _____</p> <p><b>Signature:</b> _____</p> <p><b>Name:</b> _____</p> <p><b>Designation:</b> _____</p>
--

**Annex-B****TECHNICAL OFFER****NUTECH / SCM / Mechanical Lab Eqpt (PSDP) 2020 / TD-149****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 FOR Cases
20% advance payment against BG/CDR/Pay Order/DD
80% payment 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 & CNIC:
OEM Email Id:	Firm Email Id:	Designation:

Annex C

**FINANCIAL OFFER**  
**NUTECH / SCM / Mechanical Lab Eqpt (PSDP) 2020 / TD-149**

Ser	Item Name/Size	Specification	A/U	Qty Req	Unit Price PKR (Including Tax)	Total Price PKR (Including Tax)
1.	<b>Winch Mechanism</b>	<ul style="list-style-type: none"> <li>○ Investigate lift velocity and load transmission of winch</li> <li>○ Provide the parameters to calculate the efficiency and load transmission of winch mechanism</li> <li>○ Anodized aluminium frame</li> <li>○ Safety element to prevent reversal of direction of rotation</li> <li>○ A horizontal shaft running through the heart of the unit and a pulley high strength cord wrapped around its periphery with attached to its end, which terminates with a weight holder</li> <li>○ The unit should include:               <ul style="list-style-type: none"> <li>• 2 Gear wheels with Small gear comprising 14 teeth and large gear having 70 teeth</li> <li>• Pulleys should be made of Aluminium and should consist of Driving pulley of min 250 mm diameter, Driven pulley of max 125 mm diameter</li> <li>• Suitable Set of weights and holders not less than :</li> <li>• Driving pulley:                   <ul style="list-style-type: none"> <li>• 1 x 5N.</li> <li>• 4 x 2N.</li> <li>• 2 x 1N.</li> <li>• 2 x 0.5N.</li> <li>• 0.5 N weights holder.</li> </ul> </li> <li>• Driven pulley:                   <ul style="list-style-type: none"> <li>• 1 x 50N.</li> <li>• 2 x 20N.</li> <li>• 1 x 10N.</li> <li>• 1 x 5N.</li> <li>• 5 N weights holder</li> </ul> </li> </ul> </li> </ul>	Nos	1		



		<p><b><u>Experimental Capabilities</u></b></p> <ul style="list-style-type: none"> <li>○ Investigating the velocity ratios</li> <li>○ Investigating transmission ratio</li> <li>○ Investigating unwinding rate</li> <li>○ Investigating angular velocity</li> <li>○ Investigating efficiency of winch</li> <li>○ Determination of behaviour of winch</li> <li>○ Estimation of the velocity ratio.</li> <li>○ Study of the behavior of a winch, especially noting the characteristics of the unit with increasing load</li> <li>○ Examination of the safety features of the winch.</li> </ul>				
2.	<b>Bench Grinder</b>	<ul style="list-style-type: none"> <li>○ Cast iron base mounted unit</li> <li>○ Wheel covers with in-built task lights</li> <li>○ Incorporation of one eye-shield for close work</li> <li>○ Induction motor for high speed material removal</li> <li>○ Wheel Dia: 150-250mm</li> <li>○ Hole Dia: 10-20mm</li> <li>○ No load speed: 2500-4000rpm</li> </ul> <p><b><u>Experimental Capabilities</u></b></p> <ul style="list-style-type: none"> <li>○ Should be able to grind the item it encounters</li> <li>○ Shape, sharpen, buff, polish or clean the metal object</li> </ul>	Nos	2		
3.	<b>Portable Hand Drilling Machine</b>	<ul style="list-style-type: none"> <li>○ 1000-2000W small electric hand drilling machine specifications.</li> <li>○ Drilling dia:100-150mm</li> <li>○ Rated voltage: 110V/220~240V</li> <li>○ Rated frequency: 50-60HZ Rated input power: 1000-2000W</li> <li>○ No-load speed:2200-2800 r/min</li> <li>○ Waterproof manner: Copper tube sealing</li> <li>○ Portable core drill.</li> <li>○ Picture attached as <b>“Picture A”</b></li> </ul>	Nos	4		
4.	<b>Reciprocating Compressor (On Base) –</b>	<ul style="list-style-type: none"> <li>○ Trainer for recording the characteristic curve of a two-stage compressor</li> <li>○ Two cylinders with V-arrangement</li> <li>○ Intake vessel, with orifice meter to measure the airflow rate</li> </ul>	Nos	1		

	<b>Manual</b>	<ul style="list-style-type: none"> <li>○ pressure sensor and additional gauges of temperature</li> <li>○ pressure gauges for analogue display</li> <li>○ Intercooler between first and second stage</li> <li>○ Safety valve, control valve and outlet silencer</li> <li>○ power consumption: 3-5kW</li> <li>○ speed: 500-1000min-1</li> <li>○ intake capacity: 200-300L/min</li> <li>○ quantity delivered: 180-220L/min</li> <li>○ Operating pressure: 8-13bar, max. 35bar</li> <li>○ Intake vessel: 18-25L</li> <li>○ Digital display of Torque, speed and power</li> <li>○ Low Pressure Cylinder: Bore 90-100mm; Stroke 40-60mm</li> <li>○ High Pressure Cylinder: Bore 40-60mm; Stroke 40-60mm</li> </ul> <p><b><u>Experimental Capabilities</u></b></p> <ul style="list-style-type: none"> <li>○ Understanding different components of functions of compressor</li> <li>○ Measurement of efficiencies</li> <li>○ Measurement of velocities</li> <li>○ Measurement of air flow rate</li> <li>○ Investigation of temperature at different stages of compression</li> <li>○ Comparison of volumetric and thermal efficiencies</li> <li>○ Determination of compressor performance</li> </ul> <p>Showing compression process on P-V diagram</p>				
5.	<b>Tool Kit 142 Tools or more</b>	<ul style="list-style-type: none"> <li>○ 1/2 inches Hexagonal Socket, Star Socket, Dr. Flex handle, ratchet wrench, Extension bar, dr Universal joint, Spark plug socket</li> <li>○ 1/2 inches (F) x 3/8 inches (M) three way adaptor</li> <li>○ 1/2 inches x 10 inches L handle</li> <li>○ 3/8 inches, 12 pt. socket, ratchet wrench, Extension bar, dr Universal joint</li> <li>○ 1/4 inches x 25 mm Bit socket</li> <li>○ Bit Holder</li> <li>○ 1/4 inches Hexagonal Socket, Star Socket, ratchet wrench, Extension bar, dr. universal joint</li> <li>○ 3/8 inches(F) x 1/4 inches (M) three way adaptor</li> <li>○ 1/4 inches x 150 mm Spinner handle</li> <li>○ 1/4 inches x 150 mm Flexible extension bar</li> <li>○ Combination spanner</li> <li>○ Flare nut spanner</li> </ul>	Nos	3		

		<ul style="list-style-type: none"> <li>○ Hex key</li> <li>○ 300 g Machinist hammer</li> <li>○ 7 inches Combination Pliers</li> <li>○ 10 inches Curved jaw lock wrench</li> <li>○ S2 Slotted, Phillips screwdriver</li> <li>○ Stubby screwdriver</li> </ul>				
6.	<b>Sand Casting Unit For Spark Plugs</b>	<ul style="list-style-type: none"> <li>○ Unit should be bench mounted</li> <li>○ Frame of unit should be metal based but aluminium based would be preferred</li> <li>○ Cleaning of the spark plugs should be based on sand blasting mechanisms</li> <li>○ Picture attached in “<b>Picture B</b>”</li> </ul> <p><b><u>Experimental Capabilities</u></b></p> <ul style="list-style-type: none"> <li>○ Demonstration of the cleaning of spark plugs</li> <li>○ Demonstration of spark plug effectiveness after sand blasting</li> </ul>	Nos	1		
7.	<b>Spark Plugs Of All Types</b>	<ul style="list-style-type: none"> <li>○ Spark plugs containing:</li> <li>○ flash ribs</li> <li>○ insulator</li> <li>○ caulking</li> <li>○ hex</li> <li>○ shell</li> <li>○ gasket</li> <li>○ thread</li> <li>○ centre electrode</li> <li>○ ground electrode</li> <li>○ copper core</li> <li>○ insulator tip</li> <li>○ Copper/Nickel spark plugs</li> <li>○ Single Platinum spark plugs</li> <li>○ Double Platinum spark plugs</li> <li>○ Iridium spark plugs</li> <li>○ Silver spark plugs</li> <li>○ Gapping spark plugs</li> </ul>	Nos	25		
8.	<b>Cutaway Model: 4 Stroke Petrol And 2 Stroke Diesel</b>	<p><b>4 stroke Petrol engine</b></p> <ul style="list-style-type: none"> <li>○ Sectioning of actual hardware.</li> <li>○ Color-coding of the engines using contrast colours</li> <li>○ Complete with sectioned carburettor and coil ignition, cooling system, distribution system, spark coil, etc</li> </ul>	Nos	1 each		

	<b>Engines</b>	<ul style="list-style-type: none"> <li>○ Indication for combustion phase to simulate the mixture ignition</li> <li>○ The engine is operated manually through a crank handle.</li> <li>○ Model should be mounted on suitable base of wood or metal approximately 4-6 inches high.</li> </ul> <p><b>2 stroke Diesel Engines</b></p> <ul style="list-style-type: none"> <li>○ Sectioning of actual hardware.</li> <li>○ Color-coding of the engines using contrast colours</li> <li>○ Direct injection, complete with injection pump, injector, volumetric compressor, cooling system, etc</li> <li>○ The engine is operated manually through a crank handle.</li> <li>○ Indication for active stage of the cycle through a small bulb during the expansion phase</li> <li>○ Pictures attached in “<b>Picture C &amp; D</b>”</li> </ul>				
9.	<b>Air Compressor (On Base) – Manual</b>	<ul style="list-style-type: none"> <li>○ Investigating intake and delivery pressure airflow rate compressor</li> <li>○ Two cylinders</li> <li>○ Air flow rate sensor</li> <li>○ Pressure sensor</li> <li>○ Temperature sensor</li> <li>○ Speed control sensor</li> <li>○ Manometers</li> <li>○ Inlet and outlet silencers</li> <li>○ Safety valve</li> <li>○ Control valve</li> <li>○ Clean, dry air</li> <li>○ Pressure: 5-15 bar</li> <li>○ Air connection: 3/4”</li> <li>○ Intake vessel</li> <li>○ Pressure vessel</li> </ul> <p><b><u>Experimental Capabilities</u></b></p> <ul style="list-style-type: none"> <li>○ Demonstration and availability of pressurized air</li> <li>○ Air pressure comparison over screw and reciprocating compressors</li> </ul>	Nos	1		
10.	<b>Thermostatic Expansion Valve Cutaway</b>	<ul style="list-style-type: none"> <li>○ Sectioning of actual hardware.</li> <li>○ Color-coding of the valve components valve body, internal surfaces, seat, and closure devices using contrast colours.</li> <li>○ Model should be mounted on suitable base of wood or metal approximately 4-6 inches high.</li> <li>○ Pic attached at “<b>Picture E</b>”</li> </ul>	Nos	1		

11.	<b>Cutaway: Screw Compressor (On Base)</b>	<ul style="list-style-type: none"> <li>○ Sectioning of actual hardware.</li> <li>○ Color-coding of the compressor components, and flow paths using contrast colours</li> <li>○ Model should be mounted on suitable base of wood or metal approximately 4-6 inches high.</li> <li>○ Picture attached as <b>“Picture F”</b></li> </ul>	Nos	1		
12.	<b>Hydraulic Brake Training Bench</b>	<ul style="list-style-type: none"> <li>○ Model should be mounted on suitable metal frame with dimensions</li> <li>○ Unit should consist of minimum of two sets of hydraulics brakes</li> <li>○ Pressure distribution systems to brakes should be visible to students</li> <li>○ Pressure sensors/meters should be places to acquire the actual hydraulic pressures to brakes</li> <li>○ Motor for driving the wheels to from 0...300 revolutions per min</li> <li>○ Pic attached at <b>“Picture G”</b></li> </ul> <p><b><u>Experimental Capabilities</u></b></p> <ul style="list-style-type: none"> <li>○ Demonstration of pressure applying on disc brakes</li> <li>○ Demonstration and predictions of disc brakes effects over high speeds</li> <li>○ Demonstration of frictional effects over disc brakes</li> <li>○ Hydraulic pressure applying on brakes</li> </ul>	Nos	1		
13.	<b>Electrical Wiring Trainer</b>	<ul style="list-style-type: none"> <li>○ Low voltage pushbutton “doorbell” switch</li> <li>○ Pilot light to indicate low voltage “ON”</li> <li>○ A low voltage buzzer</li> <li>○ Two standard duplex receptacles</li> <li>○ GFI duplex receptacles</li> <li>○ Two lamp sockets</li> <li>○ Pilot light to indicate 120 VAC is “ON”</li> <li>○ Two three-way toggle light switches</li> <li>○ Standard residential 4 circuit breaker panel</li> <li>○ Dual 24 VAC, 5 Amp pre-test panel with breaker</li> <li>○ Three wire grounding AC 120V cord</li> <li>○ Starter quantity of wire for trainer</li> </ul> <p><b><u>Experimental Capabilities</u></b></p> <ul style="list-style-type: none"> <li>○ Demonstration of residential wiring demonstrator</li> <li>○ Demonstration of wiring and electrical distribution</li> <li>○ Wiring instructions along with practice text</li> <li>○ Demonstration of wiring needs over different areas and requirements with respect to current</li> </ul>	Nos	1		

14.	<b>Air-Fuel Mixture Measuring Apparatus</b>	<ul style="list-style-type: none"> <li>○ Portable air fuel mixture testing unit</li> <li>○ Measure the air fuel ratio of car/motorcycle in a running conditions</li> <li>○ Unit should be operate-able on petrol engines</li> <li>○ Identify and set the proportions of petrol fuel and air quantity before entering into the combustion chamber</li> </ul> <p><b><u>Experimental Capabilities</u></b></p> <ul style="list-style-type: none"> <li>○ Analysis of air-fuel ratios in petrol engine over throttling conditions</li> <li>○ Calculations of optimum air-fuel ratios for a petrol engine</li> </ul>	Nos	1		
15.	<b>Hooks Universal Joint</b>	<ul style="list-style-type: none"> <li>● Bench Mounted Unit</li> <li>● Demonstrates the advantages and disadvantages of universal coupling</li> <li>● Using a manually rotated frame with a low-friction cantilever linkage</li> <li>● Adjustable masses and a spring to apply force</li> <li>● -Weight hangers and weights</li> <li>● Chain Drive, Belt Drive</li> </ul> <p><b><u>Experimental Capabilities</u></b></p> <ul style="list-style-type: none"> <li>● Power transfer, efficiency and direction in a belt drive</li> <li>● Power transfer and efficiency in a chain drive</li> <li>● Input and output relationships of a universal coupling</li> <li>● Friction and angle of lap on a pulley</li> </ul>	Nos	1		
<b><u>Total</u></b>						

Firm Name: \_\_\_\_\_

Signature: \_\_\_\_\_

Name: \_\_\_\_\_

Designation: \_\_\_\_\_

**Picture A**



**Portable Hand Drilling Machine**

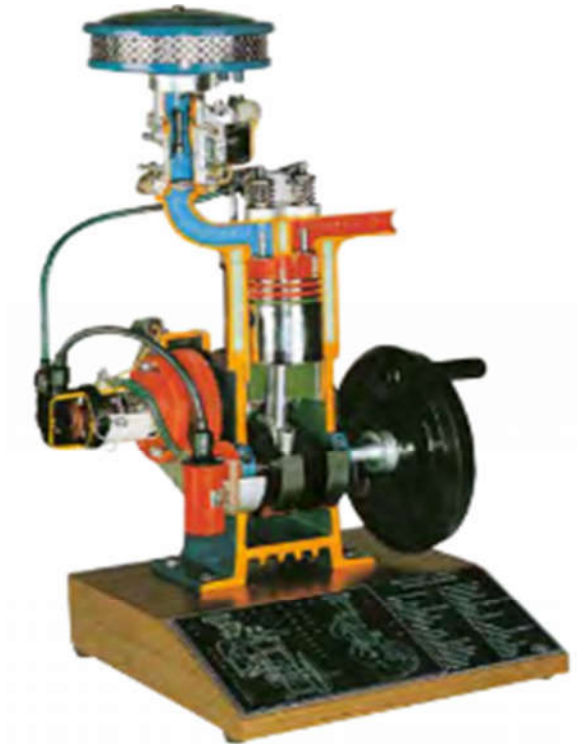
**Picture B**



**Sand Casting Unit For Spark Plugs**

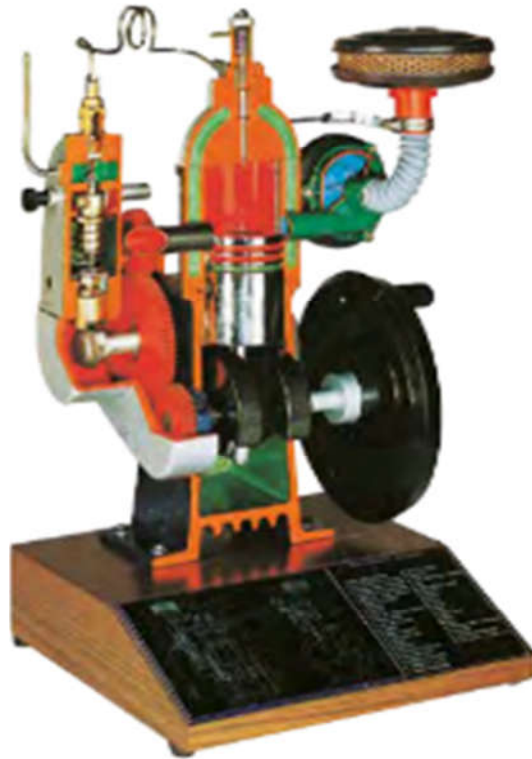


**Picture C**



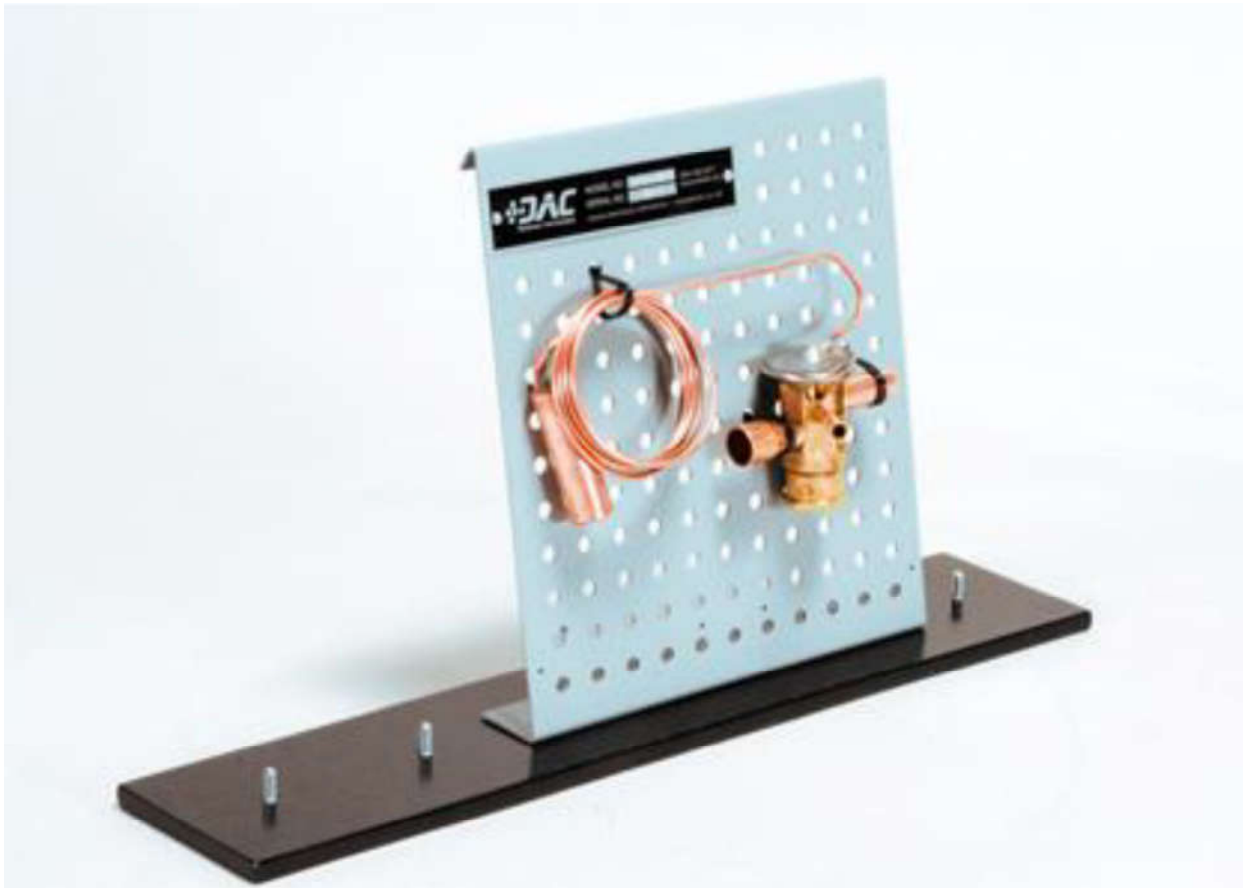
**Cutaway Model: 4 stroke Petrol Engine**

**Picture D**



**Cutaway Model: 2 Stroke Diesel Engine**

**Picture E**



**Cutaway Model: Thermostatic Expansion Valve**

**Picture F**



**Cutaway: Screw Compressor (On Base)**

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

To,

DD SCM Office  
NUTECH University  
I- 2, 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"**

(To be provided on stamp paper)

Contract No: \_\_\_\_\_

Dated: \_\_\_\_\_

Validity \_\_\_\_\_ from the date of final acceptance of the Stores.

1. 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.
2. 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.
3. The Warranty shall remain valid for a period of \_\_\_\_\_ years from the date of final acceptance of the Stores.

Signature \_\_\_\_\_

Name \_\_\_\_\_

Desig \_\_\_\_\_

Stamp \_\_\_\_\_

Date \_\_\_\_\_

**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		<b>Yes</b>	<b>No</b>
4	Offering specification of items as per IT		<b>Yes</b>	<b>No</b>
5	Quoted Currency as per IT		<b>Yes</b>	<b>No</b>
6	Accounting unit/Qty as per IT		<b>Yes</b>	<b>No</b>
7	Delivery Schedule as per IT		<b>Yes</b>	<b>No</b>
8	Country of origin of store _____			
9	Name of OEM:- _____			
10	Original Performa invoice (Mandatory)		<b>Yes</b>	<b>No</b>
11	Certified that there is no Deviation from IT conditions/ there is deviation from IT condition as per fol details		<b>Yes</b>	<b>No</b>
12	Blacklisting certificate.		<b>Yes</b>	<b>No</b>
13	Verifiable OEM Certificate		<b>Yes</b>	<b>No</b>
14	Warranty Period as per IT		<b>Yes</b>	<b>No</b>
15	ATPs provided		<b>Yes</b>	<b>No</b>

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

\_\_\_\_\_  
Signature of Firm Auth Signatory