TENDER DOCUMENTS

Electical Lab Equipment

NUTECH / SCM / Electrical Lab Eqpt (RE) 2021 / TD-200

NATIONAL UNIVERSITY OF TECHNOLOGY

TENDER NOTICE

National University of Technology (NUTECH)

NUTECH / SCM / Physics Lab Eqpt (RE) 2021 / TD-198,

NUTECH / SCM / Cptr Lab Eqpt (RE) 2021 / TD-199,

NUTECH / SCM / Electrical Lab Eqpt (RE) 2021 / TD-200 &

NUTECH / SCM / Civil Lab Eqpt (RE) 2021 / TD-201

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 **27 January 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.	Physics Lab Equipment (TD-198)	0930 hrs on 12 Feb 2021	1000 hrs on 12 Feb 2021	90 Days
b.	Cptr Lab Equipment (TD-199)	1030 hrs on 12 Feb 2021	1100 hrs on 12 Feb 2021	90 Days
c.	Electrical Lab Equipment (TD-200)	1130 hrs on 12 Feb 2021	1200 hrs on 12 Feb 2021	90 Days
d.	Civil Lab Equipment (TD-201)	1230 hrs on 12 Feb 2021	1300 hrs on 12 Feb 2021	90 Days

Deputy Director (Supply Chain Management)

NATIONAL UNIVERSITY OF TECHNOLOGY, I.J PROAD, I-12, ISLAMABAD

Tel: 0092-51-5476768, Ext: 178

NATIONAL UNIVERSITY OF TECHNOLOGY

SUPPLY CHAIN MANAGEMENT

INVITATION TO TENDER

Tender submission time: **1130 hrs on 12 Feb 2021**

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)
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 **1130 hrs on 12 Feb 2021.** 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 **(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.

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. Manufacturer's relevant brochures and technical details on major equipment assemblies are not attached in support of specifications.

f. Offer received later than appointed / fixed date and time.

g. Subject to restriction of export license.

h. 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.

i. 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/ and as the case may be i.e through Inland LC, as per procedure in vogue. 100% payment will be made after receiving of CRV.

13. **Warranty/ Bank Guarantee (BG)**. **1 Year** 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. **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)**.

15. **Insurance:-** Insurance will be NUTECH's responsibility through NICL **(in FOB Cases)**.

16. **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.

17. **Delivery Schedule.** Store will be delivered within **90 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, pandemics/epidemics 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. (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 / Electrical Lab Eqpt (RE) 2021 / TD-200

Ser	Part No	Items	Description	A/U	Country of Origin	Qty Req	Bidder Compliance		Tech Scrutiny to be done by user	
							Yes	No	Accepted	Rejected
									Reason of Rejection	
1		**Function/Signal Generator**	• Channels : 2 • Frequency range: 1 µHz...25 MHz (sine); arbitrary 1 µHz...10 MHz • Waveforms: Sine, square/pulse, ramp, white noise, arbitrary (exp. rise/fall, sin(x)/x, staircase etc. • Resolution: 14 bit • Sample rate: 125MS/s • Arbitrary waveform length approx. 8000 points • Modulation: AM, FM, PM, FSK • Frequency counter: Frequency, period, positive pulse width, duty cycle; frequency range single channel 100 mHz...200 MHz; frequency resolution 6 digits/s • Anyaccessory/software required for operation of the equipment. **Or Equivalent**	No	European / USA	05				
2		**Techometer**	Total test range: 2 - 199,999 rpm(± 10%) Test range: 2.5 - 199,999 rpm (non-contact)(± 10%) Test range: 2 - 19,999 rpm (contact)(± 10%)	No	European / USA	02				

			Resolution: 0.001 (0 - 99 rpm); 0.1 (100 - 999 rpm)(± 10%) 0.1 (1000 - 9999 rpm)(± 10%) 1 (1000 - 199,999 rpm)(± 10%) Sampling rate: 0.5 sec (over 120 rpm)(± 10%) Measuring distance: 50 mm to 500 mm(± 10%) Accuracy: ± 0.05% + 1 digits(± 10%) Laser: class 2 Output: < 1 mW(± 10%) Wavelength: 630 - 670 nm(± 10%) Operating voltage: 9 V-Batteries or compactable batteries **OR Equivalent**						
3		**LCR meters**	Measurement functions: DCR, Ls, Cs, Lp, Cp, D, Q, Rp, θ, ESR (± 10%) Capacitance measurements Ranges: 200/2000 pF, 20 nF, 20/200 µF, 2/20 mF (± 10%) Resistor Ranges: 20/200 Ohm, 2/20/200 kOhm, 2/20/200 MOhm(± 10%) Inductance Ranges: 20/200/2000 µH, 20/200 mH, 20/2000 H, 20 kH(± 10%) Other functions DCR: 200 Ohm ~ 200 MOhm.(± 10%) ESR: 0.00 Ohm ~ 20.0 MOhm(± 10%) 8-phase angle: -180° ~ +180 °	No	European / USA	02			

			D/Q: 0.001 ~ 1999 (± 10%) Measuring frequencies: 100/120 Hz, 1/10/100 kHz(± 10%) Operating voltage: 6 x 1.5 V AAA batteries; optional mains adapter 12 V/500 mA (or compactable batteries) **OR Equivalent**						
4		**Clamp meter**	DCV: 400 mV/4/40/400/600 V; ± 1,5 % + 2 St.(± 10%) ACV: 400 mV/4/40/400/600 V; ± 1,0 % + 10 St.(± 10%) DCA: 40/400 A; ± 2,5 % + 5 St.(± 10%) ACA: 40/400 A; ± 2,5 % + 8 St.(± 10%) Resistance: 400 Ω/4/40/400 kΩ/4/40 MΩ; ± 1,5 % + 2 St.(± 10%) Cap.: 40 nF - 4 mF; ±3,0 % + 5 St.(± 10%) Freq.: 10 Hz - 100 kHz; ± 1,5 % + 2 St.(± 10%) Temp.: -20 ... +760°C; ± 3,0 % + 5 St.(± 10%) **OR Equivalent**	No	European / USA	02			
5		**Earth tester/ Insulation Tester**	Insulation range/test voltage: 200MΩ/250V; 200MΩ/500V; 2000MΩ/1000V; ±1.5% + 5 dgt 100kΩ (± 10%) Short circuit current: 1mA DC (± 10%) Voltage AC: 600V; 1.5%+ 3 dgt – 1V (± 10%) Ohmic: 20/2kΩ; ±1.5% + 3 dgt - 10mΩ (± 10%) Operation voltage: 8x 1.5V batteries (UM3, AA)	No	European / USA	01			

			(or compactable batteries) **OR Equivalent**					
6		**FPGA Trainer Board**	At least 4 input LUTs and 8 flip-flops At least 2.1Mbits of fast block RAM Four clock tiles (eight DCMs & four PLLs) 58 DSP slices Approx. 500MHz+ clock speeds At least 128MB DDR2 SDRAM At least 2MB SRAM At least 16MB QSPI FLASH 100 MHz Crystal Oscillator 20W power supply and USB cable 10/100 Ethernet PHY HDMI Video Output 12-bit VGA port I2S Audio codec with line-in, line-out, mic, and headphone USB-JTAG circuitry with USB-UART function At least three two-digit seven-segment LED displays On-board USB2 ports for programming and USB-HID devices (for mouse/keyboard) Keypad with 16 labelled keys (0-F) GPIO: 14 LEDs (10 red, 2 yellow, 2 green), 8 slide switches, 8 DIP switches in 2 groups, and 4 push buttons Breadboard with 10 Digital I/Os 32 I/Os routed to 40-pin expansion connector Seven 12-pin Pmod ports with 56 I/Os total **OR Equivalent**	No	European / USA	10			
7		**Programmable Logic Control Trainer (Siemen Based)**	**The Trainer consists of PLCs module, power supply, programming, operating software and Programming cable.** **Features:** Power Supplies Installed	No	Any	10			

			Analog Source Included Input Switches Installed Interface Headers Installed **Technical Features:** **PLC:** Siemens CPU 1215C **Digital Outputs:** 10 **Analog Inputs:** 2 X Voltage Type with 11-bit ADC **Analog Outputs:** 2X Voltage Type & Current Type Simultaneous Output **Programming Language:** Ladder, STL & FBD **Analog Voltage Source:** 2 X +/- 10V **Fixed Supply DC:** 24V, 12V & 5V **Interface Connector:** 40-pin IDC **Digital Input Simulator:** 8X Momentary, 8X Toggle Switches **Accessories:** 2mm Patch Cords, Power Cord, Experiment Manual, IDC Cable, PC Programming Cable, Software CD **Experimental Capabilities:** Implementation of Logic Gates Implementation of Counters(Parking Stand) Implementation of Timer Application (Flash Light) Study of PLC Analog Input Implement Digital to Analog Converter **The equipment should have below mentioned modules** **OR Equivalent**						
	7A	**Traffic Light Control By PLC**	**Technical Features:** **Round About:** Red, Yellow & Green Lamps **Right Turn:** Red, Green Lamps **Digital Output from PLC:** 8X **Interface Connector:** 40-pin IDC **Compatible PLC Trainer:** Mentioned above **Accessories:** User Manual, IDC Cable, Sample Program **Experiments Included:**	No	Any	10			

			Introduction, Types of Traffic Lights Traffic Light Control using PLC **OR Equivalent**						
	7B	**Water Level Control By PLC**	**Features:** Control Circuits Installed Drivers Installed Protection Circuits Installed **Technical Features:** **Input to PLC:** 5X Level, 2X Output Valves **Output from PLC:** 2X Pump Drives **Analog Output from PLC:** To Drive Level Indicators **Interface Connector:** 40-pin IDC **Compatible PLC Trainer:** Mentioned above **Accessories:** User Manual, IDC Cable, Sample Program **Experiments Included:** Introduction, Operation Water Level Control using PLC **OR Equivalent**	No	Any	10			
	7C	**Temperature Control By PLC**	**Features:** Sensors installed on-board Control Circuits Installed Drivers Installed Protection Circuits Installed **Technical Features:** **Heater:** 4X 47R 5W Resistor Type **Fan:** 12 VDC **3 ½-Digit Digital Voltmeter:** LCD Type **3 ½-Digit Digital Ammeter:** LCD Type **Analog Input to PLC:** 1X Voltage, 1X Current Type **Output Signals from PLC:** 2X Fan ON/OFF, 2X Heater ON/OFF **Temperature Sensor:** 2X IC Type **Interface Connector:** 40-pin IDC **Compatible PLC Trainer:** Mentioned Above **Accessories:** User Manual, IDC Cable, Sample	No	Any	10			

			Program, 2mm Patch Cords **Experiments Included:** Introduction, Control Loops Temperature Control using PLC **OR Equivalent**						
	7D	**Conveyor Control By PLC**	**Features:** Sensors installed on-board Control Circuits Installed Drivers Installed Protection Circuits Installed **Technical Features:** **Conveyor Belt:** 205mm **Sensors:** IR, Proximity **Motor:** DC Gear Motor **Indicator:** LED, Buzzer **Control:** Auto / Manual, Forward / Reverse **Digital Inputs to PLC:** IR, Proximity, Auto/Manual & Process Reset **Digital Outputs from PLC:** Forward, Reverse, LED, Buzzer **Interface Connector:** 40-pin IDC **Compatible PLC Trainer:** Siemens IT-1200S **Accessories:** User Manual, IDC Cable, Sample Program **Experiments Included:** Introduction, Types of Conveyor Belts **Conveyor Belt:** 205mm Conveyor Control using PLC **OR Equivalent**	No	Any	10			
	7E	**Elevator Control By PLC**	**Features:** Control Circuits Installed Drivers Installed Protection Circuits Installed **Technical Features:** **Elevator:** 3-Floor **Floor Indicator:** 7-Segment LED Display **Call Switch:** Momentary Tact Type **Call Indicator:** LEDs	No	Any	10			

			Elevator Direction Indicator: LEDs **Elevator Door Indicator:** 8X8 Dual Colour Dot Matrix **Digital Inputs to PLC:** 3XCall Switches, 3XInternal Panel Floor Switch **Digital O/P from PLC:** 2XFloor Indicator, 3XDoor Indicator, UP, DOWN, 3XCall Switch Indicator **Interface Connector:** 40-pin IDC **Compatible PLC Trainer:** Siemens IT-1200S **Accessories:** User Manual, IDC Cable, Sample Program **Experiments Included:** Introduction, Types of Elevators Elevator Control using PLC **OR Equivalent**						
	7F	**Motor Control By PLC**	**Features:** Sensors installed on-board Control Circuits Installed Drivers Installed Protection Circuits Installed **Technical Features:** **Motor:** DC Motor, Stepper Motor & R/C Servo Motor **Encoder:** IR Opto-interrupter, 4XDigital Hall **Driver:** Monolithic Dual H-Bridge **Signal Conditioning:** PWM Generator, F/V Converter **Interface Connector:** 40-pin IDC, 2mm Input/Output **Compatible PLC Trainer:** Mentioned Above **Accessories:** User Manual, IDC Cable, Sample Program, 2mm Patch Cords **Experiments Included:** Introduction, DC Motor Control using PLC Stepper Motor Control using PLC R/C Servo Motor Control using PLC **OR Equivalent**	No	Any	10			

	7G	**Electro-Pneumatic Conveyor Control By PLC**	**Features:** Sensors installed on-board Control Circuits Installed Drivers Installed Protection Circuits Installed **Technical Features:** **Motor:** DC Motor, Stepper Motor & R/C Servo Motor **Encoder:** IR Opto-interrupter, 4XDigital Hall **Driver:** Monolithic Dual H-Bridge **Signal Conditioning:** PWM Generator, F/V Converter **Interface Connector:** 40-pin IDC, 2mm Input/Output **Compatible PLC Trainer:** Mentioned Above **Accessories:** User Manual, IDC Cable, Sample Program, 2mm Patch Cords **Experiments Included:** Introduction, DC Motor Control using PLC Stepper Motor Control using PLC R/C Servo Motor Control using PLC **OR Equivalent**	No	Any	10			
	7H	**Robot Control Module By PLC**	**Features:** The robot module is used to transport pieces in a circular area. It includes a cylinder for up/down movements, another cylinder for the forward/backward movements, a suction cup for holding the piece, and a motor with encoder coupled to a reducer for the operations of rotation. The robot's movements are clearly identified by the REED sensors, for the movement of cylinders and by the inductive sensor for the rotation. **Technical Features:** **Sensors and actuators:** 1 Motor of 24 V DC with encoder 3 5/2 monostable electro-valves 1 Inductive sensor	No	Any	10			

			4 REED sensors **Module I/O:** 7 Digital inputs 5 Digital outputs **Experiments Included:** Principles of electro-pneumatics Operation of vacuum circuit coupled to a suction cup Operation of the electro-valves Operation of REED and inductive sensors **OR Equivalent**						
	7I	**Module for Testing Selecting Pieces Control By PLC**	**Features:** The module is used to test and select pieces and it has been designed to work with the module of conveyor belt module. It consists of two cylinders for the selection of pieces and two sensors: an inductive sensor enables to identify the material (plastic/metal); whereas another optic reflection sensor is used to identify the color (white/black). **Technical Features:** **Sensors and actuators:** 1 Inductive sensor 1 Optic reflection sensor 2 3/2 electro-valves **Module I/O:** 2 Digital inputs 2 Digital outputs **Experiments Included:** Principles of electro-pneumatics Operation of pneumatic cylinders Operation of inductive sensors Operation of optic reflection sensors **OR Equivalent**	No	Any	10			
	7J	**Weight Control Module By PLC**	**Features:** The module IT-5109 is used to weigh pieces. The sensor included in this equipment enables to carry out measurements on objects of variable weight	No	Any	10			

			(from 0.1 to 4 kg) generating an analog output Signal ranging between 0 and 10 V. **Technical Features:** **Sensors and actuators:** Weight sensor **Module I/O:** 1 Analog output **Experiments Included:** Principles of electronics Operation of weight sensors **OR Equivalent**						
	7K	**Storage Control Module for Prismatic Pieces By PLC**	**Features:** The module is used to distribute prismatic pieces. It has been designed to work with the module of conveyor belt. Pieces are expelled by a double acting cylinder controlled by a 5/2-way solenoid valve. The presence of pieces in the column is detected by a micro-switch sensor, whereas the position of the cylinder is detected by two REED sensors. **Technical Features:** **Sensors and actuators:** 1 Micro-switch sensor 2 REED sensors 1 5/2 electro-valve **Module I/O:** 3 Digital inputs 2 Digital outputs **Experiments Included:** Principles of electro-pneumatics Operation of micro-switch sensors Operation of REED sensors **OR Equivalent**	No	Any	10			
	7L	**Conveyor Belt Control Module By PLC**	**Features:** The module has been designed to enable the linear pieces transportation along one axis, in the two directions. The conveyor is driven by a bidirectional DC motor that provides the movement of the belt.	No	Any	10			

			Technical Features: **Sensors and actuators:** 1 Fiber optical sensor 1 DC motor 24 VDC **Module I/O:** 1 Digital inputs 2 Digital outputs **Experiments Included:** Principles of electrical control of DC motor The conveyor operation The fiber optical sensor **OR Equivalent**						
	7M	**HMI (Touch Screen Module)**	**Features:** Power Supply Installed Communication Port Installed Programming Port Installed **Technical Features:** Display: Display: 7" TFT LCD Resolution: 800x480 Brightness: 300 Contrast Ratio: 500:1 Backlight Type: LED Backlight Life Time: >30,000hrs Colors: 16M LCD Viewing Angle (T/B/L/R): 70/50/70/70 Touch Panel: type: 4-wire resistive type Accuracy: Active area length (x) 2%, width(Y) + +2% Memory: Flash: 128MB RAM: 128MB Processor: 32Bits RISC Cortex-A8 600MHz I/O Port: USB Host: USB 2.0x1 USB Client: N/A	No	Any	10			

			Ethernet: 10/100 Base-T x 1 COM Port: COM1: RS-232, COM2: RS-485 2W/4W **OR Equivalent**						
	7N	**Pneumatic Supply unit**	Pneumatic Supply unit Compactable with above mentioned trainer/modules **OR Equivalent**	No	Any	10			
	7O	**PLC Workbench**	Metallic workbench should have following specifications. Main module installed in front of the table. At least two drawers for small components. Cabinet with shelves for sub-modules The height (less than 4ft approx.), length (4ft approx.), width (3ft approx.). There can be small variations in the said dimension of the table. Sample picture attached below	No	Any	10			

Firm Name: _____

Signature:_____

Name: _____

Designation: _____

Annex-A1

Special Instructions

Description	Bidder		Tech Scrutiny to be done by User		
	Yes	No	Accepted	Rejected	Reasons of Rejection
Environment Conditions (a) Temperature range: 05ºC to +45ºC (b) Relative humidity: 0-70% non-condensing					
Warranty period One year from the date of commissioning.					
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 Used (3) Trouble shooting guide (b) **IPB** should have 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.					
Spares / Technical Support (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					
Additional Spare / Replaceable parts. (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.					
Physical Inspection Criteria: 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 OEM (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. (f) Brand name and country of origin.					
Commissioning (a) Commissioning of the equipment will be carried out by OEM rep at his own cost and risk at designated place at NUTECH. (b) Any special requirement for installation, operation and commissioning must be specified the offer by the supplier.					
Training: 01 week OEM operational/ maintenance training at NUTECH					

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.					
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) In case 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					
Note: Item at ser 7 with parts i.e 7A to 7O will be awarded on package deal basis					

Firm Name: _____

Signature:_____

Name: _____

Designation: _____

Annex-B

TECHNICAL OFFER
NUTECH / SCM / Electrical Lab Eqpt (RE) 2021 / TD-200

Fill in following essential parameters:-

1. Validity of Offer: _____Days (Should not be less than **90 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)

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 / Electrical Lab Eqpt (RE) 2021 / TD-200

Ser	Part No	Item Name/Size	Specification	A/U	Qty Req	Unit Price PKR (Including Tax)	Total Price PKR (Including Tax)
1		**Function/Signal Generator**	• Channels : 2 • Frequency range: 1 µHz...25 MHz (sine); arbitrary 1 µHz...10 MHz • Waveforms: Sine, square/pulse, ramp, white noise, arbitrary (exp. rise/fall, sin(x)/x, staircase etc. • Resolution: 14 bit • Sample rate: 125MS/s • Arbitrary waveform length approx. 8000 points • Modulation: AM, FM, PM, FSK • Frequency counter: Frequency, period, positive pulse width, duty cycle; frequency range single channel 100 mHz...200 MHz; frequency resolution 6 digits/s • Anyaccessory/software required for operation of the equipment. **Or Equivalent**	No	05		
2		**Techometer**	Total test range: 2 - 199,999 rpm(± 10%) Test range: 2.5 - 199,999 rpm (non-contact)(± 10%) Test range: 2 - 19,999 rpm (contact)(± 10%) Resolution: 0.001 (0 - 99 rpm); 0.1 (100 - 999 rpm)(± 10%) 0.1 (1000 - 9999 rpm)(± 10%) 1 (1000 - 199,999 rpm)(± 10%) Sampling rate: 0.5 sec (over 120 rpm)(± 10%) Measuring distance: 50 mm to 500 mm(± 10%)	No	02		

			Accuracy: ± 0.05% + 1 digits(± 10%) Laser: class 2 Output: < 1 mW(± 10%) Wavelength: 630 - 670 nm(± 10%) Operating voltage: 9 V-Batteries or compactable batteries **OR Equivalent**				
3		**LCR meters**	Measurement functions: DCR, Ls, Cs, Lp, Cp, D, Q, Rp, θ, ESR (± 10%) Capacitance measurements Ranges: 200/2000 pF, 20 nF, 20/200 µF, 2/20 mF (± 10%) Resistor Ranges: 20/200 Ohm, 2/20/200 kOhm, 2/20/200 MOhm(± 10%) Inductance Ranges: 20/200/2000 µH, 20/200 mH, 20/2000 H, 20 kH(± 10%) Other functions DCR: 200 Ohm ~ 200 MOhm.(± 10%) ESR: 0.00 Ohm ~ 20.0 MOhm(± 10%) 8-phase angle: -180° ~ +180 ° D/Q: 0.001 ~ 1999 (± 10%) Measuring frequencies: 100/120 Hz, 1/10/100 kHz(± 10%) Operating voltage: 6 x 1.5 V AAA batteries; optional mains adapter 12 V/500 mA (or compactable batteries) **OR Equivalent**	No	02		
4		**Clamp meter**	DCV: 400 mV/4/40/400/600 V; ± 1,5 % + 2 St.(± 10%) ACV: 400 mV/4/40/400/600 V; ± 1,0 % + 10 St.(± 10%) DCA: 40/400 A; ± 2,5 % + 5 St.(± 10%)	No	02		

			ACA: 40/400 A; ± 2,5 % + 8 St.(± 10%) Resistance: 400 Ω/4/40/400 kΩ/4/40 MΩ; ± 1,5 % + 2 St.(± 10%) Cap.: 40 nF - 4 mF; ±3,0 % + 5 St.(± 10%) Freq.: 10 Hz - 100 kHz; ± 1,5 % + 2 St.(± 10%) Temp.: -20 ... +760°C; ± 3,0 % + 5 St.(± 10%) **OR Equivalent**				
5		**Earth tester/ Insulation Tester**	Insulation range/test voltage: 200MΩ/250V; 200MΩ/500V; 2000MΩ/1000V; ±1.5% + 5 dgt 100kΩ (± 10%) Short circuit current: 1mA DC (± 10%) Voltage AC: 600V; 1.5%+ 3 dgt – 1V (± 10%) Ohmic: 20/2kΩ; ±1.5% + 3 dgt - 10mΩ (± 10%) Operation voltage: 8x 1.5V batteries (UM3, AA) (or compactable batteries) **OR Equivalent**	No	01		
6		**FPGA Trainer Board**	At least 4 input LUTs and 8 flip-flops At least 2.1Mbits of fast block RAM Four clock tiles (eight DCMs & four PLLs) 58 DSP slices Approx. 500MHz+ clock speeds At least 128MB DDR2 SDRAM At least 2MB SRAM At least 16MB QSPI FLASH 100 MHz Crystal Oscillator 20W power supply and USB cable 10/100 Ethernet PHY HDMI Video Output 12-bit VGA port I2S Audio codec with line-in, line-out, mic, and headphone USB-JTAG circuitry with USB-UART function At least three two-digit seven-segment LED displays	No	10		

			On-board USB2 ports for programming and USB-HID devices (for mouse/keyboard) Keypad with 16 labelled keys (0-F) GPIO: 14 LEDs (10 red, 2 yellow, 2 green), 8 slide switches, 8 DIP switches in 2 groups, and 4 push buttons Breadboard with 10 Digital I/Os 32 I/Os routed to 40-pin expansion connector Seven 12-pin Pmod ports with 56 I/Os total **OR Equivalent**				
7		**Programmable Logic Control Trainer (Siemen Based)**	**The Trainer consists of PLCs module, power supply, programming, operating software and Programming cable.** **Features:** Power Supplies Installed Analog Source Included Input Switches Installed Interface Headers Installed **Technical Features:** **PLC:** Siemens CPU 1215C **Digital Outputs:** 10 **Analog Inputs:** 2 X Voltage Type with 11-bit ADC **Analog Outputs:** 2X Voltage Type & Current Type Simultaneous Output **Programming Language:** Ladder, STL & FBD **Analog Voltage Source:** 2 X +/- 10V **Fixed Supply DC:** 24V, 12V & 5V **Interface Connector:** 40-pin IDC **Digital Input Simulator:** 8X Momentary, 8X Toggle Switches **Accessories:** 2mm Patch Cords, Power Cord, Experiment Manual, IDC Cable, PC Programming Cable, Software CD **Experimental Capabilities:** Implementation of Logic Gates Implementation of Counters(Parking Stand) Implementation of Timer Application (Flash Light) Study of PLC Analog Input Implement Digital to Analog Converter	No	10		

			<u>The equipment should have below mentioned modules</u> **OR Equivalent**				
	7A	**Traffic Light Control By PLC**	**Technical Features:** **Round About:** Red, Yellow & Green Lamps **Right Turn:** Red, Green Lamps **Digital Output from PLC:** 8X **Interface Connector:** 40-pin IDC **Compatible PLC Trainer:** Mentioned above **Accessories:** User Manual, IDC Cable, Sample Program **Experiments Included:** Introduction, Types of Traffic Lights Traffic Light Control using PLC **OR Equivalent**	No	10		
	7B	**Water Level Control By PLC**	**Features:** Control Circuits Installed Drivers Installed Protection Circuits Installed **Technical Features:** **Input to PLC:** 5X Level, 2X Output Valves **Output from PLC:** 2X Pump Drives **Analog Output from PLC:** To Drive Level Indicators **Interface Connector:** 40-pin IDC **Compatible PLC Trainer:** Mentioned above **Accessories:** User Manual, IDC Cable, Sample Program **Experiments Included:** Introduction, Operation Water Level Control using PLC **OR Equivalent**	No	10		
	7C	**Temperature Control By PLC**	**Features:** Sensors installed on-board Control Circuits Installed	No	10		

			Drivers Installed Protection Circuits Installed **Technical Features:** **Heater:** 4X 47R 5W Resistor Type **Fan:** 12 VDC **3 ½-Digit Digital Voltmeter:** LCD Type **3 ½-Digit Digital Ammeter:** LCD Type **Analog Input to PLC:** 1X Voltage, 1X Current Type **Output Signals from PLC:** 2X Fan ON/OFF, 2X Heater ON/OFF **Temperature Sensor:** 2X IC Type **Interface Connector:** 40-pin IDC **Compatible PLC Trainer:** Mentioned Above **Accessories:** User Manual, IDC Cable, Sample Program, 2mm Patch Cords **Experiments Included:** Introduction, Control Loops Temperature Control using PLC **OR Equivalent**				
	7D	**Conveyor Control By PLC**	**Features:** Sensors installed on-board Control Circuits Installed Drivers Installed Protection Circuits Installed **Technical Features:** **Conveyor Belt:** 205mm **Sensors:** IR, Proximity **Motor:** DC Gear Motor **Indicator:** LED, Buzzer **Control:** Auto / Manual, Forward / Reverse **Digital Inputs to PLC:** IR, Proximity, Auto/Manual & Process Reset **Digital Outputs from PLC:** Forward, Reverse, LED, Buzzer **Interface Connector:** 40-pin IDC **Compatible PLC Trainer:** Siemens IT-1200S	No	10		

			Accessories: User Manual, IDC Cable, Sample Program **Experiments Included:** Introduction, Types of Conveyor Belts **Conveyor Belt:** 205mm Conveyor Control using PLC **OR Equivalent**				
	7E	**Elevator Control By PLC**	**Features:** Control Circuits Installed Drivers Installed Protection Circuits Installed **Technical Features:** **Elevator:** 3-Floor **Floor Indicator:** 7-Segment LED Display **Call Switch:** Momentary Tact Type **Call Indicator:** LEDs **Elevator Direction Indicator:** LEDs **Elevator Door Indicator:** 8X8 Dual Colour Dot Matrix **Digital Inputs to PLC:** 3XCall Switches, 3XInternal Panel Floor Switch **Digital O/P from PLC:** 2XFloor Indicator, 3XDoor Indicator, UP, DOWN, 3XCall Switch Indicator **Interface Connector:** 40-pin IDC **Compatible PLC Trainer:** Siemens IT-1200S **Accessories:** User Manual, IDC Cable, Sample Program **Experiments Included:** Introduction, Types of Elevators Elevator Control using PLC **OR Equivalent**	No	10		
	7F	**Motor Control By PLC**	**Features:** Sensors installed on-board Control Circuits Installed	No	10		

			Drivers Installed Protection Circuits Installed **Technical Features:** **Motor:** DC Motor, Stepper Motor & R/C Servo Motor **Encoder:** IR Opto-interrupter, 4XDigital Hall **Driver:** Monolithic Dual H-Bridge **Signal Conditioning:** PWM Generator, F/V Converter **Interface Connector:** 40-pin IDC, 2mm Input/Output **Compatible PLC Trainer:** Mentioned Above **Accessories:** User Manual, IDC Cable, Sample Program, 2mm Patch Cords **Experiments Included:** Introduction, DC Motor Control using PLC Stepper Motor Control using PLC R/C Servo Motor Control using PLC **OR Equivalent**				
	7G	**Electro-Pneumatic Conveyor Control By PLC**	**Features:** Sensors installed on-board Control Circuits Installed Drivers Installed Protection Circuits Installed **Technical Features:** **Motor:** DC Motor, Stepper Motor & R/C Servo Motor **Encoder:** IR Opto-interrupter, 4XDigital Hall **Driver:** Monolithic Dual H-Bridge **Signal Conditioning:** PWM Generator, F/V Converter **Interface Connector:** 40-pin IDC, 2mm Input/Output **Compatible PLC Trainer:** Mentioned Above **Accessories:** User Manual, IDC Cable, Sample Program, 2mm Patch Cords **Experiments Included:** Introduction, DC Motor Control using PLC	No	10		

			Stepper Motor Control using PLC R/C Servo Motor Control using PLC **OR Equivalent**				
	7H	**Robot Control Module By PLC**	**Features:** The robot module is used to transport pieces in a circular area. It includes a cylinder for up/down movements, another cylinder for the forward/backward movements, a suction cup for holding the piece, and a motor with encoder coupled to a reducer for the operations of rotation. The robot's movements are clearly identified by the REED sensors, for the movement of cylinders and by the inductive sensor for the rotation. **Technical Features:** **Sensors and actuators:** 1 Motor of 24 V DC with encoder 3 5/2 monostable electro-valves 1 Inductive sensor 4 REED sensors **Module I/O:** 7 Digital inputs 5 Digital outputs **Experiments Included:** Principles of electro-pneumatics Operation of vacuum circuit coupled to a suction cup Operation of the electro-valves Operation of REED and inductive sensors **OR Equivalent**	No	10		
	7I	**Module for Testing Selecting Pieces Control By PLC**	**Features:** The module is used to test and select pieces and it has been designed to work with the module of conveyor belt module. It consists of two cylinders for the selection of pieces and two sensors: an inductive sensor enables to identify the material (plastic/metal); whereas another optic reflection sensor is used to identify the color (white/black). **Technical Features:** **Sensors and actuators:**	No	10		

			1 Inductive sensor 1 Optic reflection sensor 2 3/2 electro-valves **Module I/O:** 2 Digital inputs 2 Digital outputs **Experiments Included:** Principles of electro-pneumatics Operation of pneumatic cylinders Operation of inductive sensors Operation of optic reflection sensors **OR Equivalent**				
	7J	**Weight Control Module By PLC**	**Features:** The module IT-5109 is used to weigh pieces. The sensor included in this equipment enables to carry out measurements on objects of variable weight (from 0.1 to 4 kg) generating an analog output Signal ranging between 0 and 10 V. **Technical Features:** **Sensors and actuators:** Weight sensor **Module I/O:** 1 Analog output **Experiments Included:** Principles of electronics Operation of weight sensors **OR Equivalent**	No	10		
	7K	**Storage Control Module for Prismatic Pieces By PLC**	**Features:** The module is used to distribute prismatic pieces. It has been designed to work with the module of conveyor belt. Pieces are expelled by a double acting cylinder controlled by a 5/2-way solenoid valve. The presence of pieces in the column is detected by a micro-switch sensor, whereas the position of the cylinder is detected by two REED sensors. **Technical Features:** **Sensors and actuators:** 1 Micro-switch sensor 2 REED sensors 1 5/2 electro-valve	No	10		

			Module I/O: 3 Digital inputs 2 Digital outputs **Experiments Included:** Principles of electro-pneumatics Operation of micro-switch sensors Operation of REED sensors **OR Equivalent**				
	7L	**Conveyor Belt Control Module By PLC**	**Features:** The module has been designed to enable the linear pieces transportation along one axis, in the two directions. The conveyor is driven by a bidirectional DC motor that provides the movement of the belt. **Technical Features:** **Sensors and actuators:** 1 Fiber optical sensor 1 DC motor 24 VDC **Module I/O:** 1 Digital inputs 2 Digital outputs **Experiments Included:** Principles of electrical control of DC motor The conveyor operation The fiber optical sensor **OR Equivalent**	No	10		
	7M	**HMI (Touch Screen Module)**	**Features:** Power Supply Installed Communication Port Installed Programming Port Installed **Technical Features:** Display: Display: 7" TFT LCD Resolution: 800x480 Brightness: 300 Contrast Ratio: 500:1 Backlight Type: LED Backlight Life Time: >30,000hrs Colors: 16M LCD Viewing Angle (T/B/L/R): 70/50/70/70	No	10		

			Touch Panel: type: 4-wire resistive type Accuracy: Active area length (x) 2%, width(Y) + +2% Memory: Flash: 128MB RAM: 128MB Processor: 32Bits RISC Cortex-A8 600MHz I/O Port: USB Host: USB 2.0x1 USB Client: N/A Ethernet: 10/100 Base-T x 1 COM Port: COM1: RS-232, COM2: RS-485 2W/4W **OR Equivalent**				
	7N	**Pneumatic Supply unit**	Pneumatic Supply unit Compactable with above mentioned trainer/modules **OR Equivalent**	No	10		
	7O	**PLC Workbench**	Metallic workbench should have following specifications. Main module installed in front of the table. At least two drawers for small components. Cabinet with shelves for sub-modules The height (less than 4ft approx.), length (4ft approx.), width (3ft approx.). There can be small variations in the said dimension of the table.	No	10		
Total							

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 he 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:

"SPECIMEN FOR BANK GUARANTEE AGAINST 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 been 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	Quoted Currency as per IT		**Yes**	**No**
6	Accounting unit/Qty as per IT		**Yes**	**No**
7	Delivery Schedule as per IT		**Yes**	**No**
8	Country of origin of store_____			
9	Name of OEM:-_____			
10	Original Performa invoice (Mandatory)		**Yes**	**No**
11	Certified that there is no Deviation from IT conditions/ there is deviation from IT condition as per fol details		**Yes**	**No**
12	Blacklisting certificate.		**Yes**	**No**
13	Verifiable OEM Certificate		**Yes**	**No**
14	Warranty Period as per IT		**Yes**	**No**
15	ATPs provided		**Yes**	**No**

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

_____

Signature of Firm Auth Signatory