



TENDER DOCUMENTS

Computer Lab Equipment

NUTECH / SCM / Computer Lab Eqpt (Ph-IV) 2020 / TD-156

NATIONAL UNIVERSITY OF TECHNOLOGY

TENDER NOTICE**National University of Technology (NUTECH)****NUTECH / SCM / IT Eqpt NUTL (Ph-IV) 2020 / TD-155 &****NUTECH / SCM / Computer Lab Eqpt (Ph-IV) 2020 / TD-156**

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 **25 August 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.	IT Equipment (TD-155)	1030 hrs on 11 Sep 2020	1100 hrs on 11 Sep 2020	90 Days
b.	Computer Lab Equipment (TD-156)	1100 hrs on 11 Sep 2020	1130 hrs on 11 Sep 2020	90 Days

Deputy Director (Supply Chain Management)

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

Tel: 0092-51-5476768, Ext: 227

NATIONAL UNIVERSITY OF TECHNOLOGY
SUPPLY CHAIN MANAGEMENT
INVITATION TO TENDER

Tender submission time: 1100 hours, 11 Sep 2020

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

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

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

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

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

b. **Commercial Offer.** Commercial Offer will contain Annexure-C and bid bond (Dully mentioned and placed in separate envelope. The offer indicating the quoted price FE/Local Currency (in Local Currency for FOR cases & in FE for FOB cases) in figures as well as in words

would be enclosed in an envelope. Following information will be clearly marked on the envelope;

- (1) Commercial Offer
 - (2) Original Performa invoice with price
 - (3) Tender number
- c. Both the envelopes i.e. commercial offer and technical offer would be enclosed in yet another properly sealed envelope that will be marked with address of this office only. There should be clear indication that this envelope contains tender documents.
- d. The tender duly sealed will be addressed to the following:-

Deputy Director (Supply Chain Management Office)
NATIONAL UNIVERSITY OF TECHNOLOGY (NUTECH)
IJ P ROAD, I12, ISLAMABAD
Tel: 0092-51-5476768, Ext: 227

4. **Date and Time for Receipt of Tender.** Sealed bids with detailed specifications should reach SCM office latest by **1100 hours on 11 Sep 2020**. Delay occurring in post shall not be accepted. Tenders received after the appointed / fixed time will NOT be entertained. The appointed time will, however, fall on next working day in case of closed / forced holiday.

5. **Tender opening.** The offers shall be opened **30 minutes** after submission time. Commercial offers will be opened at later stage if Technical Offer is found acceptable on examination by technical authorities. Date and time for opening of commercial offer shall intimated later. Only legitimate / registered representatives of firm will be allowed to attend tender opening.

6. **Validity of Offer.** The validity period of quotations must be indicated and should be **90 days** from the date of opening of financial offer.

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

- a. A copy of letter showing firm's financial capability.
- b. NTN/GST number be mentioned on the offer and copy of registration Certificate issued by Sales Tax Department, attached.
- c. Foreign supplier to provide its Registration Number issued by respective Department of Commerce authorizing export of subject stores **(in FOB cases)**.
- d. Annexes A, A-1, B and C and special conditions must be signed and

stamped. ATTACH ONLY RELEVANT DOCUMENTS.

- e. Complete all Annexes as per given format. Do not use your format or letter head. Offer may be rejected if given format is not followed.
 - f. OEM/principal agency agreement must be provided.
8. **Disqualification.** Offers are liable to be rejected if:-
- a. Validity of offer is not quoted as required in IT documents.
 - b. Any deviation from the General/ Special / Technical Instructions.
 - c. Offers are found conditional or incomplete in any respect.
 - d. Copy of EM/Bid Bond & Tender processing fee (with tech offer) and original EM/Bid Bond (with fin offer) are NOT attached.
 - e. Multiple rates/items are quoted against one item.
 - f. Manufacturer's relevant brochures and technical details on major equipment assemblies are not attached in support of specifications.
 - g. Offer received later than appointed / fixed date and time.
 - h. Subject to restriction of export license.
 - i. Offers (Commercial / technical) containing non-initialled / unauthenticated amendments / corrections / overwriting. If the validity of the agency agreement has expired. The commercial offer against FOB / CIF / C&F tender quoted in local currency.
 - j. If the offer is found to be based on cartel action in connivance with other sources/participants of the tender.
9. **Earnest Money / Bid Bond.** Commercial Offer must be accompanied with a Bid Bond (CDR/Pay Order/Bank Draft) in agreement of faithful compliance of the conditions of Contract. This amount will be equivalent to 5% of the total quoted value. The Bid Bond amount submitted by the successful bidder will however be refunded on effective termination of Contract. (The Bid Bond will be forfeited in case of default by the bidder from his commitments made through his offer). Submission of Bid Bond is mandatory; otherwise your offer will be rejected. Bid Bond will be used as performance guarantee till the delivery of stores, otherwise separate performance guarantee valued at 5 % of contract will be submitted by successful firm till stores are delivered and inspected.
10. **Return of Earnest Money/Bid Bond.**
- a. Bid Bond to the unsuccessful bidders will be returned on finalization of the lowest evaluated bidder.
 - b. Bid Bond of the successful bidder/bidders will be returned on

submission of Bank Guarantee/Bid bond against warranty period OR Bid bond retained for the warranty period as the case may be.

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

(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 be made to the Seller after receipt and confirming the correctness of ordered specifications, installation, commissioning OR as the case may be i.e through Inland LC.

12. **Bank Guarantee (BG). 1 Years (Except Ser 22)** 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.

13. **Taxes/ Duties/ Custom clearance** All taxes /duties /import Licenses Fee as applicable under government laws in Pakistan as well as country of supplier shall be on Seller **(in FOR Case)**. NUTECH will provide applicable exemption certificates and documents **(In FOB Cases only)**.

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

15. **Freight charges /Misc charges:** All charges such as packing, forwarding, local freight, loading and unloading, installation and commissioning, custom clearance, orientations, on job training or any other will be part of quoted price. Delivery till NUTECH will be seller's responsibility and all associated costs will be part of quotation as well.

16. **Delivery Schedule.** Store will be delivered within **90 days** from contract signing date.

17. **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.

18. **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.

19. **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."

20. **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.

21. **Export License/Permit /End User Cert.** It shall be the responsibility of the Supplier to obtain from the Government concerned all permits and export licenses, etc required to enable each consignment to be shipped immediately as per the delivery schedule. In case the supplier fails to arrange export license within 30 days of signing the contract the purchaser reserves the right to cancel the contract on the risk and expense of the supplier without prior notice. The purchaser will provide End User Certificate for acquisition of export license to the supplier (format to be provided

by the supplier for respective country within 10 day of signing of the contract).

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

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

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

25. **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.

26. **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.

27. **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.

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

- a. The firm should provide point to point acceptance of each clause of IT and special instructions attached with IT.
- b. Firm will render a certificate with technical offer that firm is neither defaulter nor blacklisted by any Government / semi Government organization directly or indirectly.
- c. Rates should be quoted on Free Delivery basis at NUTECH Islamabad.
- d. 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 with NUTECH may not be considered for award of this tender.

Deputy Director
Supply Chain Management Office

Annex-A**Technical Specifications****NUTECH / SCM / Computer Lab Eqpt (Ph-IV) 2020 / TD-156**

Ser	Part No	Items	Description	Country of Origin	A/U	Qty Req	Bidder Compliance		Tech Scrutiny to be done by user	
							Yes	No	Accepted	Rejected
									Reason of Rejection	
1.		Student embedded device	<p>Package include FPGA and Protoboard Student embedded device (FPGA):</p> <ul style="list-style-type: none"> • Xilinx FPGA and dual-core ARM Cortex-A9 Zynq processor • 10 analog inputs, 6 analog outputs, 40 digital I/O lines • Wireless, LEDs, push button, accelerometer onboard • Programmable with LabVIEW or C; adaptable for different programming levels <p>Accessory contains:</p> <ul style="list-style-type: none"> • Driver and software evaluation DVDs • USB cable • Power supply with international adapters • 1 MXP protoboard accessory • MSP connector • Screwdriver and MSP screw-terminal connector • Audio in/Out Cables <p>Protoboard:</p> <ul style="list-style-type: none"> • Solderless Protoboard • All myDAQ signals accessible from breadboards • 3 onboard user LEDs • 1 10K Potentiometer • 2 Audio Jacks 	USA	No	15				

			<ul style="list-style-type: none"> • External power connector for breadboard circuits • Switches on all power supplies • SP connector (+5 VDC and ± 15 VDC) • Eight configurable digital I/O pins • Two analog inputs • Two analog outputs • Uses the Mini System Port (MSP) connector <p>Or Equivalent</p>						
2.		FPGA	<p>Package include FPGA and Protoboard Student embedded device (FPGA):</p> <ul style="list-style-type: none"> • Xilinx Spartan-6 LX45 FPGA (XC6SLX45-CSG484-3) • 6,822 slices, each containing four input LUTs and eight flip-flops • 2.1Mbits of fast block RAM • Four clock tiles (eight DCMs & four PLLs) • 58 DSP slices • 500MHz+ clock speeds • 128MB DDR2 SDRAM • 2MB SRAM • 16MB QSPI FLASH for configuration and data storage • 100 MHz Crystal Oscillator • Ships with a 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 • Digilent USB-JTAG circuitry with USB-UART function 	USA	No	12			

			<ul style="list-style-type: none"> • 4.3" wide-format vivid color LED backlit LCD screen • 128x32 pixel 0.9" OLED graphic display panel • Three two-digit seven-segment LED displays • On-board USB2 ports for programming and USB-HID devices (for mouse/keyboard) • Keypad with 16 labeled 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 (I/Os are shared with Pmod ports) • Seven 12-pin Pmod ports with 56 I/Os total <p>Package include:</p> <ol style="list-style-type: none"> 1) FPGA 2) Custom cardboard box with protective foam 3) One USB A to micro-B cable 4) 20W external power supply 					
3.		Analog Discovery 2-Student Only	<p>Package include Analog Discovery 2-Student Only and component kit:</p> <ul style="list-style-type: none"> • Two-channel oscilloscope (1MΩ, \pm25V, differential, 14-bit, 100MS/s, 30MHz+ bandwidth - with the BNC Adapter Board) • Two-channel arbitrary function generator (\pm5V, 14-bit, 100MS/s, 12MHz+ bandwidth - with the BNC Adapter Board) • Stereo audio amplifier to drive external headphones or speakers with replicated AWG signals 	USA	No	12		

		<ul style="list-style-type: none"> • 16-channel digital logic analyzer (3.3V CMOS, 100MS/s)1) 2) • 16-channel pattern generator (3.3V CMOS, 100MS/s)3) 4) • 16-channel virtual digital I/O including buttons, switches, and LEDs – perfect for logic training applications 5) 6) • Two input/output digital trigger signals for linking multiple instruments (3.3V CMOS)7) • Two programmable power supplies (0...+5V , 0...-5V). The maximum available output current and power depend on the Analog Discovery 2 powering choice: • 500mW total when powered through USB • 2.1W max for each supply when powered by an auxiliary supply • 700mA maximum current for each supply • Two-channel voltmeter (AC, DC, $\pm 25V$) • Network analyzer – Bode, Nyquist, Nichols transfer diagrams of a circuit. Range: 1Hz to 10MHz • Spectrum Analyzer – power spectrum and spectral measurements (noise floor, SFDR, SNR, THD, etc.) • Digital Bus Analyzers (SPI, I²C, UART, Parallel, CAN) <p>Component Kit:</p> <ul style="list-style-type: none"> • One regular-sized project box (without sticker sheet) • One USB A to micro B programming cable • One 2x15 flywire signal cable assembly • 5-pack of 6-pin male headers • One ferrite cable snap-on • Power Supplies • Analog parts kit • Supporting Software 						
4.	DAQ university Kit	<ul style="list-style-type: none"> • Analog input (2 channels, 200 kS/s, 16-bit) 	USA	No	7			

		<ul style="list-style-type: none"> • Analog output (2 channels, 200 kS/s, 16-bit) • Analog input and output also available through 3.5 mm audio jacks • 8 digital I/O • 1 counter • Digital multimeter (V, A, Ω) • Power supply (+5 V, ± 15 V) • Bus-powered (USB) operation • Compatible with NI ELVISmx driver • Powered by NI LabVIEW • Package Includes: • myDAQ Student Instrumentation Device • Driver and software installation DVD (NI ELVISmx, NI LabVIEW, NI Multisim) • USB cable • Digital multimeter probes • 3.5 mm audio cable (for iPod/mp3 player connectivity) • NI screwdriver and screw terminal connector • Reusable storage tray for NI myDAQ and components 						
5.	DAQ Protoboard	<ul style="list-style-type: none"> • Solderless Protoboard • All myDAQ signals accessible from breadboards • 3 onboard user LEDs • 1 10K Potentiometer • 2 Audio Jacks • External power connector for breadboard circuits • Switches on all power supplies • SP connector (+5 VDC and ± 15 VDC) • Eight configurable digital I/O pins • Two analog inputs • Two analog outputs • Uses the Mini System Port (MSP) 	USA	No	7			

6.		Analog & Digital Circuit Design Trainers	connector <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 	USA	No	10			
7.		Embedded System trainers board	Type 1: Microprocessor Trainer (8086) with Applications (x10): Motherboard: <ul style="list-style-type: none"> • 33Mhz Intel 8086/80186 Compatible Processor • XDOS (PC DOS 3.3 Compatible) • 415K Flash • 64 Digital I/O lines • 2xRS-232 Ports with USB-UART interface • Software for program uploading / execution • Watchdog Timer • 3×16 Bit Timer Channels • Selected PC BIOS Functions • Full Address/Data Expansion Bus • PC Console Software: <ul style="list-style-type: none"> • Borland C/C++ 4.5 or later Compiler • Sample Code • .net based control program External I/O Interface Board: <ul style="list-style-type: none"> • 8-Bit A/D Converter • 8-Bit D/A Converter • 128×64 Graphical LCD • 16×4 Character LCD • Four 7-Segment Displays 	USA	No	10 Ea			

			<ul style="list-style-type: none"> • 8-Bit Monitor LEDs • DC Motor with optical encoder, direction control & PWM control • Stepper motor with drive circuit • R/C Servo motor with drive circuit • Programmable Peripheral Interface 82C55 • 4×4 Matrix Keypad with 5-way joystick • 16×8 Dot Matrix LED Display <p>Type 2: Industrial Arduino 1o1 (x10):</p> <ul style="list-style-type: none"> • Processor:Atheros AR9331 • Architecture:MIPS • Operating Voltage:3.3V • Flash Memory:16 MB • RAM:64 MB DDR2 • Clock Speed:400 MHz • WiFi:802.11 b/g/n 2.4 GHz • Ethernet:802.3 10/100 Mbit/s (Exported on headers) • USB:2.0 Host (Exported on headers) • Microcontroller:ATmega32u4 • Architecture:AVR • Operating Voltage:5V • SRAM:2.5 KB • Clock Speed:16 MHz • Analog I/O Pins:12 (4 exported on header) • EEPROM:1 KB • DC Current per I/O Pins:40 mA • Input Voltage:5 V • Digital I/O Pins:20 (7 exported on header) • PWM Output:7 (2 exported on header) • Power Consumption:130 mA • PCB Size:42 x 51 mm • GPIO:3 Exported on headers • DogOLED Support:1 Exported on headers 						
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			<p>Type 3: Universal Programmer TI866 ii plus USB programmer for IC SPI Flash NAND EEPROM MCU PIC AVR (x10):</p> <ul style="list-style-type: none"> • Supports multiprogramming mode (up to four) • Automatically identify the operating system to install • Run under WIN XP/ VISTA/ WIN 7/ WIN 10 (32 & 64 bit) • Overvoltage & overcurrent protection 					
8.		Microcomputer Trainer	<p>Package includes:</p> <p>a) MX3: PIC32MX Trainer Board</p> <p>b) MX3 Lab Bundle: Companion Parts Kit for the MX3 and PIC32MX370</p> <p>c) MPLAB PICKit 4 In-Circuit Debugger:</p> <p>a) MX3: PIC32MX Trainer Board:</p> <ul style="list-style-type: none"> • Main features • Processor/IC: Microchip PIC32MX370F512L Microcontroller • MIPS32® M4K® core runs up to 96 MHz using onboard 8 MHz oscillator • 512 KB of Program Flash Memory • 12KB of Boot Flash Memory • 128 KB of SRAM • Four Direct Memory Access (DMA) Modules • Two SPI, Two I²C, and Five UART serial interfaces • Parallel Master Port (PMP) for graphics interfaces • Five 16-bit Timers/Counters • Five Input Capture Modules • Five Output Compare Modules • 85 I/O pins <p>b) MX3 Lab Bundle: Companion Parts Kit</p>	Any	No	15 Ea		

			<p>for the MX3 and PIC32MX370</p> <ul style="list-style-type: none"> • Bundle Includes: • Motor/Gearbox • 5V, 4A Switching Power supply (includes US and EU adapters) • 70-piece jumper wire kit with rounded tips • 5V stepper motor • USB A to Micro-B cable • Pmod KYPD: 16-button Keypad • Pmod DIP: DIP to 12-pin Pmod Adapter <p>c) MPLAB PICKit 4 In-Circuit Debugger:</p> <ul style="list-style-type: none"> • MPLAB PICKit 4 In-Circuit Debugger/Programmer • USB to micro-B USB cable • Warranty card • 2 MPLAB PICKit 4 stickers 					
9.		Programmable Trainers	<p>Package contains:</p> <p>a) CoDrone Programmable Educational Drone and accessories</p> <p>b) Zumi AI Car and accessories</p> <p>a) CoDrone Pro Programmable And Educational Drone:</p> <ul style="list-style-type: none"> • 1 codrone • Controller Set (Joystick, Various Frames, Wires, Battery Pack) • Smart Inventor board • 1 Lipo Battery • USB Cable & Battery Charger • Bluetooth Module • Main Features: • Arduino-compatible circuit board • Easily removable/replaceable motorssingle 	Any	No	10 Ea		

		<ul style="list-style-type: none"> • Dimensions 9 × 9 × 2.5 in • Free tutorials <p>Accessories included:</p> <ol style="list-style-type: none"> 1. Power Pack for CoDrone: <ul style="list-style-type: none"> • Multi-Charger • AC/DC Adaptor • Plug • USB Cable • 2 Lipo Batteries 2. Camera (FPV) Add-on for CoDrone: <ul style="list-style-type: none"> • Drone body w/ HD Camera, live stream compatible. • User manual 3. CoDrone Drive Kit: <ul style="list-style-type: none"> • Transform CoDrone into a remote-controlled car • Comes with a set of sleek wheels, motors, and headlights • Compatible with the Android Petrone App or iPhone Petrone App <p>b) Zumi AI Car and accessories:</p> <ul style="list-style-type: none"> • A sleek Zumi shell • The Zumi main board • Color activity cards • Raspberry Pi Zero • Pi CAM • Arduino Compatible PCB • On Board buzzer • Gyrometer • 128*64 OLED • Accelerometer • 6 IR Sensors • 2 DC Motors • Atleast 60 min Battery life 						
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			<ul style="list-style-type: none"> • Access to early content 						
10.		Control Training Equipment (type -1)	<p>Type 1: VR _ Headset (x8):</p> <ul style="list-style-type: none"> • Virtual reality Rift s headset • Screen: Dual fast-switch LCD • Resolution: 1280 x 1440 pixels per eye (2560 x 1440 toal) • Subpixel Rendering: RGB sub-pixel • Refresh rate: 80 Hz • Field of view: undisclosed - "slightly higher than Rift" • Tracking: 5 built-in cameras, two front facing, two on the sides, one on top • Sensors: Oculus Insight 6DoF inside-out tracking, gyroscope, accelerometer, and magnetometer • Eye adjustments: Fixed lens IPD 63.5mm, software adjustable 61.5mm to 65.5mm • Connections: DisplayPort 1.2, USB 3.0, 3.5mm Stereo headphone jack • Cables: 5 meter 2-in-1 tether cable (DisplayPort 1.2, USB 3.0) • Face Cushion: Soft foam permantly affixed to rubber facial interface <p>Accessories Included:</p> <ol style="list-style-type: none"> 1) 5-meter headset cable with USB 3.0 and DisplayPort connectors on one end and an Oculink connector on the other, that connects Oculus Rift S to PC. <p>Type 2: VR Headset Starter Kit (x2)</p> <ol style="list-style-type: none"> 1) VIVE Pro headset: <ul style="list-style-type: none"> • VIVE Pro headset: • Headset cable (attached) • Face cushion (attached) • Cleaning cloth • Earphone hole cap (x 2) 	Any	No	8+2			

			<ul style="list-style-type: none"> • Documentation <p>2) Link Box for VIVE Pro:</p> <ul style="list-style-type: none"> • Power adapter • DisplayPort™ cable • USB 3.0 cable • Mounting pad <p>3) Base Station 1.0 (x 2):</p> <ul style="list-style-type: none"> • Base station power adapter (x 2) <p>4) Controller 1.0 (x 2):</p> <ul style="list-style-type: none"> • Power adapter x 2 • Micro-USB cable x 2 • Lanyard x 2 					
		Control Training Equipment (type – 2)	<p>Package contains:</p> <ul style="list-style-type: none"> a) MDUINO PLC (Arduino type) (x5) b) Fatek PLC Trainer (x5) c) Fatek PLC Set for Platform (x5) <p>a) MDUINO PLC (Arduino type)</p> <p>Package contains:</p> <p>1) MDUINO PLC+ Power supply+ HMI (x2)</p> <p>MDUINO PLC ARDUINO ETHERNET & WiFi & BLUETOOTH LE 19R I/Os RELAY/ANALOG/DIGITAL PLUS:</p> <ul style="list-style-type: none"> • 6 inputs • 11 outputs • Communications • RTC, μSD, Ethernet, USB, Full/Half duplex, RS485, RS232, I2C, Modbus • Wi-Fi & Bluetooth LE (ESP32). <p>Accessories included:</p>	Any	No	5 Ea		

			<ul style="list-style-type: none"> • IoT mote B with antennas • Patch coed • User manuals • Software CD • Experiments • Cable • Power cords <p>Power supply:</p> <ul style="list-style-type: none"> • Din RAIL Power Supply • ac-dc • 30W • 1 Output 2.5A at 12Vdc • Wires and connectors included <p>HMI:</p> <ul style="list-style-type: none"> • Panel PC based on Raspberry PI 4 B board • 10.1" Resistive Touch Screenfor industrial environment using Raspian or Ubuntu from Linux • EMC and ESD protection • Anodized aluminum <p>Accessories included:</p> <ul style="list-style-type: none"> • Power cords • Patch cords • Connector • Software CD <p>2) MDUINOPLC+ Power supply (x 3)</p> <p>MDUINO PLC ARDUINO ETHERNET & WiFi & BLUETOOTH LE 19R I/Os RELAY/ANALOG/DIGITAL PLUS:</p> <ul style="list-style-type: none"> • 6 inputs • 11 outputs 					
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			<ul style="list-style-type: none"> • Communications • RTC, μSD, Ethernet, USB, Full/Half duplex, RS485, RS232, I2C, Modbus • Wi-Fi & Bluetooth LE (ESP32). <p>Accessories included:</p> <ul style="list-style-type: none"> • IoT mote B with antennas • Patch cords • User manuals • Software CD • Experiment • Cable • Power cords <p>Power supply:</p> <ul style="list-style-type: none"> • Din RAIL Power Supply • ac-dc • 30W • 1 Output 2.5A at 12Vdc <p>DNI Rail and board for fixing included:</p> <p>b) Fatek PLC Trainer (x5)</p> <p>Features:</p> <ul style="list-style-type: none"> • Sensors installed on-board • Control Circuits Installed • Drivers Installed • Protection Circuits Installed <p>Technical Features:</p> <ul style="list-style-type: none"> • PLC: Fatek • Digital Inputs: 14 • Digital Outputs: 10 • Programming Language: Ladder • Fixed Supply DC: 24V, 12V, 5V, -5V 					
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			<p>& -12V</p> <ul style="list-style-type: none"> • Digital Input Simulator: 8X Momentary, 8X Toggle Switches • Switches: 2X Thumbwheel, 8-bit DIP • Signal Conditioning: F/V Converter, A/D Converter. D/A Converter • Displays: 4X 7-Segment, 8X8 Dual Colour Dot Matrix, 10 point LED Bar • Analog Source: 2X +10V DC • Motors: DC with IR Encoder, Stepper with four IR Encoder, R/C Servo • Driver: Dual H-Bridge Monolithic Type, PWM • Sensor: Light Intensity, Temperature with Heater <p>On-Board PLC Applications:</p> <ul style="list-style-type: none"> • Traffic Light Control • Liquid Mixer • Temperature Control • Light Intensity Control • Elevator Control • DC Motor Control • Stepper Motor Control • R/C Servo Motor Control • LED Flasher • Dot Matrix • 7-Segment • LED Bar Display • Assembly Line Control <p>Experiments Included:</p> <ul style="list-style-type: none"> • Implementation of Counters(Parking Stand) • Implementation of Timer Application 					
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			<p>(Flash Light)</p> <ul style="list-style-type: none"> • Monolithic A/D Converter Control by PLC • Monolithic D/A Converter Control by PLC • 7-Segment Display Application • Thumbwheel Switch Application • Traffic Light Control Application • Liquid Mixer Application • Temperature Control Application • Light Intensity Control Application • Elevator Control Application • DC Motor Control Application • Stepper Motor Control Application • R/C Servo Motor Control Application • Stage Light Control Application • Dot Matrix Application <p>Accessories Included:</p> <ul style="list-style-type: none"> • 2mm Patch Cords • Power Cord • User Manual • Experiment Manual • IDC Cables • PC Programming Cable • Software CD <p>c) Fatek PLCset for platform (x5)</p> <p>Package contains:</p> <ol style="list-style-type: none"> 1) Fatek PLC 2) Communication Board,FBs-CB55 3) Temperature Measurement Modules (RTD 6) 4) Segment LED Display Modules 5) Bluetooth to RS232(FBs-B2C) 					
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			<p>6) AIO Modules FBs-6AD 7) Din Rail 8) P5 series HMI</p> <p>Fatek PLC:</p> <ul style="list-style-type: none"> • 20 points 24VDC digital input (6 points 200KHz + 2 points 20KHz + 8 5KHz + 4 Low) • 12 Points relay or transistor digital output (Model "T" 6 points 100KHz + 2 points 20KHz + 4 Low) • 1 built-in RS-232 or USB port (expandable up to 5) • built-in RTC • detachable terminal block • Sink (NPN) or Source (PNP) type transistor I/O (Model "T" only) • 100~240VAC, 24 VDC or 12 VDC power supply • Expandable Ports – RS485 or RS232 or Ethernet or GSM or ZigBee • Built-in 1 port (Port0, USB or RS232) • Expandable 4 ports (Port 1-4, RS485 or RS232 or Ethernet or GSM or ZigBee) <p>Communication Board:</p> <ul style="list-style-type: none"> • 2 ports RS485 (Port 3+ Port 4) communication board <p>Temperature Measurement Modules:</p> <ul style="list-style-type: none"> • 6 channel RTD temperature input module with 0.1 resolution <p>Segment LED Display Modules:</p>					
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			<ul style="list-style-type: none"> • Support up to 8 digits of seven-segment LED display (include decimal point) or 4 digits of 16-segment alphanumerical LED display or 64 independent LED displays <p>Bluetooth to RS232:</p> <ul style="list-style-type: none"> • Bluetooth to RS232 wireless data communication converter which is dedicated designed for FATEK PLC port0 usage <p>AIO Modules FBs-6AD:</p> <ul style="list-style-type: none"> • Analog input modules of FATEK FBs series PLC • Provides 6 channels A/D input with 12- or 14-bit effective resolution <p>Din rail: P5 Series HMI:</p> <ul style="list-style-type: none"> • CPU: • 32-bit 300MHz RISC • Storage: • Date Storage, CF Card, USB • Display size: • 4.3 inch TFT colors • Serial port: • 1 serial ports, RS232/RS485/RS422 could be use at the same <p>Accessories included:</p> <ul style="list-style-type: none"> • Patch cords • User manuals 					
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			<ul style="list-style-type: none"> • Software CD • Experiment • Cable • Power cords 						
11.		Portable Trainers	<p>Package contains:</p> <p>a) pi-top [4] Foundation Kit</p> <p>b) Pitop3</p> <p>a) pi-top [4] Foundation Kit:</p> <ul style="list-style-type: none"> • Single board computer : Raspberry Pi 4 Mode B • CPU : Quad Core 64 bit SoC @ 1.5 GHz • Memory: 4 GB DDR4 • Storage: 16 GB micro SD card • Networking: Gigabit Ethernet up to 1Gbps, WiFi 2.5GHz + 5.0GHz IEEE 802.11ac, Bluetooth low energy v5.0 • Multimedia: OpenGL ES, 3.0 Graphics • Metal 'bento box' containing 14 components including programmable sensors, buttons, and LEDs. <p>b) Pitop3:</p> <p>1) Screen:</p> <ul style="list-style-type: none"> • 13.3" HD LCD screen with eDP interface • 1366x768 resolution • Colour active matrix TFT LCD module with anti-glare finish • 3W power consumption • PWM screen dim control (available on PCB rail) • 60Hz refresh rate • 262K colours • eDP 1.2 interface <p>2) Base Top:</p>	Any	No	10 Ea			

			<ul style="list-style-type: none"> • Keyboard • Fully reprogrammable via USB • Any character can be put on any key position, to suit user's exact preferences • UK and US vinyl layouts available • 2.2mm operating distance • 28 pin FPC cable • Trackpad • PalmCheck feature helps prevents unwanted mouse clicks • PS/2 interface • 1N mouse click operating force • 8 pin FPC cable <p>3) Base Bottom:</p> <ul style="list-style-type: none"> • Smart Battery Pack • Two-wire SMBus v2.0 interface • JEITA recommended charge profile • Over-current, over-voltage, over-temperature and short-circuit protection • Charge balancing for extended lifetime • 51.8 Watt-hour capacity • 10-12 hours run time <p>4) Hub board:</p> <ul style="list-style-type: none"> • Power management • Screen driver (HDMI to eDP conversion) • Battery LED indicators • 18V. 3A input • 5V. 3.5A output • 3.3V 500mA output • Persistent 3.3V output (available even when powered off) • PCB rail specification pinout connects UART, I2C and SPI to Raspberry Pi for 						
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			<p>use with add-on boards.</p> <p>5) Raspberry Pi 3</p> <ul style="list-style-type: none"> • Chipset: Broadcom BCM2837 • CPU: 1.2GHz quad-core 64-bit ARM cortex A53 • Ethernet : 10/100 (Max throughput 100Mbps) • USB: Four USB 2.0 with 480Mbps data transfer • Storage: MicroSD card or via USB-attached storage • Wireless: 802.11n Wireless LAN (Peak transmit/receive throughput of 150Mbps), Bluetooth 4.1 • Graphics: 400MHz VideoCore IV multimedia • Memory: 1GB LPDDR2-900 SDRAM • Expandability: 40 general purpose input-output pins • Video: Full HDMI port • Audio: Combined 3.5mm audio out jack and composite video • Camera interface (CSI) • Display interface (DSI) <p>Also included:</p> <ol style="list-style-type: none"> 1) SD Card (32GB) with pi-topOS 2) Cables connecting pi-top pieces 3) Wifi Dongle 4) PI-TOPSPEAKER 5) Charger 6) Instruction Booklet 						
12.		Robotic Arm	<p>Type 1: 6-Axis Robotic Arm (x2):</p> <ul style="list-style-type: none"> • 6-Axis Mirobot Arm for Education • PenHolding+Pen Set +Micro Servo Gripper Module 	Any	No	2 Ea			

		<ul style="list-style-type: none"> • Suction Cup & Pneumatic kit • Mirobot mecha Sticker: Handbook • Power Supply • High Speed USB Cable • Mirobot mecha Sticker: Handbook • At least .2mm repeatability • Up to 110°/s joint speed • Atleast have 150g payload • USB connectivity • Open Source Firmware • Compatible with Programming Languages (Blockly, Python, GCode, C, C++, Java) • Controller type Arduino • Weight 1.5 kg • Control methods: MirobotStudio/ MirobotController/App <p>Type 2: Robotic Arm Fixtures Set (x2):</p> <ul style="list-style-type: none"> • Sliding Rail • Conveyor Belt • Robot Controller <p>Type 3: Robotic Arm Fixtures Set (x2):</p> <ul style="list-style-type: none"> • Robot Arm Vehicle • Universal Ball Gripper & Pneumatic Kit 						
13.	PCB Printer	<p>Package include PCB printer and DRILL ADD-ON:</p> <ul style="list-style-type: none"> • V-ONE PRINTER • Conductive Ink Cartridge (×10) • Solder Paste Cartridge (×10) • Dispensers (×10) • z-axis Probe (×1) • Board Clamps (×2) • Clamp Thumbscrews (×4) • 3"×4" FR4 Substrates (×6) • 2"×3" FR4 Substrates (×10) • Power Cable (×1) 	Canada	No	1			

		<ul style="list-style-type: none"> • USB Cable (×1) • Nozzles (×4) • Solder Wire Spool (×1) • Flux (×1) • Hello World Circuit (×1) • Burnishing Pad (×1) • DRILL ADD-ON: • Drill bits (×10 - various sizes) • Sacrificial Layer (×1) • 3"×4" FR1 Substrates (×6) • 2"×3" FR1 Substrates (×10) • Safety Glasses (×1) • 0.4mm PCB Rivets (~×200) • 1.0mm PCB Rivets (~×200) • PCB Rivet Tool (×2) • Power Cable and Adapter (×1) • Allen Key and Set Screws (×1) • Clamp Thumbscrews (×4) • Hello Drill Circuit (×1) • Zipties (×3) 						
14.	Signal Processing Kit	<p>Type a: C6713 DSP Starter kit (x7):</p> <ul style="list-style-type: none"> • Embedded JTAG support via USB • High-quality 24-bit stereo codec • Four 3.5mm audio jacks for microphone, line in, speaker and line out • 512K words of Flash and 16 MB SDRAM • Expansion port connector for plug-in modules • On-board standard IEEE JTAG interface • +5V universal power supply • A complete Integrated Development Environment (IDE), an efficient optimizing C/C++ compiler • assembler, linker, debugger, an a advanced editor with Code Maestro™ technology for faster code 	USA	No	7+5			

		<ul style="list-style-type: none"> • Creation, data visualization, a profiler and a flexible project manager • DSP/BIOS™ real-time kernel • Target error recovery software • DSK diagnostic tool • ability for third-party software for additional functionality <p>Package include:</p> <ol style="list-style-type: none"> 1) C6713 DSP Starter kit with 512K Flash and 16MB SDRAM 2) C6713 DSK Code Composer Studio™ IDE including the Fast Simulators and access to Analysis Toolkit on Update Advisor 3) Quick Start Guide 4) Technical Reference 5) Customer Support Guide 6) USB Cable 7) Universal Power Supply 8) AC Power Cord(s) 9) Matlab 30 day free evaluation version <p>Type b: C6416 DSP Starter Kit (x5):</p> <ul style="list-style-type: none"> • Embedded JTAG support via USB • High-quality 24-bit stereo codec • Four 3.5mm audio jacks for microphone, line in, speaker and line out • 512K words of Flash and 16 MB SDRAM • Expansion port connector for plug-in modules • On-board standard IEEE JTAG interface • +5V universal power supply • A complete Integrated Development Environment (IDE), an efficient optimizing C/C++ compiler assembler, linker, debugger, data visualization, a profiler, advanced optimization tools, and a flexible project manager 					
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		<ul style="list-style-type: none"> • DSP/BIOS™ real-time kernel • Target error recovery software • DSP diagnostic tool • "Plug-in" ability for third-party software for additional functionality <p>The full contents of the kit include:</p> <ol style="list-style-type: none"> 1) 1 GHz DSP Development Board with 512K Flash and 16MB SDRAM 2) DSP Code Composer Studio™ IDE including the Fast Simulators and access to Analysis Toolkit on Update Advisor 3) Quick Start Guide 4) Technical Reference 5) Customer Support Guide 6) USB Cable 7) Universal Power Supply 8) AC Power Cord(s) 9) MATLAB from The Mathworks 						
15.	Portable only SDR Device	<ul style="list-style-type: none"> • Portable self-contained RF learning module • Based on Analog Devices AD9363--Highly Integrated RF Agile Transceiver and Xilinx® Zynq Z-7010 FPGA • RF coverage from 325 MHz to 3.8 GHz • Up to 20 MHz of instantaneous bandwidth • Flexible rate, 12-bit ADC and DAC • One transmitter and one receiver, half or full duplex • MATLAB®, Simulink® support • GNU Radio sink and source blocks • libiio, a C, C++, C#, and Python API • USB 2.0 Powered Interface with Micro-USB 2.0 connector • High quality plastic enclosure 	USA	No	5			
16.	Core Set	Type 1: The EV3 Core Lego Set includes 541 elements that can be used for teaching	Any	No	2+5			

		<p>science, technology, engineering, math, and computer science. (x2)</p> <p>The LEGO system comes in:</p> <ul style="list-style-type: none"> • Sturdy storage bin • Sorting tray • Includes three servomotors • Five sensors (gyro, ultrasonic, color and two touch) • A rechargeable battery • Connecting cables • Printed and digital building instructions • LEGO® Technic building bricks for creating models. • EV3 Intelligent Brick. <p>Type 2: Formula AllCode standard class set (x5)</p> <ul style="list-style-type: none"> • Five host independent robots, maze walls, maze mat • Compatible with Raspberry Pi, Android, MATLAB & more • Rechargeable batteries and 2 micro USB leads included • Bluetooth enabled • Free complete course included (Matrix) <p>Accessories included:</p> <ol style="list-style-type: none"> 1) Bluetooth 4.00 USB module 						
17.	Magnetic Levitation Kit &+ Nano Stick+ Demo	<p>Magnetic Levitation kits come with MinSegNanoStick - Arduino compatible board, pre-loaded with balance code</p> <ul style="list-style-type: none"> • Fully functional Arduino board with motor driver! • Fully assembled coil, hall effect sensor, mosfet, Attiny85 processor, with box • Hook Up 9v battery (ONLY Liithium ion or 	Any	No	20			

			<p>Energizer Industrial or Duracell Procell have enough current)</p> <ul style="list-style-type: none"> • Kit is fully assembled with box. • RASPLib) Compatible USB cable - plug in and balance! • Electromagnetic Coil & stand • Magnet • Cable for M1V4.3 MinSegShield • Kit is fully assembled with box. • MinSeg Nano Stick - a fully functional Arduino compatible board with motor driver (compatible with MinSegNano library) • Direct plug-in compatible with M1V4.3 and M2V5 Shields, the MinSegMega V3 and the MinSeg Nano Stick micro usb. Compatible with M2V3.2 and other systems with single jumper wire. • Instructions for use 						
18.		Single Axis Kit	<p>MinSeg V3 Board: Arduino Compatible Mega 2560 (compatible with Arduino IDE):</p> <ul style="list-style-type: none"> • 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) • Lego NXT DC Motor with Encoder and wheels • 6AA (9v) battery holder • Retractable USB Cable • Project Box • Dual MicroGear Motor Kit (assembly 	Any	No	20			

			<p>required): Includes 2 microgear motors and cables, mounted on adapter board with 2 screws (screwdriver assembly required). Also includes 9v battery holder and screw for mini configuration</p> <ul style="list-style-type: none"> • Plug In Bluetooth Module • Ultrasonic Sensor • Time of Flight sensor 						
19.		The DC Motor Control Kit	<ul style="list-style-type: none"> • MinSegMega V3 Board: Arduino Compatible Mega 2560 • 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 • 2 different sized gears • MPU9250 + MPU280 10DOF sensor • Accelerometer • Gyroscope compass • Barometer 	Any	No	15			
20.		Raspberry Pi 4 4GB Starter Kit	<ul style="list-style-type: none"> • 1.5GHz 64-bit quad-core ARMv8 CPU (4GB RAM) • 32GB Micro SD Card (Class 10) Pre-loaded with NOOBS, USB MicroSD Card Reader 	Any	No	10			

			<ul style="list-style-type: none"> • Raspberry Pi 4 Case with Integrated Fan Mount, Low Noise Bearing System Fan • USB-C Raspberry Pi 4 Power Supply with Noise Filter, Set of Heat Sinks, Micro HDMI to HDMI Cable - 6 foot • USB-C Pi Switch: On/Off Power Switch for Raspberry Pi 4 						
21.		Raspberry Pi 4 Touch Screen	<ul style="list-style-type: none"> • 7 Inch LCD HDMI Touch Screen Display for Raspberry Pi with Pen and case 	Any	No	15			
22.		First aid box with medicine	<p>Portable and can be carried with ease and ready to use in emergency The Box includes</p> <ul style="list-style-type: none"> • all essentials to treat cuts and wounds (At least three sets) • Cotton bandages, band-aids, scissors, Pyodine, and cotton wool (at least 3 Sets) • OTC medicines like Panadol, Disprin, (20 Each) • ORS 5 sachets • Muscles pain cream (01) • Cream for Burns (02) 	Any	No	3			

Special Instructions (Except Ser 22)

Description	Bidder		Tech Scrutiny to be done by User		
	Yes	No	Accepted	Rejected	Reasons of Rejection
Environment Conditions (a) Temperature range: 05°C to +45°C (b) Relative humidity: 0-70% non-condensing					
Warranty period As per IT Document Clause 12.					
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					

<p>original OEM certificate of subject equipment bought directly from the manufacturer and being an authorized dealer.</p> <p>(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</p>					
<p>Special Notes</p> <p>(a) Additional requirements for the maintenance of equipment (if any) must be intimated by the supplier in technical offer.</p> <p>(b) Supplier must provide the list of organizations using same equipment in Pakistan (if any).</p> <p>(c) Equipment must be a standard product of OEM available at web address of OEM.</p> <p>(d) In case of premature failure of the equipment, OEM has to replace / rectify the item free of cost. Required transportation charges would be borne by the supplier.</p>					

<p>Firm Name: _____</p> <p>Signature: _____</p> <p>Name: _____</p> <p>Designation: _____</p>
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Annex-B**TECHNICAL OFFER****NUTECH / SCM / Computer Lab Eqpt (Ph-IV) 2020 / TD-156****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 11)

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 / Computer Lab Eqpt (Ph-IV) 2020 / TD-156**

Ser	Part No	Item Name/Size	Specification	A/U	Qty Req	Unit Price PKR (Including Tax)	Total Price PKR (Including Tax)
1.		Student embedded device	<p>Package include FPGA and Protoboard</p> <p>Student embedded device (FPGA):</p> <ul style="list-style-type: none"> • Xilinx FPGA and dual-core ARM Cortex-A9 Zynq processor • 10 analog inputs, 6 analog outputs, 40 digital I/O lines • Wireless, LEDs, push button, accelerometer onboard • Programmable with LabVIEW or C; adaptable for different programming levels <p>Accessory contains:</p> <ul style="list-style-type: none"> • Driver and software evaluation DVDs • USB cable • Power supply with international adapters • 1 MXP protoboard accessory • MSP connector • Screwdriver and MSP screw-terminal connector • Audio in/Out Cables <p>Protoboard:</p> <ul style="list-style-type: none"> • Solderless Protoboard • All myDAQ signals accessible from breadboards • 3 onboard user LEDs • 1 10K Potentiometer • 2 Audio Jacks • External power connector for breadboard circuits • Switches on all power supplies • SP connector (+5 VDC and ±15 VDC) • Eight configurable digital I/O pins • Two analog inputs • Two analog outputs 	No	15		

			<ul style="list-style-type: none"> • Uses the Mini System Port (MSP) connector Or Equivalent				
2.		FPGA	Package include FPGA and Protoboard Student embedded device (FPGA): <ul style="list-style-type: none"> • Xilinx Spartan-6 LX45 FPGA (XC6SLX45-CSG484-3) • 6,822 slices, each containing four input LUTs and eight flip-flops • 2.1Mbits of fast block RAM • Four clock tiles (eight DCMs & four PLLs) • 58 DSP slices • 500MHz+ clock speeds • 128MB DDR2 SDRAM • 2MB SRAM • 16MB QSPI FLASH for configuration and data storage • 100 MHz Crystal Oscillator • Ships with a 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 • Digilent USB-JTAG circuitry with USB-UART function • 4.3" wide-format vivid color LED backlit LCD screen • 128x32 pixel 0.9" OLED graphic display panel • Three two-digit seven-segment LED displays • On-board USB2 ports for programming and USB-HID devices (for mouse/keyboard) • Keypad with 16 labeled 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 (I/Os are shared with Pmod ports) • Seven 12-pin Pmod ports with 56 I/Os total Package include:	No	12		

			<ul style="list-style-type: none"> 1)FPGA 2) Custom cardboard box with protective foam 3) One USB A to micro-B cable 4) 20W external power supply 				
3.		Analog Discovery 2-Student Only	<p>Package include Analog Discovery 2-Student Only and component kit:</p> <ul style="list-style-type: none"> • Two-channel oscilloscope (1MΩ, \pm25V, differential, 14-bit, 100MS/s, 30MHz+ bandwidth - with the BNC Adapter Board) • Two-channel arbitrary function generator (\pm5V, 14-bit, 100MS/s, 12MHz+ bandwidth - with the BNC Adapter Board) • Stereo audio amplifier to drive external headphones or speakers with replicated AWG signals • 16-channel digital logic analyzer (3.3V CMOS, 100MS/s)1) 2) • 16-channel pattern generator (3.3V CMOS, 100MS/s)3) 4) • 16-channel virtual digital I/O including buttons, switches, and LEDs – perfect for logic training applications 5) 6) • Two input/output digital trigger signals for linking multiple instruments (3.3V CMOS)7) • Two programmable power supplies (0...+5V , 0...-5V). The maximum available output current and power depend on the Analog Discovery 2 powering choice: <ul style="list-style-type: none"> • 500mW total when powered through USB • 2.1W max for each supply when powered by an auxiliary supply • 700mA maximum current for each supply • Two-channel voltmeter (AC, DC, \pm25V) • Network analyzer – Bode, Nyquist, Nichols transfer diagrams of a circuit. Range: 1Hz to 10MHz • Spectrum Analyzer – power spectrum and spectral measurements (noise floor, SFDR, SNR, THD, etc.) • Digital Bus Analyzers (SPI, I²C, UART, Parallel, CAN) <p>Component Kit:</p> <ul style="list-style-type: none"> • One regular-sized project box (without sticker sheet) • One USB A to micro B programming cable • One 2x15 flywire signal cable assembly • 5-pack of 6-pin male headers • One ferrite cable snap-on 	No	12		

			<ul style="list-style-type: none"> • Power Supplies • Analog parts kit • Supporting Software 				
4.		DAQ university Kit	<ul style="list-style-type: none"> • Analog input (2 channels, 200 kS/s, 16-bit) • Analog output (2 channels, 200 kS/s, 16-bit) • Analog input and output also available through 3.5 mm audio jacks • 8 digital I/O • 1 counter • Digital multimeter (V, A, Ω) • Power supply (+5 V, ± 15 V) • Bus-powered (USB) operation • Compatible with NI ELVISmx driver • Powered by NI LabVIEW • Package Includes: <ul style="list-style-type: none"> • myDAQ Student Instrumentation Device • Driver and software installation DVD (NI ELVISmx, NI LabVIEW, NI Multisim) • USB cable • Digital multimeter probes • 3.5 mm audio cable (for iPod/mp3 player connectivity) • NI screwdriver and screw terminal connector • Reusable storage tray for NI myDAQ and components 	No	7		
5.		DAQ Protoboard	<ul style="list-style-type: none"> • Solderless Protoboard • All myDAQ signals accessible from breadboards • 3 onboard user LEDs • 1 10K Potentiometer • 2 Audio Jacks • External power connector for breadboard circuits • Switches on all power supplies • SP connector (+5 VDC and ± 15 VDC) • Eight configurable digital I/O pins • Two analog inputs • Two analog outputs • Uses the Mini System Port (MSP) connector 	No	7		

6.		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	10		
7.		Embedded System trainers board	<p>Type 1: Microprocessor Trainer (8086) with Applications (x10):</p> <p>Motherboard:</p> <ul style="list-style-type: none"> • 33Mhz Intel 8086/80186 Compatible Processor • XDOS (PC DOS 3.3 Compatible) • 415K Flash • 64 Digital I/O lines • 2xRS-232 Ports with USB-UART interface • Software for program uploading / execution • Watchdog Timer • 3x16 Bit Timer Channels • Selected PC BIOS Functions • Full Address/Data Expansion Bus • PC Console <p>Software:</p> <ul style="list-style-type: none"> • Borland C/C++ 4.5 or later Compiler • Sample Code • .net based control program <p>External I/O Interface Board:</p> <ul style="list-style-type: none"> • 8-Bit A/D Converter • 8-Bit D/A Converter • 128x64 Graphical LCD • 16x4 Character LCD • Four 7-Segment Displays • 8-Bit Monitor LEDs • DC Motor with optical encoder, direction control & PWM control • Stepper motor with drive circuit • R/C Servo motor with drive circuit 	No	10 Ea		

		<ul style="list-style-type: none"> • Programmable Peripheral Interface 82C55 • 4×4 Matrix Keypad with 5-way joystick • 16×8 Dot Matrix LED Display <p>Type 2: Industrial Arduino 1o1 (x10):</p> <ul style="list-style-type: none"> • Processor:Atheros AR9331 • Architecture:MIPS • Operating Voltage:3.3V • Flash Memory:16 MB • RAM:64 MB DDR2 • Clock Speed:400 MHz • WiFi:802.11 b/g/n 2.4 GHz • Ethernet:802.3 10/100 Mbit/s (Exported on headers) • USB:2.0 Host (Exported on headers) • Microcontroller:ATmega32u4 • Architecture:AVR • Operating Voltage:5V • SRAM:2.5 KB • Clock Speed:16 MHz • Analog I/O Pins:12 (4 exported on header) • EEPROM:1 KB • DC Current per I/O Pins:40 mA • Input Voltage:5 V • Digital I/O Pins:20 (7 exported on header) • PWM Output:7 (2 exported on header) • Power Consumption:130 mA • PCB Size:42 x 51 mm • GPIO:3 Exported on headers • DogOLED Support:1 Exported on headers <p>Type 3: Universal Programmer TI866 ii plus USB programmer for IC SPI Flash NAND EEPROM MCU PIC AVR (x10):</p> <ul style="list-style-type: none"> • Supports multiprogramming mode (up to four) • Automatically identify the operating system to install • Run under WIN XP/ VISTA/ WIN 7/ WIN 10 (32 & 64 bit) • Overvoltage & overcurrent protection 				
8.	Microcomputer Trainer	<p>Package includes:</p> <p>a) MX3: PIC32MX Trainer Board</p>	No	15 Ea		

b) MX3 Lab Bundle: Companion Parts Kit for the MX3 and PIC32MX370

c) MPLAB PICkit 4 In-Circuit Debugger:

a) MX3: PIC32MX Trainer Board:

- Main features
- Processor/IC: Microchip PIC32MX370F512L Microcontroller
- MIPS32® M4K® core runs up to 96 MHz using onboard 8 MHz oscillator
- 512 KB of Program Flash Memory
- 12KB of Boot Flash Memory
- 128 KB of SRAM
- Four Direct Memory Access (DMA) Modules
- Two SPI, Two I²C, and Five UART serial interfaces
- Parallel Master Port (PMP) for graphics interfaces
- Five 16-bit Timers/Counters
- Five Input Capture Modules
- Five Output Compare Modules
- 85 I/O pins

b) MX3 Lab Bundle: Companion Parts Kit for the MX3 and PIC32MX370

- Bundle Includes:
- Motor/Gearbox
- 5V, 4A Switching Power supply (includes US and EU adapters)
- 70-piece jumper wire kit with rounded tips
- 5V stepper motor
- USB A to Micro-B cable
- Pmod KYPD: 16-button Keypad
- Pmod DIP: DIP to 12-pin Pmod Adapter

c) MPLAB PICkit 4 In-Circuit Debugger:

- MPLAB PICkit 4 In-Circuit Debugger/Programmer
- USB to micro-B USB cable
- Warranty card

			<ul style="list-style-type: none"> • 2 MPLAB PICKit 4 stickers 				
9.		Programmable Trainers	<p>Package contains:</p> <p>a) CoDrone Programmable Educational Drone and accessories</p> <p>b) Zumi AI Car and accessories</p> <p>a) CoDrone Pro Programmable And Educational Drone:</p> <ul style="list-style-type: none"> • 1 codrone • Controller Set (Joystick, Various Frames, Wires, Battery Pack) • Smart Inventor board • 1 Lipo Battery • USB Cable & Battery Charger • Bluetooth Module • Main Features: • Arduino-compatible circuit board • Easily removable/replaceable motorssingle • Dimensions 9 × 9 × 2.5 in • Free tutorials <p>Accessories included:</p> <ol style="list-style-type: none"> 1. Power Pack for CoDrone: <ul style="list-style-type: none"> • Multi-Charger • AC/DC Adaptor • Plug • USB Cable • 2 Lipo Batteries 2. Camera (FPV) Add-on for CoDrone: <ul style="list-style-type: none"> • Drone body w/ HD Camera, live stream compatible. • User manual 3. CoDrone Drive Kit: <ul style="list-style-type: none"> • Transform CoDrone into a remote-controlled car • Comes with a set of sleek wheels, motors, and headlights • Compatible with the Android Petrone App or iPhone 	No	10 Ea		

			<p>Petrone App</p> <p>b) Zumi AI Car and accessories:</p> <ul style="list-style-type: none"> • A sleek Zumi shell • The Zumi main board • Color activity cards • Rasperry Pi Zero • Pi CAM • Arduino Compatible PCB • On Board buzzer • Gyrometer • 128*64 OLED • Accelerometer • 6 IR Sensors • 2 DC Motors • Atleast 60 min Battery life • Access to early content 			
10.		Control Training Equipment (type -1)	<p>Type 1: VR _ Headset (x8):</p> <ul style="list-style-type: none"> • Virtual reality Rift s headset • Screen: Dual fast-switch LCD • Resolution: 1280 x 1440 pixels per eye (2560 x 1440 toal) • Subpixel Rendering: RGB sub-pixel • Refresh rate: 80 Hz • Field of view: undisclosed - "slightly higher than Rift" • Tracking: 5 built-in cameras, two front facing, two on the sides, one on top • Sensors: Oculus Insight 6DoF inside-out tracking, gyroscope, accelerometer, and magnetometer • Eye adjustments: Fixed lens IPD 63.5mm, software adjustable 61.5mm to 65.5mm • Connections: DisplayPort 1.2, USB 3.0, 3.5mm Stereo headphone jack • Cables: 5 meter 2-in-1 tether cable (DisplayPort 1.2, USB 3.0) • Face Cushion: Soft foam permantly affixed to rubber facial interface 		8+2	

			<p>Accessories Included:</p> <p>1) 5-meter headset cable with USB 3.0 and DisplayPort connectors on one end and an Oculink connector on the other, that connects Oculus Rift S to PC.</p> <p>Type 2: VR Headset Starter Kit (x2)</p> <p>1) VIVE Pro headset:</p> <ul style="list-style-type: none"> • VIVE Pro headset: • Headset cable (attached) • Face cushion (attached) • Cleaning cloth • Earphone hole cap (x 2) • Documentation <p>2) Link Box for VIVE Pro:</p> <ul style="list-style-type: none"> • Power adapter • DisplayPort™ cable • USB 3.0 cable • Mounting pad <p>3) Base Station 1.0 (x 2):</p> <ul style="list-style-type: none"> • Base station power adapter (x 2) <p>4) Controller 1.0 (x 2):</p> <ul style="list-style-type: none"> • Power adapter x 2 • Micro-USB cable x 2 • Lanyard x 2 				
		<p>Control Training Equipment (type – 2)</p>	<p>Package contains:</p> <p>a) MDUINO PLC (Arduino type) (x5)</p> <p>b) Fatek PLC Trainer (x5)</p> <p>c) Fatek PLC Set for Platform (x5)</p> <p>a) MDUINO PLC (Arduino type)</p> <p>Package contains:</p> <p>1) MDUINO PLC+ Power supply+ HMI (x2)</p> <p>MDUINO PLC ARDUINO ETHERNET & WiFi & BLUETOOTH LE 19R I/Os RELAY/ANALOG/DIGITAL PLUS:</p>	<p>No</p>	<p>5 Ea</p>		

- 6 inputs
- 11 outputs
- Communications
- RTC, μ SD, Ethernet, USB, Full/Half duplex, RS485, RS232, I2C, Modbus
- Wi-Fi & Bluetooth LE (ESP32).

Accessories included:

- IoT mote B with antennas
- Patch coed
- User manuals
- Software CD
- Experiments
- Cable
- Power cords

Power supply:

- Din RAIL Power Supply
- ac-dc
- 30W
- 1 Output 2.5A at 12Vdc
- Wires and connectors included

HMI:

- Panel PC based on Raspberry PI 4 B board
- 10.1" Resistive Touch Screenfor industrial environment using Raspian or Ubuntu from Linux
- EMC and ESD protection
- Anodized aluminum

Accessories included:

- Power cords
- Patch cords
- Connector
- Software CD

2) MDUINOPLC+ Power supply (x 3)

MDUINO PLC ARDUINO ETHERNET & WiFi & BLUETOOTH LE 19R I/Os RELAY/ANALOG/DIGITAL PLUS:

- 6 inputs
- 11 outputs
- Communications
- RTC, µSD, Ethernet, USB, Full/Half duplex, RS485, RS232, I2C, Modbus
- Wi-Fi & Bluetooth LE (ESP32).

Accessories included:

- IoT mote B with antennas
- Patch cords
- User manuals
- Software CD
- Experiment
- Cable
- Power cords

Power supply:

- Din RAIL Power Supply
- ac-dc
- 30W
- 1 Output 2.5A at 12Vdc

DNI Rail and board for fixing included:**b) Fatek PLC Trainer (x5)****Features:**

- Sensors installed on-board
- Control Circuits Installed
- Drivers Installed
- Protection Circuits Installed

Technical Features:

- PLC: Fatek

- Digital Inputs: 14
- Digital Outputs: 10
- Programming Language: Ladder
- Fixed Supply DC: 24V, 12V, 5V, -5V & -12V
- Digital Input Simulator: 8X Momentary, 8X Toggle Switches
- Switches: 2X Thumbwheel, 8-bit DIP
- Signal Conditioning: F/V Converter, A/D Converter. D/A Converter
- Displays: 4X 7-Segment, 8X8 Dual Colour Dot Matrix, 10 point LED Bar
- Analog Source: 2X +10V DC
- Motors: DC with IR Encoder, Stepper with four IR Encoder, R/C Servo
- Driver: Dual H-Bridge Monolithic Type, PWM
- Sensor: Light Intensity, Temperature with Heater

On-Board PLC Applications:

- Traffic Light Control
- Liquid Mixer
- Temperature Control
- Light Intensity Control
- Elevator Control
- DC Motor Control
- Stepper Motor Control
- R/C Servo Motor Control
- LED Flasher
- Dot Matrix
- 7-Segment
- LED Bar Display
- Assembly Line Control

Experiments Included:

- Implementation of Counters (Parking Stand)
- Implementation of Timer Application (Flash Light)

- Monolithic A/D Converter Control by PLC
- Monolithic D/A Converter Control by PLC
- 7-Segment Display Application
- Thumbwheel Switch Application
- Traffic Light Control Application
- Liquid Mixer Application
- Temperature Control Application
- Light Intensity Control Application
- Elevator Control Application
- DC Motor Control Application
- Stepper Motor Control Application
- R/C Servo Motor Control Application
- Stage Light Control Application
- Dot Matrix Application

Accessories Included:

- 2mm Patch Cords
- Power Cord
- User Manual
- Experiment Manual
- IDC Cables
- PC Programming Cable
- Software CD

c) Fatek PLCset for platform (x5)

Package contains:

- 9) Fatek PLC
- 10) Communication Board, FBs-CB55
- 11) Temperature Measurement Modules (RTD 6)
- 12) Segment LED Display Modules
- 13) Bluetooth to RS232 (FBs-B2C)
- 14) AIO Modules FBs-6AD
- 15) Din Rail
- 16) P5 series HMI

Fatek PLC:

- 20 points 24VDC digital input (6 points 200KHz + 2

- points 20KHz + 8 5KHz + 4 Low)
- 12 Points relay or transistor digital output (Model “T” 6 points 100KHz + 2 points 20KHz + 4 Low)
- 1 built-in RS-232 or USB port (expandable up to 5)
- built-in RTC
- detachable terminal block
- Sink (NPN) or Source (PNP) type transistor I/O (Model “T” only)
- 100~240VAC, 24 VDC or 12 VDC power supply
- Expandable Ports – RS485 or RS232 or Ethernet or GSM or ZigBee
- Built-in 1 port (Port0, USB or RS232)
- Expandable 4 ports (Port 1-4, RS485 or RS232 or Ethernet or GSM or ZigBee)

Communication Board:

- 2 ports RS485 (Port 3+ Port 4) communication board

Temperature Measurement Modules:

- 6 channel RTD temperature input module with 0.1 resolution

Segment LED Display Modules:

- Support up to 8 digits of seven-segment LED display (include decimal point) or 4 digits of 16-segment alphanumerical LED display or 64 independent LED displays

Bluetooth to RS232:

- Bluetooth to RS232 wireless data communication converter which is dedicated designed for FATEK PLC port0 usage

AIO Modules FBs-6AD:

- Analog input modules of FATEK FBs series PLC
- Provides 6 channels A/D input with 12- or 14-bit effective resolution

		<p>Din rail:</p> <p>P5 Series HMI:</p> <ul style="list-style-type: none"> • CPU: • 32-bit 300MHz RISC • Storage: • Date Storage, CF Card, USB • Display size: • 4.3 inch TFT colors • Serial port: • 1 serial ports, RS232/RS485/RS422 could be use at the same <p>Accessories included:</p> <ul style="list-style-type: none"> • Patch cords • User manuals • Software CD • Experiment • Cable • Power cords 				
11.	Portable Trainers	<p>Package contains:</p> <p>a) pi-top [4] Foundation Kit</p> <p>b) Pitop3</p> <p>a) pi-top [4] Foundation Kit:</p> <ul style="list-style-type: none"> • Single board computer : Raspberry Pi 4 Mode B • CPU : Quad Core 64 bit SoC @ 1.5 GHz • Memory: 4 GB DDR4 • Storage: 16 GB micro SD card • Networking: Gigabit Ethernet up to 1Gbps, WiFi 2.5GHz + 5.0GHz IEEE 802.11ac, Bluetooth low energy v5.0 • Multimedia: OpenGL ES, 3.0 Graphics • Metal 'bento box' containing 14 components including programmable sensors, buttons, and LEDs. <p>b) Pitop3:</p> <p>1) Screen:</p>	No	10 Ea		

- | | | | | | | |
|--|--|--|--|--|--|--|
| | | | <ul style="list-style-type: none">• 13.3" HD LCD screen with eDP interface• 1366x768 resolution• Colour active matrix TFT LCD module with anti-glare finish• 3W power consumption• PWM screen dim control (available on PCB rail)• 60Hz refresh rate• 262K colours• eDP 1.2 interface <p>2) Base Top:</p> <ul style="list-style-type: none">• Keyboard• Fully reprogrammable via USB• Any character can be put on any key position, to suit user's exact preferences• UK and US vinyl layouts available• 2.2mm operating distance• 28 pin FPC cable• Trackpad• PalmCheck feature helps prevents unwanted mouse clicks• PS/2 interface• 1N mouse click operating force• 8 pin FPC cable <p>3) Base Bottom:</p> <ul style="list-style-type: none">• Smart Battery Pack• Two-wire SMBus v2.0 interface• JEITA recommended charge profile• Over-current, over-voltage, over-temperature and short-circuit protection• Charge balancing for extended lifetime• 51.8 Watt-hour capacity• 10-12 hours run time <p>4) Hub board:</p> <ul style="list-style-type: none">• Power management• Screen driver (HDMI to eDP conversion) | | | |
|--|--|--|--|--|--|--|

		<ul style="list-style-type: none"> • Battery LED indicators • 18V. 3A input • 5V. 3.5A output • 3.3V 500mA output • Persistent 3.3V output (available even when powered off) • PCB rail specification pinout connects UART, I2C and SPI to Raspberry Pi for use with add-on boards. <p>5) Raspberry Pi 3</p> <ul style="list-style-type: none"> • Chipset: Broadcom BCM2837 • CPU: 1.2GHz quad-core 64-bit ARM cortex A53 • Ethernet : 10/100 (Max throughput 100Mbps) • USB: Four USB 2.0 with 480Mbps data transfer • Storage: MicroSD card or via USB-attached storage • Wireless: 802.11n Wireless LAN (Peak transmit/receive throughput of 150Mbps), Bluetooth 4.1 • Graphics: 400MHz VideoCore IV multimedia • Memory: 1GB LPDDR2-900 SDRAM • Expandability: 40 general purpose input-output pins • Video: Full HDMI port • Audio: Combined 3.5mm audio out jack and composite video • Camera interface (CSI) • Display interface (DSI) <p>Also included:</p> <ol style="list-style-type: none"> 1) SD Card (32GB) with pi-topOS 2) Cables connecting pi-top pieces 3) Wifi Dongle 4) PI-TOPSPEAKER 5) Charger 6) Instruction Booklet 				
12.	Robotic Arm	<p>Type 1: 6-Axis Robotic Arm (x2):</p> <ul style="list-style-type: none"> • 6-Axis Mirobot Arm for Education • PenHolding+Pen Set +Micro Servo Gripper Module • Suction Cup & Pneumatic kit 	No	2 Ea		

		<ul style="list-style-type: none"> • Mirobot mecha Sticker: Handbook • Power Supply • High Speed USB Cable • Mirobot mecha Sticker: Handbook • At least .2mm repeatability • Up to 110°/s joint speed • Atleast have 150g payload • USB connectivity • Open Source Firmware • Compatible with Programming Languages (Blockly, Python, GCode, C, C++, Java) • Controller type Arduino • Weight 1.5 kg • Control methods: MirobotStudio/ MirobotController/App <p>Type 2: Robotic Arm Fixtures Set (x2):</p> <ul style="list-style-type: none"> • Sliding Rail • Conveyor Belt • Robot Controller <p>Type 3: Robotic Arm Fixtures Set (x2):</p> <ul style="list-style-type: none"> • Robot Arm Vehicle • Universal Ball Gripper & Pneumatic Kit 				
13.	PCB Printer	<p>Package include PCB printer and DRILL ADD-ON:</p> <ul style="list-style-type: none"> • V-ONE PRINTER • Conductive Ink Cartridge (×10) • Solder Paste Cartridge (×10) • Dispensers (×10) • z-axis Probe (×1) • Board Clamps (×2) • Clamp Thumbscrews (×4) • 3"×4" FR4 Substrates (×6) • 2"×3" FR4 Substrates (×10) • Power Cable (×1) • USB Cable (×1) • Nozzles (×4) • Solder Wire Spool (×1) • Flux (×1) 	No	1		

		<ul style="list-style-type: none"> • Hello World Circuit (×1) • Burnishing Pad (×1) • DRILL ADD-ON: • Drill bits (×10 - various sizes) • Sacrificial Layer (×1) • 3"×4" FR1 Substrates (×6) • 2"×3" FR1 Substrates (×10) • Safety Glasses (×1) • 0.4mm PCB Rivets (~×200) • 1.0mm PCB Rivets (~×200) • PCB Rivet Tool (×2) • Power Cable and Adapter (×1) • Allen Key and Set Screws (×1) • Clamp Thumbscrews (×4) • Hello Drill Circuit (×1) • Zipties (×3) 				
14.	Signal Processing Kit	<p>Type a: C6713 DSP Starter kit (x7):</p> <ul style="list-style-type: none"> • Embedded JTAG support via USB • High-quality 24-bit stereo codec • Four 3.5mm audio jacks for microphone, line in, speaker and line out • 512K words of Flash and 16 MB SDRAM • Expansion port connector for plug-in modules • On-board standard IEEE JTAG interface • +5V universal power supply • A complete Integrated Development Environment (IDE), an efficient optimizing C/C++ compiler • assembler, linker, debugger, an a advanced editor with Code Maestro™ technology for faster code • Creation, data visualization, a profiler nd a flexible project manager • DSP/BIOS™ real-time kernel • Target error recovery software • DSK diagnostic tool • ability for third-party software for additional functionality <p>Package include:</p>	No	7+5		

- 10) C6713 DSP Starter kit with 512K Flash and 16MB SDRAM
- 11) C6713 DSK Code Composer Studio™ IDE including the Fast Simulators and access to Analysis Toolkit on Update Advisor
- 12) Quick Start Guide
- 13) Technical Reference
- 14) Customer Support Guide
- 15) USB Cable
- 16) Universal Power Supply
- 17) AC Power Cord(s)
- 18) Matlab 30 day free evaluation version

Type b: C6416 DSP Starter Kit (x5):

- Embedded JTAG support via USB
- High-quality 24-bit stereo codec
- Four 3.5mm audio jacks for microphone, line in, speaker and line out
- 512K words of Flash and 16 MB SDRAM
- Expansion port connector for plug-in modules
- On-board standard IEEE JTAG interface
- +5V universal power supply
- A complete Integrated Development Environment (IDE), an efficient optimizing C/C++ compiler assembler, linker, debugger, data visualization, a profiler, advanced optimization tools, and a flexible project manager
- DSP/BIOS™ real-time kernel
- Target error recovery software
- DSP diagnostic tool
- "Plug-in" ability for third-party software for additional functionality

The full contents of the kit include:

- 1) 1 GHz DSP Development Board with 512K Flash and 16MB SDRAM
- 2) DSP Code Composer Studio™ IDE including the Fast Simulators and access to Analysis Toolkit on Update Advisor
- 3) Quick Start Guide
- 4) Technical Reference

			<ul style="list-style-type: none"> 5) Customer Support Guide 6) USB Cable 7) Universal Power Supply 8) AC Power Cord(s) 9) MATLAB from The Mathworks 				
15.		Portable only SDR Device	<ul style="list-style-type: none"> • Portable self-contained RF learning module • Based on Analog Devices AD9363--Highly Integrated RF Agile Transceiver and Xilinx® Zynq Z-7010 FPGA • RF coverage from 325 MHz to 3.8 GHz • Up to 20 MHz of instantaneous bandwidth • Flexible rate, 12-bit ADC and DAC • One transmitter and one receiver, half or full duplex • MATLAB®, Simulink® support • GNU Radio sink and source blocks • libiio, a C, C++, C#, and Python API • USB 2.0 Powered Interface with Micro-USB 2.0 connector • High quality plastic enclosure 	No	5		
16.		Core Set	<p>Type 1: The EV3 Core Lego Set includes 541 elements that can be used for teaching science, technology, engineering, math, and computer science. (x2)</p> <p>The LEGO system comes in:</p> <ul style="list-style-type: none"> • Sturdy storage bin • Sorting tray • Includes three servomotors • Five sensors (gyro, ultrasonic, color and two touch) • A rechargeable battery • Connecting cables • Printed and digital building instructions • LEGO® Technic building bricks for creating models. • EV3 Intelligent Brick. <p>Type 2: Formula AllCode standard class set (x5)</p> <ul style="list-style-type: none"> • Five host independent robots, maze walls, maze mat • Compatible with Raspberry Pi, Android, MATLAB & more • Rechargeable batteries and 2 micro USB leads included • Bluetooth enabled • Free complete course included (Matrix) 	No	2+5		

			Accessories included: 1) Bluetooth 4.00 USB module				
17.	Magnetic Levitation Kit &+ Nano Stick+ Demo	Magnetic Levitation kits come with MinSegNanoStick - Arduino compatible board, pre-loaded with balance code <ul style="list-style-type: none"> • Fully functional Arduino board with motor driver! • Fully assembled coil, hall effect sensor, mosfet, Attiny85 processor, with box • Hook Up 9v battery (ONLY Liithium ion or Energizer Industrial or Duracell Procell have enough current) • Kit is fully assembled with box. • RASPLib) Compatible USB cable - plug in and balance! • Electromagnetic Coil & stand • Magnet • Cable for M1V4.3 MinSegShield • Kit is fully assembled with box. • MinSeg Nano Stick - a fully functional Arduino compatible board with motor driver (compatible with MinSegNano library) • Direct plug-in compatible with M1V4.3 and M2V5 Shields, the MinSegMega V3 and the MinSeg Nano Stick micro usb. Compatible with M2V3.2 and other systems with single jumper wire. • Instructions for use 		20			
18.	Single Axis Kit	MinSeg V3 Board: Arduino Compatible Mega 2560 (compatible with Arduino IDE): <ul style="list-style-type: none"> • 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) • Lego NXT DC Motor with Encoder and wheels • 6AA (9v) battery holder • Retractable USB Cable 	No	20			

			<ul style="list-style-type: none"> • Project Box • Dual MicroGear Motor Kit (assembly required): Includes 2 microgear motors and cables, mounted on adapter board with 2 screws (screwdriver assembly required). Also includes 9v battery holder and screw for mini configuration • Plug In Bluetooth Module • Ultrasonic Sensor • Time of Flight sensor 				
19.		The DC Motor Control Kit	<ul style="list-style-type: none"> • MinSegMega V3 Board: Arduino Compatible Mega 2560 • 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 • 2 different sized gears • MPU9250 + MPU280 10DOF sensor • Accelerometer • Gyroscope compass • Barometer 	No	15		
20.		Raspberry Pi 4 4GB Starter Kit	<ul style="list-style-type: none"> • 1.5GHz 64-bit quad-core ARMv8 CPU (4GB RAM) • 32GB Micro SD Card (Class 10) Pre-loaded with NOOBS, USB MicroSD Card Reader • Raspberry Pi 4 Case with Integrated Fan Mount, Low Noise Bearing System Fan • USB-C Raspberry Pi 4 Power Supply with Noise Filter, Set of Heat Sinks, Micro HDMI to HDMI Cable - 6 foot • USB-C Pi Switch: On/Off Power Switch for Raspberry Pi 4 	No	10		
21.		Raspberry Pi 4 Touch Screen	<ul style="list-style-type: none"> • 7 Inch LCD HDMI Touch Screen Display for Raspberry Pi with Pen and case 	No	15		

22.		First aid box with medicine	Portable and can be carried with ease and ready to use in emergency The Box includes <ul style="list-style-type: none"> • all essentials to treat cuts and wounds (At least three sets) • Cotton bandages, band-aids, scissors, Pyodine, and cotton wool (at least 3 Sets) • OTC medicines like Panadol, Disprin, (20 Each) • ORS 5 sachets • Muscles pain cream (01) • Cream for Burns (02) 	No	3		
<u>Total</u>							

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

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

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

Dear Sir

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

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

Yours Faithfully.

(Signature of Tenderer)

Designation

Date:

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

SPECIMEN FOR "ADVANCE PAYMENT BANK GUARANTEE"

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

In Favour of:

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

Subject: **Advance Payment Bank Guarantee**

Contract No: _____ DATED. _____

Dear Sir,

1. We [Name of Guarantor] understand that you have entered into contract with M/S [Name of Firm] (hereinafter called Our Client), for provision of [Name of Stores]. And as per the above mentioned Contract, you are liable to pay to Our Client an amount of [Amount of Guarantee] in advance, which shall be released against a Bank Guarantee. 2. Bank & seller firm shall inform your office regarding termination of the validity of this bank Guarantee one clear month before the actual expiry date of this Bank Guarantee.

3. Now, we hereby irrevocably undertake to immediately make payment on to your orders, merely upon receipt of your first written notice, an amount not exceeding [Amount of Guarantee] that may be claimed by you at your own discretion without it being necessary for you to prove or even assert to the Bank any default whatsoever of Our Client under the Contract.

4. Claims against this Guarantee shall be lodged on us through written request/s on your proper Letter Head. Unless claims are not presented on or before the Validity Date, all rights and benefits under this guarantee shall be forfeited and we shall be released from all claims, demands or liabilities of any kind whatsoever.

5. This Guarantee shall remain in force up to the above mentioned Validity Date which can however, be extended upon request of Our Client.

Yours faithfully,

Signature: _____

Name: _____

Designation: _____

Bank Stamp:

"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 be cashed on sight on presentation without any reference to our Customer / Supplier or Vendor.

Signature_____

Name_____

Desig_____

Bank Stamp_____

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

"SELLER'S WARRANTY CERTIFICATE"

Contract No: _____ (To be provided on stamp paper)
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