



TENDER DOCUMENTS

Laboratory Equipment

NUTECH / SCM / Design Lab Eqpt Phase-III (B)-2019 / TD-089

NATIONAL UNIVERSITY OF TECHNOLOGY

TENDER NOTICE

National University of Technology (NUTECH)

NUTECH / SCM / Design Lab Eqpt Phase-III (B)-2019 / TD-089

Sealed bids are invited from Government / FBR Registered Firms for the procurement of **Design Laboratory Equipment** for NUTECH.

1. Tender documents containing terms, conditions and detailed specifications of items (including draft contract) can be downloaded from NUTECH website "<https://nutech.edu.pk>" w.e.f **10 Oct 2019**.
2. Quotations shall be submitted as per requirement of the tender documents.
3. 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).
4. Sealed bids with detailed specifications should reach on the following address latest by **1030 hours on 31 Oct 2019**. Late submission will not be entertained.
5. Bids will be opened at **1100 hours on 31 Oct 2019** at SCM Office.
6. Project is to be completed in **90days** from the date of award of contract.
7. 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.

Deputy Director (Supply Chain Management)

NATIONAL UNIVERSITY OF TECHNOLOGY, UPROAD,I-12,ISLAMABAD

Tel: 0092-51-5476768, Ext: 178

NATIONAL UNIVERSITY OF TECHNOLOGY

SUPPLY CHAIN MANAGEMENT

INVITATION TO TENDER

1. NUTECH desires to procure the list of item(s) / Store(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. If due to any unforeseen circumstances, NUTECH establishment is close on given date, then the last date of submission will be extended to next working day.
2. Please also note that Technical Offer should contain only Annexes-A & B duly filled in (supported with relevant technical literature / details / catalogues etc) and receipt of tender processing fee. Commercial Offer will contain Annexure-C and bid bond (Dully mentioned and placed in separate envelope). Please ensure no space is left blank in the annexes.
3. Following must be noted :-
 - a. 4 x copies of technical offer are to be provided.
 - b. Annexes A, B and C must be signed and stamped. Attach only relevant documents.
 - c. Complete all document as per given format. Do not use your format or letter head. Offer may be rejected if given format is not followed.
 - d. Validity of offer will be for **90 days**.
 - e. Delivery period will be **90 days** from the date of award of contract.
 - f. The firm should provide point to point acceptance of each clause of IT and special instructions attached with IT.
 - g. Firm will render a certificate with technical offer that firm is neither defaulter nor blacklisted by any Government / semi Government organization directly or indirectly.
 - h. Commercial Offer must be accompanied with a Bid Bond in agreement of faithful compliance of the conditions of Contract / Purchase Order. This amount will be equivalent to 5% of the total quoted value. In case of non-acceptance of any offer, the Bid Bond will be returned to the bidder by fastest possible means. The Bid Bond amount submitted by the successful bidder will however be refunded on effective termination

of Contract / Purchase Order. (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.

- i. Rates should be quoted on Free Delivery basis at NUTECH Islamabad.
- j. **2 years** warranty against **5% Bank Guarantee** will be required from the successful bidders from the date of commissioning as performance bond.
- k. Commercial Offer must be accompanied with a Bid Bond in agreement of faithful compliance of the conditions of Contract/Purchase Order. This amount will be equivalent to 5% of the total quoted value. In case of non-acceptance of any offer, the Bid Bond will be returned to the bidder by fastest possible means. The Bid Bond amount submitted by the successful bidder will however be refunded on effective termination of Contract/ Purchase Order. (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.
- l. Rates should be quoted on Free Delivery basis at NUTECH Islamabad.
- m. Bid Bond may 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.
- n. 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 contract value, in any way.
- o. If even after applicability of 10% LD, the Seller fails to deliver the required stores, the Buyer will be at liberty to procure the stores from

an alternate source, on the Seller's "Risk & Cost". In that case, the Seller will be bound to make payment to the new source through NUTECH

- p. 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 /
 - q. damage of whatsoever nature shall be entertained and NUTECH's decision in this regard will be final and binding on the Supplier / Seller.
 - r. An appropriate amount may be paid for mobilization against Bank Guarantee/CDR/Demand Draft/Pay Order
 - s. Partial payment/partial delivery allowed.
4. NUTECH reserves the rights to accept or reject any or all tenders as a whole or in part without assigning any reason whatsoever. The decision in this regard will be firm, final and binding on all bidders.

DD (Supply Chain Management)

Technical Specifications

NUTECH / SCM / Design Lab Eqpt Phase-III (B)-2019 / TD-089

Ser	Items	Description	A/ U	Country of Origin	Qty Req	Bidder Compliance			Tech Scrutiny to be done by user	
						Yes	No	Alternate	Accepted	Rejected
									Reason of Rejection	
01	Student embedded device	<ul style="list-style-type: none"> • Processor type Xilinx Z-7010 • Processor speed 667 MHz • Processor cores 2 • Nonvolatile memory 256 MB • DDR3 memory 512 MB • DDR3 clock frequency 533 MHz • DDR3 data bus width 16 bits • FPGA type Xilinx Z-7010 • Radio mode IEEE 802.11 b,g,n • Frequency band ISM 2.4 GH • Channel width 20 MHz • Outdoor range Up to 150 m (line of sight) • USB host port USB 2.0 Hi-Speed • USB device port USB 2.0 Hi-Speed • Expansion Port (MXP) Breakouts (One-Included in Kit) • Analog input (AI) has aggregate sample rate 500 kS/s • Analog output (AO) has aggregate sample 345 kS/s • Digital input and output (DIO) audio • Power output in a compact embedded-device 	No	United States	13					

		<ul style="list-style-type: none"> • Connects to a host computer over USB and- wireless 802.11b,g,n. • Mini System Port (MSP) connector • Contains a three-axis accelerometer • Contains 3.3 V general-purpose DIO lines- on the MXP and MSP connectors • Has one UART receive input line one UART transmit output line on each MXP connector • Reset button restarts the processor and the FPGA • Wireless button • USB host port supports Web cameras • USB host port also supports USB Flash drives • Supports USB-to-IDE adapters formatted with FAT16 and FAT32 file systems • Maximum power consumption 14 W • Typical idle power consumption 2.6 W • Ambient temperature (IEC 60068-2-1, IEC 600682-2) near device 0 to 40 °C • Operating humidity (IEC 60068-2-56) 10 to 90% RH, noncondensing <p>Accessory</p> <ul style="list-style-type: none"> • Power Input Cable • Power supply with voltage range 6-16 VDC • MXP breakouts • MSP connector • Panel mounting kit 						
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		<ul style="list-style-type: none"> • USB Device Cable • USB Host Cable (Not Included in Kit) • Mini System Port (MSP) Screw-Terminal Connector Audio in/Out Cables (One Included in Kit)							
02	Analog Discovery 2-Student Only	<ul style="list-style-type: none"> • 2-Channel Oscilloscope • 2-Channel Waveform Generator • 16-Channel Logic Analyzer • 16-Channel Digital Pattern Generator • Digital I/O • Voltmeter • Spectrum Analyzer • Network Analyzer • ± 5VDC Adjustable • Power Supplies • Compatible with Windows, Mac, and Linux • USB powered; all needed cables included • High-speed USB2 interface for fast data transfer • Software Development Kit provided for custom applications • Waveform Generator output can be played on stereo audio jack • Two external trigger pins can link triggers across multiple devices • Cross triggering between instruments • Help screens, including contextual help 	No	United States	10				

		<ul style="list-style-type: none"> • Instruments and workspaces can be • Individually configured; configurations can be exported • Two independent meters (shared with Analog input channels) • Automatic measurements include DC, AC RMS and True RMS values • Single-ended and differential measurement capability • Up to $\pm 25V$ on each pin ($\pm 50V$ max peak-peak) • Auto-range feature selects best gain range • Performs FFT or CZT algorithm on analog input channels and displays power spectrum • Frequency range adjustments in center/span or start/stop modes • Linear or logarithmic frequency scale • Peak tracking option finds peak power and adjusts display to keep peak in center of display • Vertical axis supports voltage-peak, voltageRMS, dBV and dBu display options • Windowing options include rectangular, triangular, hamming, Cosine, and many others • Cursors and automatic measurements including noise floor, SFDR, SNR, THD, and many others • Data file export using standard formats 										
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		<ul style="list-style-type: none"> • Two fully differential channels; 14-bit converters; 100 MSPS real-time sample rate • 500uV to 5V/division; 1MΩ, 24pF inputs with 9MHz analog bandwidth (30MHz using BNC Adapter Board) • Input voltages up to $\pm 25V$ on each input ($\pm 50V$ differential); protected to $\pm 50V$ • Up to 16k samples/channel buffer length • Advanced triggering modes (edge, pulse, transition types, hysteresis, etc.) • Trigger in/trigger out allows multiple instruments to be linked • Selectable channel sampling mode (average, decimate, min/max) • Mixed signal visualization (analog and digital signals share same view pane) • Real-time FFTs, XY plots, Histograms and other functions always available • Multiple math channels support complex functions Cursors with advanced data measurements available on all channels • All captured data files can be exported in standard formats Scope configurations can be saved, exported and Imported • Two channels; 14-bit converters; 100 MSPS real-time sample rate • Single-ended waveforms with offset control and up to $\pm 5 V$ amplitude 											
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		<ul style="list-style-type: none"> • 9MHz analog bandwidth and up to 16k samples/channel (12MHz using BNC Adapter Board) • Easily defined standard waveforms (sine, triangle, sawtooth, etc.) • Easily defined sweeps, envelopes, AM and FM modulation • User-defined arbitrary waveforms can be defined using standard tools (e.g. Excel) • Digital Pattern Generator 16 signals shared between analyzer, pattern generator, and discrete I/O • 100 MSPS, with buffers supporting up to 16K transitions per pin • Algorithmic pattern generator (no memory buffers used) • Custom pattern editor supports up to 16K transitions per pin s3.3V outputs • Data file import/export using standard formats <p>Customized visualization options for signals and busses</p>							
03	DAQ University Kit	<ul style="list-style-type: none"> • Number of channels 2 differential or 1 stereo audio input • ADC resolution 16 bits • Maximum sampling rate 200 kS/s • Timing accuracy 100 ppm of sample rate • Timing resolution 10 ns • Analog input ± 10 V, ± 2 V, DC-coupled • Audio input ± 2 V, AC-coupled • Passband (-3 dB) • Analog input DC to 400 kHz • Audio input 1.5 Hz to 400 kHz 	No	United States	5				

		<ul style="list-style-type: none"> • Connector type • Analog input Screw terminals • Audio input 3.5 mm stereo jack • Input type (audio input) Line-in or microphone • Microphone excitation (audio input) 5.25 V through 10 kΩ • Number of channels 2 ground-referenced or 1 stereo audio output • DAC resolution 16 bits • Maximum update rate 200 kS/s • Analog output ± 10 V, ± 2 V, DC-coupled • Audio output ± 2 V, AC-coupled • Maximum output current (analog output) 2 mA • Analog output 1 Ω • Audio output 120 Ω • Number of lines 8; DIO <0..7> Direction control Each line individually programmable as input or output • Update mode Software-timed • Pull-down resistor 75 kΩ • Logic level 5 V compatible LVTTTL input; 3.3 V LVTTTL • VIH min 2.0 V • VIL max 0.8 V • Maximum output current per line 24 mA • Functions: DC voltage, AC voltage, DC current, AC current, resistance, diode, continuity • Isolation level: 60 VDC/20 Vrms, Measurement Category 						
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		Bus interface USB 2.0 Hi-Speed							
04	DAQ Circuits and Electronics Protoboard	<ul style="list-style-type: none"> Extends the capabilities of the DAQ Student Data Acquisition Device for teaching circuits and electronics curriculum. <p>The DAQ Circuits and Electronics Protoboard connects to the DAQ Student Data Acquisition Device to provide a customized tool for experimenting with circuits and electronic design. The protoboard extends the capabilities of the DAQ device by providing connections for external power and additional components to test.</p>	No	United States	5				
05	Single Axis Kit	<ul style="list-style-type: none"> MinSegMega Board: Arduino Compatible Mega 2560 (compatible with Arduino IDE) Supports 2 motors and 2 encoders DRV8833 motor driver MPU6050 3-axis accelerometer 3-axis gyro HMC5883L 3-axis Magnetometer/Compass Potentiometer for user input Bluetooth Header for plug in bluetooth module Header for NXT Sensors (like optical Sensor) and I2C Sensor (like sonar) NXT DC Motor with Encoder and wheels 6AA (9v) battery holder Retractable USB Cable <p>Project Box</p>		US, Canada, EU	10				
06	Raspberry Pi (Design Lab)	<ul style="list-style-type: none"> CPU: 4x ARM Cortex-A53, 1.2GHz. 	No	US, EU	13				

		<ul style="list-style-type: none"> GPU: Broadcom VideoCore IV. RAM: 1GB LPDDR2 (900 MHz) Networking: 10/100 Ethernet, 2.4GHz 802.11n wireless. Bluetooth: Bluetooth 4.1 Classic, Bluetooth Low Energy. Storage: microSD. GPIO: 40-pin header, populated.							
07	Digital Handheld Multi-meter	<ul style="list-style-type: none"> 0.05% basic accuracy True RMS Auto power off Overload and Short circuit protection DC ranges 200 mV to 20 V Resolution 10 μV to 100 mV AC ranges 200 mV, 2 V, 20 V, 200 V, 750 V Fused and short circuit protected	No	US, EU, China	13				
08	Digital Oscilloscope	<ul style="list-style-type: none"> 10Msamples standard and 20Msamples interleaved, 50000 waveforms/s update rate 100MHz dual channel Offers an outstanding sensitivity down to 1mV/div, full measurement bandwidth & low noise Math functions such as +, -, *, /, FFT Overload and Short circuit protection	No	US, EU	5				
09	Function Generator	<ul style="list-style-type: none"> Wide frequency ranges from 1uHz to 80/50MHz High 200MSa/s sampling rate 16-bit Amplitude Resolution Output from any section of 1M-point-long waveform 	No	China, America, Japan, Korea and Malaysia	5				

		<ul style="list-style-type: none"> • 4.3" high-resolution LCD display/on-screen help/Impedance switch • Four ways to generate arbitrary waveform: Front Panel Operation • CSV file uploading, Direct Waveform Reconstruction (DWR), Arbitrary • Waveform Editing PC Software USB, RS-232, GPIB interface support							
10	3D Printer	<ul style="list-style-type: none"> • Print Speed up to 250MM/sec and layer resolution as low as .05MM. 1.4 cu ft (14"x14"x12.6") enclosed print area with multi-zone heated bed. • 32 Bit Controller with Automated Bed Leveling & Remote Management Over Your Network. • Max travel speed: 550 mm/s, Positioning resolution: 21 micron (horizontal plane), Minimum feature size: 0.5 mm², Vertical resolution: 50 - 300-micron, Print head size: 0.4 mm, tolerances: ±0.003" per inch. • Max print head temperature: 300°C (572°F), Max bed temperature: 140°C (284°F), Connectivity: SD card, Ethernet. Processing software: Simplify3D Creator (included). Software compatibility: Windows, Mac, Linux Base. 	No	American/EU	1				
11	The DC Motor Control Kit	<ul style="list-style-type: none"> • Arduino Nano Compatible board with a micro usb connector • DRV8833 Motor Driver 	No	US	10				

		<ul style="list-style-type: none"> • 2 FPC headers for easy connection to included DC Motor • 2 JST ZH 1.5mm headers to directly connect micro-motors • Male Pinouts for 2 motors with encoders (see pinout diagram, M currently posted, this kit has same pinouts only switches are in different locations - will be updated soon) • DC motor with 334 encoder counts (1336 quadrature decoded) • Micro USB Cable • Altoid sized tin box • 2mm motor shaft • 2 different sized gears 							
12	Magnetic Levitation Kit + Nano Stick + Demo	<ul style="list-style-type: none"> • Fully functional Arduino compatible board with motor driver! • It will be pre-loaded with balance code so you can see it balance right away. • RASPLib) Compatible USB cable - plug in and balance! • Electromagnetic Coil & stand • Magnet • Cable for M1V4.3 • Integrated Hall effect sensor to measure position <p>Direct plug-in compatible with M1V4.3 shields, compatible with M2V3.2 and other systems with single jumper wire.</p>	No	US, EU, Canada	10				
13	EV3 Core Set	<ul style="list-style-type: none"> • The system includes the EV3 Intelligent Brick • A compact and powerful programmable computer that 	No	US	7				

		<p>makes it possible to control motors and collect sensor feedback using the intuitive icon-based programming and data logging software that is delivered with the set.</p> <p>The set is delivered in a sturdy storage bin with a sorting tray, three Servo Motors, five Sensors (Gyro, Ultrasonic, Color and 2x Touch), a EV3 Rechargeable DC Battery (with charging cable) and connecting cables.</p>							
14	Vector Robotic Arm	<ul style="list-style-type: none"> • Comes fully assembled • 6 DOF • ATMEGA64 Processor • Various available I/Os • I2C Bus • Easy downloads with RobotLoader Software • Easy control with keyboard or RACS Software • Heavy gage aluminum chassis <p>Wireless option available</p>	No	US	5				
15	Power Supply variable	<ul style="list-style-type: none"> • 0-30V 0-5A Dual Channel Bench Power Supply with Series and Parallel Tracking Modes • It has a dual-channel DC power supply with continuously-adjustable current and voltage • A large-screen LED-backlit display • Built-in knobs help operators eliminate hidden dangers resulting from faulty adjustment • The two channels operate independently and feature switch 	No	EU, US, China	13				

		<p>activated automatic tracking in series or in parallel modes</p> <ul style="list-style-type: none"> • The third fixed output features selection between 2.5V, 3.3V, and 5V • Independent Operations Mode: Allows the power supply to have 2ea. at 0-30V 0-5A output voltage and current. • Series Tracking Mode: Allows the power supply a max output voltage at 60V, with a max output current of 5A. • Parallel Tracking Mode: Allows the power supply a max output voltage value of 30V, with a max output current of 10A. • The power supply has a fixed output, "SER" mode, that can set a fixed output voltage (the voltage fixed output values are 2.5V, 3.3V & 5V all at 3 amps) • It features 3 positive and negative output voltage and current values. The 3 outputs can work simultaneously • 4 digit display for accurate displaying of current values, precise to mA values <p>An internal fan powers on at 113°F (45°C) degrees to keep the unit temperature down to prolong machine life.</p>							
16	Arduino 37 sensor kit	<ul style="list-style-type: none"> • 1 x Small passive buzzer module • 1 x 2-color LED module • 1 x Hit sensor module • 1 x Vibration switch module • 1 x Photo resistor module • 1 x Key switch module • 1 x Tilt switch module 	No	US, EU	5				

	<ul style="list-style-type: none"> • 1 x 3-color full-color LED SMD modules • 1 x Infrared emission sensor module • 1 x 3-color LED module KY-016 • 1 x Mercury open optical module • 1 x Yin Yi 2-color LED module 3MM • 1 x Active buzzer module • 1 x Temperature sensor module • 1 x Automatic flashing colorful LED module • 1 x Mini magnetic reed modules • 1 x Hall magnetic sensor module • 1 x Infrared sensor receiver module • 1 x Class Bihor magnetic sensor • 1 x Magic light cup module • 1 x Rotary encoder module • 1 x Optical broken module • 1 x Detect the heartbeat module • 1 x Reed module • 1 x Obstacle avoidance sensor module • 1 x Hunt sensor module • 1 x Microphone sound sensor module • 1 x Laser sensor module • 1 x 5V relay module • 1 x Temperature sensor module • 1 x Temperature sensor module • 1 x Linear magnetic Hall sensors • 1 x Flame sensor module • 1 x Sensitive microphone sensor module • 1 x Temperature and humidity sensor module 							
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		<ul style="list-style-type: none"> 1 x XY-axis joystick module 1 x Metal touch sensor module 1 x Box							
17	Analog & Digital Circuit Design Trainers	<ul style="list-style-type: none"> Large removable breadboard area with 3360 tie-points Two open-collector pulsers Built-in multi-waveform function generator Quad voltage power supply: Three DC & one low voltage AC Built-in logic probe with pulse capture BCD to seven segment decoder/display Eight logic indicators High-impact metal case	No	US	5				

Installation /Assembly /Commissioning Required	Yes✓	No	Contract with OEM / Supplier	Yes✓		No
Performance Bond Required	Yes✓	No	Package Deal	Yes✓		No
Note: (If any)			Warranty (2 x Years)	Yes✓		No
Maintenance Spares Required	Yes✓	No	Essentially Running Spares Required	Yes✓		No
Publications / Literature Required	Yes✓	No	Requirement of Certificate for Test Data Results	Yes		No✓
Training Required	Local✓	Foreign	Requirement of Calibration	Yes✓		No

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

Special Instructions

Description	Bidder			Tech Scrutiny to be done by User		
	Yes	No	Alternate Offer	Accepted	Rejected	Reasons of Rejection
Environment Conditions (a) Temperature range: 05°C to +45°C (b) Relative humidity: 0-70% non-condensing						
Warranty period Two years 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 Required (3) Trouble shooting guide (4) Cleaning requirements (b) Full parts description along with detailed diagrams (exploded view). (c) Experimental manuals which must contain the list and procedure of the experiments that equipment can perform.						
Spares / Technical Support						

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

Training 3 Days 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						
Special Notes (a) Additional requirements for the maintenance of equipment (if any) must be intimated by the supplier in technical offer. (b) Supplier must provide the list of organizations using same equipment in Pakistan (if any). (c) Equipment must be a standard product of OEM available at web address of OEM. (d) In case of premature failure of the equipment, OEM has to replace / rectify the item free of cost. Required transportation charges would be borne by the supplier.						

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

TECHNICAL OFFER

NUTECH / SCM / Design Lab Eqpt Phase-III (B)-2019 / TD-089

Fill in following essential parameters:-

1. Validity of Offer: _____ Days (Should not be less than **90 days**)
2. Delivery period: _____ Days (After placement of Offer)
3. Country of Origin: _____
4. Warranty Period: _____

General

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

Payment Terms.

1. 50% advance payment against BG/CDR/Pay Order/DD
2. 50% payment after delivery, installation / commissioning, user satisfaction certificate.

Details of Payment Recipient

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

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

FINANCIAL OFFER**NUTECH / SCM / Design Lab Eqpt Phase-III (B)-2019 / TD-089**

Ser	Items	Description	A/U	Qty Req	Unit Price (Rs) (Including all taxes)	Total (Rs) (Including all taxes)
01	Student embedded device	<ul style="list-style-type: none"> • Processor type Xilinx Z-7010 • Processor speed 667 MHz • Processor cores 2 • Nonvolatile memory 256 MB • DDR3 memory 512 MB • DDR3 clock frequency 533 MHz • DDR3 data bus width 16 bits • FPGA type Xilinx Z-7010 • Radio mode IEEE 802.11 b,g,n • Frequency band ISM 2.4 GH • Channel width 20 MHz • Outdoor range Up to 150 m (line of sight) • USB host port USB 2.0 Hi-Speed • USB device port USB 2.0 Hi-Speed • Expansion Port (MXP) Breakouts (One- Included in Kit) • Analog input (AI) has aggregate sample rate 500 kS/s • Analog output (AO) has aggregate sample 345 kS/s • Digital input and output (DIO) audio • Power output in a compact embedded-device • Connects to a host computer over USB and- wireless 802.11b,g,n. • Mini System Port (MSP) connector • Contains a three-axis accelerometer • Contains 3.3 V general-purpose DIO lines- on the MXP and MSP connectors • Has one UART receive input line one UART transmit output line on 	NO	13		

		<p>each MXP connector</p> <ul style="list-style-type: none"> • Reset button restarts the processor and the FPGA • Wireless button • USB host port supports Web cameras • USB host port also supports USB Flash drives • Supports USB-to-IDE adapters formatted with FAT16 and FAT32 file systems • Maximum power consumption 14 W • Typical idle power consumption 2.6 W • Ambient temperature (IEC 60068-2-1, IEC 600682-2) near device 0 to 40 °C • Operating humidity (IEC 60068-2-56) 10 to 90% RH, noncondensing <p>Accessory</p> <ul style="list-style-type: none"> • Power Input Cable • Power supply with voltage range 6-16 VDC • MXP breakouts • MSP connector • Panel mounting kit • USB Device Cable • USB Host Cable (Not Included in Kit) • Mini System Port (MSP) Screw-Terminal Connector <p>Audio in/Out Cables (One Included in Kit)</p>				
02	Analog Discovery 2-Student Only	<ul style="list-style-type: none"> • 2-Channel Oscilloscope • 2-Channel Waveform Generator • 16-Channel Logic Analyzer • 16-Channel Digital Pattern Generator • Digital I/O • Voltmeter • Spectrum Analyzer • Network Analyzer • ±5VDC Adjustable • Power Supplies • Compatible with Windows, Mac, and Linux 	NO	10		

		<ul style="list-style-type: none"> • USB powered; all needed cables included • High-speed USB2 interface for fast data transfer • Software Development Kit provided for custom applications • Waveform Generator output can be played on stereo audio jack • Two external trigger pins can link triggers across multiple devices • Cross triggering between instruments • Help screens, including contextual help • Instruments and workspaces can be • Individually configured; configurations can be exported • Two independent meters (shared with Analog input channels) • Automatic measurements include DC, AC RMS and True RMS values • Single-ended and differential measurement capability • Up to $\pm 25V$ on each pin ($\pm 50V$ max peak-peak) • Auto-range feature selects best gain range • Performs FFT or CZT algorithm on analog input channels and displays power spectrum • Frequency range adjustments in center/span or start/stop modes • Linear or logarithmic frequency scale • Peak tracking option finds peak power and adjusts display to keep peak in center of display • Vertical axis supports voltage-peak, voltageRMS, dBV and dBu display options • Windowing options include rectangular, triangular, hamming, Cosine, and many others • Cursors and automatic measurements including noise floor, SFDR, SNR, THD, and many others • Data file export using standard formats • Two fully differential channels; 14-bit converters; 100 MSPS real-time sample rate • 500uV to 5V/division; 1MΩ, 24pF inputs with 9MHz analog bandwidth (30MHz using BNC Adapter Board) 				
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		<ul style="list-style-type: none"> • Input voltages up to $\pm 25V$ on each input ($\pm 50V$ differential); protected to $\pm 50V$ • Up to 16k samples/channel buffer length • Advanced triggering modes (edge, pulse, transition types, hysteresis, etc.) • Trigger in/trigger out allows multiple instruments to be linked Selectable channel sampling mode (average, decimate, min/max) • Mixed signal visualization (analog and digital signals share same view pane) • Real-time FFTs, XY plots, Histograms and other functions always available • Multiple math channels support complex functions Cursors with advanced data measurements available on all channels • All captured data files can be exported in standard formats Scope configurations can be saved, exported and Imported • Two channels; 14-bit converters; 100 MSPS real-time sample rate • Single-ended waveforms with offset control and up to $\pm 5 V$ amplitude • 9MHz analog bandwidth and up to 16k samples/channel (12MHz using BNC Adapter Board) • Easily defined standard waveforms (sine, triangle, sawtooth, etc.) • Easily defined sweeps, envelopes, AM and FM modulation • User-defined arbitrary waveforms can be defined using standard tools (e.g. Excel) • Digital Pattern Generator 16 signals shared between analyzer, pattern generator, and discrete I/O • 100 MSPS, with buffers supporting up to 16K transitions per pin • Algorithmic pattern generator (no memory buffers used) • Custom pattern editor supports up to 16K transitions per pin s3.3V outputs 				
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		<ul style="list-style-type: none"> • Data file import/export using standard formats • Customized visualization options for signals and busses 				
03	DAQ University Kit	<ul style="list-style-type: none"> • Number of channels 2 differential or 1 stereo audio input • ADC resolution 16 bits • Maximum sampling rate 200 kS/s • Timing accuracy 100 ppm of sample rate • Timing resolution 10 ns • Analog input ± 10 V, ± 2 V, DC-coupled • Audio input ± 2 V, AC-coupled • Passband (-3 dB) • Analog input DC to 400 kHz • Audio input 1.5 Hz to 400 kHz • Connector type • Analog input Screw terminals • Audio input 3.5 mm stereo jack • Input type (audio input) Line-in or microphone • Microphone excitation (audio input) 5.25 V through 10 kΩ • Number of channels 2 ground-referenced or 1 stereo audio output • DAC resolution 16 bits • Maximum update rate 200 kS/s • Analog output ± 10 V, ± 2 V, DC-coupled • Audio output ± 2 V, AC-coupled • Maximum output current (analog output) 2 mA • Analog output 1 Ω • Audio output 120 Ω • Number of lines 8; DIO <0..7> Direction control Each line individually programmable as input or output • Update mode Software-timed • Pull-down resistor 75 kΩ • Logic level 5 V compatible LVTTTL input; 3.3 V LVTTTL • VIH min 2.0 V • VIL max 0.8 V • Maximum output current per line 24 mA 	NO	05		

		<ul style="list-style-type: none"> • Functions: DC voltage, AC voltage, DC current, AC current, resistance, diode, continuity • Isolation level: 60 VDC/20 Vrms, Measurement Category <p>Bus interface USB 2.0 Hi-Speed</p>				
04	DAQ Circuits and Electronics Protoboard	<ul style="list-style-type: none"> • Extends the capabilities of the DAQ Student Data Acquisition Device for teaching circuits and electronics curriculum. <p>The DAQ Circuits and Electronics Protoboard connects to the DAQ Student Data Acquisition Device to provide a customized tool for experimenting with circuits and electronic design. The protoboard extends the capabilities of the DAQ device by providing connections for external power and additional components to test.</p>	NO	05		
05	Single Axis Kit	<ul style="list-style-type: none"> • MinSegMega Board: Arduino Compatible Mega 2560 (compatible with Arduino IDE) • Supports 2 motors and 2 encoders • DRV8833 motor driver • MPU6050 3-axis accelerometer 3-axis gyro • HMC5883L 3-axis Magnetometer/Compass • Potentiometer for user input • Bluetooth Header for plug in bluetooth module • Header for NXT Sensors (like optical Sensor) and I2C Sensor (like sonar) • NXT DC Motor with Encoder and wheels • 6AA (9v) battery holder • Retractable USB Cable <p>Project Box</p>		10		
06	Raspberry Pi (Design Lab)	<ul style="list-style-type: none"> • CPU: 4x ARM Cortex-A53, 1.2GHz. • GPU: Broadcom VideoCore IV. • RAM: 1GB LPDDR2 (900 MHz) • Networking: 10/100 Ethernet, 2.4GHz 802.11n wireless. • Bluetooth: Bluetooth 4.1 Classic, Bluetooth Low Energy. • Storage: microSD. <p>GPIO: 40-pin header, populated.</p>	NO	13		

07	Digital Handheld Multi-meter	<ul style="list-style-type: none"> • 0.05% basic accuracy • True RMS • Auto power off • Overload and Short circuit protection DC ranges 200 mV to 20 V • Resolution 10 μV to 100 mV • AC ranges 200 mV, 2 V, 20 V, 200 V, 750 V <p>Fused and short circuit protected</p>	NO	13		
08	Digital Oscilloscope	<ul style="list-style-type: none"> • 10Msample standard and 20Msample interleaved, 50000 waveforms/s update rate • 100MHz dual channel • Offers an outstanding sensitivity down to 1mV/div, full measurement bandwidth & low noise • Math functions such as +, -, *, /, FFT <p>Overload and Short circuit protection</p>	NO	05		
09	Function Generator	<ul style="list-style-type: none"> • Wide frequency ranges from 1uHz to 80/50MHz • High 200MSa/s sampling rate • 16-bit Amplitude Resolution • Output from any section of 1M-point-long waveform • 4.3" high-resolution LCD display/on-screen help/Impedance switch • Four ways to generate arbitrary waveform: Front Panel Operation • CSV file uploading, Direct Waveform Reconstruction (DWR), Arbitrary • Waveform Editing PC Software <p>USB, RS-232, GPIB interface support</p>	NO	05		
10	3D Printer	<ul style="list-style-type: none"> • Print Speed up to 250MM/sec and layer resolution as low as .05MM. 1.4 cu ft (14"x14"x12.6") enclosed print area with multi-zone heated bed. • 32 Bit Controller with Automated Bed Leveling & Remote Management Over Your Network. • Max travel speed: 550 mm/s, Positioning resolution: 21 micron (horizontal plane), Minimum feature size: 0.5 	NO	01		

		<p>mm2, Vertical resolution: 50 - 300-micron, Print head size: 0.4 mm, tolerances: ±0.003" per inch.</p> <ul style="list-style-type: none"> • Max print head temperature: 300°C (572°F), Max bed temperature: 140°C (284°F), Connectivity: SD card, Ethernet. Processing software: Simplify3D Creator (included). <p>Software compatibility: Windows, Mac, Linux Base.</p>				
11	The DC Motor Control Kit	<ul style="list-style-type: none"> • Arduino Nano Compatible board with a micro usb connector • DRV8833 Motor Driver • 2 FPC headers for easy connection to included DC Motor • 2 JST ZH 1.5mm headers to directly connect micro-motors • Male Pinouts for 2 motors with encoders (see pinout diagram, M currently posted, this kit has same pinouts only switches are in different locations - will be updated soon) • DC motor with 334 encoder counts (1336 quadrature decoded) • Micro USB Cable • Altoid sized tin box • 2mm motor shaft <p>2 different sized gears</p>	NO	10		
12	Magnetic Levitation Kit + Nano Stick + Demo	<ul style="list-style-type: none"> • Fully functional Arduino compatible board with motor driver! • It will be pre-loaded with balance code so you can see it balance right away. • RASPLib) Compatible USB cable - plug in and balance! • Electromagnetic Coil & stand • Magnet • Cable for M1V4.3 • Integrated Hall effect sensor to measure position <p>Direct plug-in compatible with M1V4.3 shields, compatible with M2V3.2 and other systems with single jumper wire.</p>	NO	10		

13	EV3 Core Set	<ul style="list-style-type: none"> • The system includes the EV3 Intelligent Brick • A compact and powerful programmable computer that makes it possible to control motors and collect sensor feedback using the intuitive icon-based programming and data logging software that is delivered with the set. The set is delivered in a sturdy storage bin with a sorting tray, three Servo Motors, five Sensors (Gyro, Ultrasonic, Color and 2x Touch), a EV3 Rechargeable DC Battery (with charging cable) and connecting cables. 	NO	7		
14	Vector Robotic Arm	<ul style="list-style-type: none"> • Comes fully assembled • 6 DOF • ATMEGA64 Processor • Various available I/Os • I2C Bus • Easy downloads with RobotLoader Software • Easy control with keyboard or RACS Software • Heavy gage aluminum chassis <p>Wireless option available</p>	NO	5		
15	Power Supply variable	<ul style="list-style-type: none"> • 0-30V 0-5A Dual Channel Bench Power Supply with Series and Parallel Tracking Modes • It has a dual-channel DC power supply with continuously-adjustable current and voltage • A large-screen LED-backlit display • Built-in knobs help operators eliminate hidden dangers resulting from faulty adjustment • The two channels operate independently and feature switch activated automatic tracking in series or in parallel modes • The third fixed output features selection between 2.5V, 3.3V, and 5V • Independent Operations Mode: Allows the power supply to have 2ea. at 0-30V 0-5A output voltage and current. • Series Tracking Mode: Allows the power supply a max output voltage at 60V, with a max output current of 5A. 	NO	13		

		<ul style="list-style-type: none"> Parallel Tracking Mode: Allows the power supply a max output voltage value of 30V, with a max output current of 10A. The power supply has a fixed output, "SER" mode, that can set a fixed output voltage (the voltage fixed output values are 2.5V, 3.3V & 5V all at 3 amps) It features 3 positive and negative output voltage and current values. The 3 outputs can work simultaneously 4 digit display for accurate displaying of current values, precise to mA values <p>An internal fan powers on at 113°F (45°C) degrees to keep the unit temperature down to prolong machine life.</p>				
16	Arduino 37 sensor kit	<ul style="list-style-type: none"> 1 x Small passive buzzer module 1 x 2-color LED module 1 x Hit sensor module 1 x Vibration switch module 1 x Photo resistor module 1 x Key switch module 1 x Tilt switch module 1 x 3-color full-color LED SMD modules 1 x Infrared emission sensor module 1 x 3-color LED module KY-016 1 x Mercury open optical module 1 x Yin Yi 2-color LED module 3MM 1 x Active buzzer module 1 x Temperature sensor module 1 x Automatic flashing colorful LED module 1 x Mini magnetic reed modules 1 x Hall magnetic sensor module 1 x Infrared sensor receiver module 1 x Class Bihor magnetic sensor 1 x Magic light cup module 1 x Rotary encoder module 1 x Optical broken module 1 x Detect the heartbeat module 1 x Reed module 1 x Obstacle avoidance sensor module 	NO	05		

		<ul style="list-style-type: none"> • 1 x Hunt sensor module • 1 x Microphone sound sensor module • 1 x Laser sensor module • 1 x 5V relay module • 1 x Temperature sensor module • 1 x Temperature sensor module • 1 x Linear magnetic Hall sensors • 1 x Flame sensor module • 1 x Sensitive microphone sensor module • 1 x Temperature and humidity sensor module • 1 x XY-axis joystick module • 1 x Metal touch sensor module 1 x Box				
17	Analog & Digital Circuit Design Trainers	<ul style="list-style-type: none"> • Large removable breadboard area with 3360 tie-points • Two open-collector pulsers • Built-in multi-waveform function generator • Quad voltage power supply: Three DC & one low voltage AC • Built-in logic probe with pulse capture • BCD to seven segment decoder/display • Eight logic indicators High-impact metal case	NO	05		
		Total (Rs)				

Bid Bond Ref _____ GST _____

Total Value (Including Tax) _____

Bid Bond to be attached with Annex-C. Copy of Bid Bond be attached with technical offer without showing its value. Exposure of bid bond may result in rejection of offer.

Firm Name: _____

Signature: _____

Name: _____

Designation: _____