

Tender No:

KDU/PRO/CAP/C/133/2023



General Sir John Kotelawala Defence University,
Kandawala Estate, Ratmalana,
Sri Lanka.
T: Phone: 2632028 , 2622995
Fax : 2622504, 2623599
Web: www.kdu.lk

05.06.2023

INVITATION TO BID AND GENERAL CONDITIONS OF TENDER

1. The Vice Chancellor of the General Sir John Kotelawala Defence University, as the Chairman, Department Procurement Committee Invites Bid/s from prospective Bidders for supply of **item/s listed in the schedule in Annex “A”**. **The relevant specifications of the item/s are indicated in Annex “B”**.

2. **CLOSING DATE & TIME**. The tender will close at 1000 hrs. on **27/ 06/2023**. Any Bid submitted after the closing time of the tender will be rejected & unopened such bids will be returned to the bidder.

3. **VALIDITY OF BID**. The bid submitted under this tender **must be valid for a minimum period of 120 days from the date of closing of tender**.

4. **BID BOND / GUARANTEE**.

(a) If the quoted bid value exceeds Rs: 2,000,000.00, such Bids should be accompanied with 1% of Bid Value an “on demand” and “unconditional” Bid Bond/Guarantee for a sum of **Rs:** in the format given in Annex “C” through a recognized local Bank or Insurance Company registered in Sri Lanka which is authorized by the Insurance Board of Sri Lanka to issue such Bid Guarantees. All Bid Bond/Guarantees should be valid for at least 30 days more than the validity period of bids, ie, for 79 days from the date of Bid opening. **Cheques will not be accepted as Bid Guarantee**.

(b) Submission of insufficient Bid Bond/Guarantee value or period will be considered as a “**major deviation**” and such offer will not be considered for further procurement action and will be rejected.

5. **VALUE ADDED TAX**. The Bidders who bid for locally delivered items must have the VAT registration. The VAT portion must be shown separately in the price schedule in Annex “A” and VAT registration number must be indicated. If the quoted item is exempted from VAT or Bidding Company is not liable for VAT, reference number and date of relevant Act number/Gazette notification/a certificate (as applicable) **issued for the current financial year** from the Commissioner General of Inland Revenue to that effect should be submitted along with the Bid.

6. **BID SUBMISSION**. The **bidder must duly sign at the bottom of Annex ‘A’ of this document** indicating the name of the signatory and the name of the company & place the company common seal to confirm the acceptance of tender conditions. **The Bid/s that do not include authorized signature will be rejected**. The Bid/s duly signed by the bidder enclosed and sealed in an appropriate cover addressed to the following address should be sent by registered post or could be deposited in the **appropriate tender box placed at General Sir John Kotelawala Defence University, Kandawala Estate, Ratmalana** (at the Main Entrance of General Sir John Kotelawala Defence University) on or before the time & date specified for the closing of tender. **The tender reference number, date & time of closing tender should be indicated & underlined at the top left corner of the envelop**.

Tender Ref No
Closing Date & Time

The Chairman,
Department Procurement Committee,
General Sir John Kotelawala Defence University,
Kandawala Estate, Ratmalana,
Sri Lanka.

7. The Bid/s must be submitted in the attached schedule of prices in Annex “A” as applicable. However, bidders could use similar formats prepared with their own letter heads with all the details mentioned therein and submit in **three copies along with duly signed copy of a General Conditions of tender**. The Bid/s must contain **Technical Literature, Pamphlets, Drawings and Quality Standard Certificate etc** necessary to determine characteristics of items offered and in case of Machinery/Vehicles & Equipment, servicing and workshop data/after sales service, back up facilities or any other facilities provided by the supplier.

8. **SUBMISSION OF SAMPLES/PAYMENT OF TESTING CHARGES**.

When it is required to submit samples, **every offer** must be accompanied with pre - marked samples. The marking of samples **indicating the Bidder & Offer number** must be done and the samples must be handed over to the officer at same place where tender box is placed **on or before the closing date & time of the Bid**. Samples submitted after closing time of the Bid will be rejected. The documents such as Air Way Bills etc, will not be accepted in place of samples. When the testing charges are required to be paid, bidders shall pay testing charges separately **for all offers** indicated in their bid/s.

(1) **Samples**. Please submit samples.

(2) **Testing Charges**. A sum of Rs. **per offer** must be paid to the Bursar of KDU, prior to the submission of bid and a copy of the receipt must be annexed to the bid. It is the responsibility of bidder to inform the Cashier of the Account Office to note the tender number on the receipt issued for such payments.

8. **BID OPENING**. All duly received bids **will be opened immediately after the scheduled closing time of Bids at the same venue**. Bidders or their accredited agents could be present at the time of opening of bids.

9. **PRICES.**

For locally delivered items (including locally manufactured items & foreign items imported by the bidders) price must be quoted in Sri Lankan Rupees, inclusive of all charges for delivery of items to General Sir John Kotelawala Defence University Ratmalana, Faculty of Allied Health Science (FAHS) Werahera and University Hospital Werahera or Southern Campus Sooriyawewa. **Unit price, VAT and Total price should be clearly indicated in schedule in Annex "A"**. Other than VAT, all other type of taxes (eg : NBT, BTT, etc.) should not be indicated separately and should be included in unit price.

10. **RESTRICTED TENDERS.** Invitation to Bids are circulated among the registered suppliers with Ministry of Defence (MOD), only bids submitted by registered suppliers will be allowed for consideration. However, Chairman, Department Procurement Committee reserves the right to invite the bids from multiple combinations of Procurement Methods as stipulated in Chapter III of the Government Procurement Guideline, 2006 to ensure highest competitiveness.

11. **PERFORMANCE BOND/GUARANTEE.** A successful bidder shall furnish a Performance Bond/Guarantee in the form of "On Demand" & "Unconditional" Bank/Insurance Guarantee for a sum equivalent to 10% of the contract value for every contract that exceeds Rs. 2,000,000.00 or equivalent amount in foreign currency through a recognized Commercial Bank registered in Sri Lanka or through an Insurance Company authorized by the Insurance Board of Sri Lanka to issue such Performance Guarantee for this purpose, **within two weeks from the date of notification of award**. The proceeds of the Performance Bond/Guarantee shall be payable to the Vice Chancellor of the General Sir John Kotelawala Defence University as compensation for any loss resulting from the supplier's failure to complete his performance obligations under the contract. If the contracted supplier fails to deliver the items on time or fails to complete the works as per the agreed contract, **THE TOTAL VALUE OF THE PERFORMANCE BOND/GUARANTEE** will be forfeited. If only partial delivery is made during the agreed contract period, the corresponding value percentage of undelivered quantity from the Performance Bond/Guarantee will be forfeited.

12. **SIGNING OF CONTRACT.** The notification of award will be transmitted to the successful bidder by post, by fax or e-mail. This notification constitutes the formation of the contract. The successful bidder should submit his written acceptance for the award and performance bond / guarantee (For awards over Rs. 500,000.00 without VAT) within 14 days of receipt of such notification. Upon acceptance of the award and furnishing of the Performance Bond/Guarantee, the successful bidder will have to enter into a formal contract with the Vice Chancellor of the General Sir John Kotelawala Defence University by signing the Contract.

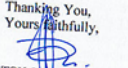
13. **DELIVERY.** Preference will be given for early delivery. In case of bulk supplies for locally manufactured items, the delivery of **total quantity must be completed within 120 days of signing of contract**, unless mutually agreed for extended delivery period with General Sir John Kotelawala Defence University. **The bidder/s must indicate the proposed delivery schedule in Annex "D"**. In the event of placing a purchase order with the successful bidder, the total quantity so ordered must be supplied as one consignment unless part deliveries are agreed upon in the contract. The deliveries not made as per agreed delivery schedule will be considered as bad performances by the suppliers and **no extended delivery period will be authorized**. Under extreme unavoidable conditions too, the Chairman, Department Procurement Committee (Vice Chancellor of the General Sir John Kotelawala Defence University) reserves the right to grant or refuse delivery period extensions only within the current financial year with or without liquidated claim for delayed deliveries and that decision will be final.

14. **LIQUIDATED DAMAGES.** In case of delivery period extensions requested by the successful bidder, a sum equivalent to 1% of the total value of the delayed supply per delay of one week or part thereof may be deducted from the payment due to the supplier from the General Sir John Kotelawala Defence University as liquidated damages up to the maximum limit of 12% of the total value of delayed supplies.

15. **PAYMENT TERMS FOR LOCALLY DELIVERED ITEMS.** Payment will be made after acceptance of items which should be subjected to a pre-acceptance inspection/testing by General Sir John Kotelawala Defence University authorities. The delivery made to the General Sir John Kotelawala Defence University should not be considered as quantities taken over by General Sir John Kotelawala Defence University until items are properly accepted after pre-acceptance inspection. Any item that does not conform to the specifications or already approved sample will be rejected & it is the responsibility of the supplier to remove them from General Sir John Kotelawala Defence University stores/premises within 07 working days of such intimation (either verbal or written) at his own cost and replace them with items conforming to specification within one month of such rejection. The bidder shall allow approximately 30-45 days' period of credit from the date of acceptance of items for Account Office, General Sir John Kotelawala Defence University to obtain liquid cash from General Treasury & release the payment.

16. **RIGHTS OF THE PROCUREMENT COMMITTEE.** The Department Procurement Committee reserve the right to accept or reject whole or part of this tender and their decision will be final. The successful bidders will be notified. Information with regard to rejected or unsuccessful bids will not be communicated.

Thanking You,
Yours faithfully,



TSK Lankeshwara Lsc
For Vice Chancellor

TSK Lankeshwara Lsc
Lieutenant Commander (S)
for Vice Chancellor
General Sir John Kotelawala Defence University

SCHEDULE OF PRICES FOR LOCALLY DELIVERED ITEMS

S/N	ITEMS	DENO	QTY	PRICE EACH SLRS	TOTAL PRICE SLRS
	<u>PURCHASE OF LAB EQUIPMENT FOR DEPARTMENT OF ELECTRICAL, ELECTRONIC & TELECOMMUNICATION ENGINEERING</u>				
01	Arduino Uno	No's	05		
02	Arduino Red Board	No's	05		
03	Arduino Lilypad	No's	05		
04	Arduino Mega	No's	05		
05	Arduino Leonardo	No's	05		
06	Raspberry Pi Zero 2 W	No's	05		
07	Raspberry Pi Pico	No's	05		
08	Raspberry Pi 4 Model B	No's	05		
09	Raspberry Pi 4 Model A+	No's	05		
10	Raspberry Pi 3 Model B	No's	05		
11	Jetson Nano development kit	No's	05		
12	STM 32 Blue pill board	No's	05		
13	ST link debugger for the blue pill board	No's	05		
14	STM32 Nucleo -64	No's	05		
15	Esp 32 - Complete	No's	05		
16	ESP 32 - WROVER-KIT V3	No's	05		
17	ESP 32 - S3 - KORVO - 2 V3.0	No's	05		
18	VISION FIVE 2	No's	05		
19	PINE 64 - OX64	No's	05		
20	KRIA KV260 VISION AI STARTER KIT	No's	05		
	<i>Attached The Specifications</i>				
	TOTAL				
	DISCOUNT				
	TOTAL(AFTER DISCOUNT)				
	VAT %				
	GRAND TOTAL				

(A) OTHER DETAILS

- (i) DELIVERY PERIOD -
- (ii) MAKE & MODEL -
- (iii) VALIDITY PERIOD -
- (iv) WARRANTY PERIOD -
- (v) PAYMENT TERMS - CREDIT
- (vi) COUNTRY OF ORIGIN -
- (vii) DISCOUNT IF ANY -
- (viii) ANY OTHER TAXES -

(B) VAT DETAILS - VALUE ADDED TAX PERMANENT REGISTRATION CERTIFICATE / VAT EXEMPTION LETTER ISSUED BY DEPARTMENT OF INLAND REVENUE TO BE ATTACHED

(C) PLACE OF DELIVERY - ITEMS TO BE DELIVERED TO THE "GENERAL SIR JOHN KOTELAWALA DEFENCE

UNIVERSITY, KANDAWALA STATE, RATMALANA
ALONG WITH THE COPY OF ORDER AND RELEVANT
INVOICE.

(D) Any queries / information with regard to this procurement / tender could be obtained from Officer Commanding Logistics Services office at General Sir John Kotelawala Defence University through e-mail ocls@kdu.ac.lk and by telephone number 0112622504 during working hours.

NOTE: UNIT PRICE AND TOTAL PRICE ARE TO BE INDICATED CLEARLY IN THE TENDER, IF NOT QUOTATION WILL BE REJECTED.

SUPPLIER NAME -
ADDRESS -
CONTACT NUMBER -
E MAIL ADDRESS -



(E) Bid Reference: KDU/PRO/CAP/A/126/2023

.....
DATE

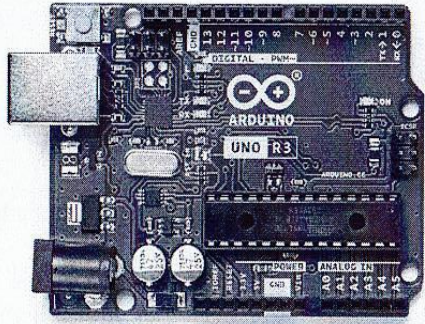
I/We agree to abide by the condition of No 01-16 bidding document and undertake to supply the items as per delivery schedule mentioned in the contract, in the event of an order been placed with me/my firm/company as a result of this tender.

..... Signature.
..... Name of Signatory
..... Name of the Company/Bidder
Date :-



ANNEX - A

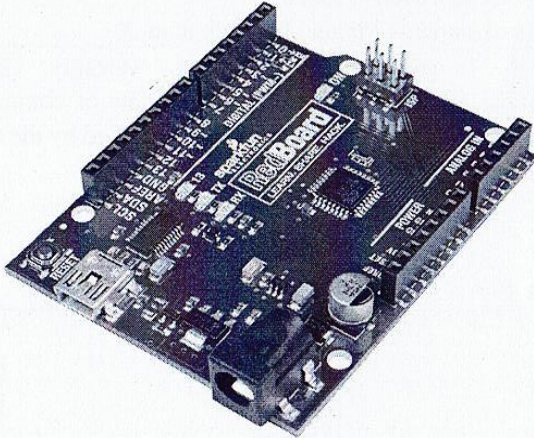
SPECIFICATION FOR ARDUINO UNO REV3

Srl No.	Description	Required Specification	Bidder's Compliance.	
			Yes/ No	If "No" your Offer
1	Make/Brand	Specify		
2	Model	Specify		
3	Country of Origin	Specify		
4	Country of Manufacture	Specify		
5	Year of Manufacture	Specify		
6	Product Image			
7	Features	<ul style="list-style-type: none"> 1.0 pinout: added SDA and SCL pins that are near to the AREF pin and two other new pins placed near to the RESET pin, the IOREF that allow the shields to adapt to the voltage provided from the board. In future, shields will be compatible with both the board that uses the AVR, which operates with 5V and with the Arduino Due that operates with 3.3V. The second one is a not connected pin, that is reserved for future purposes. 		
		<ul style="list-style-type: none"> Stronger RESET circuit. 		
		<ul style="list-style-type: none"> Atmega 16U2 replace the 8U2. 		
8	Technical Specifications	Microcontroller - <u>ATmega328P</u>		
		Operating Voltage - 5V		
		Input Voltage (recommended) - 7-12V		

		Input Voltage (limit) - 6-20V		
		Digital I/O Pins - 14 (of which 6 provide PWM output)		
		PWM Digital I/O Pins - 6		
		Analog Input Pins - 6		
		DC Current per I/O Pin - 20 mA		
		DC Current for 3.3V Pin - 50 mA		
		Flash Memory - 32 KB (ATmega328P) of which 0.5 KB used by bootloader		
		SRAM - 2 KB (ATmega328P)		
		EEPROM - 1 KB (ATmega328P)		
		Clock Speed - 16 MHz		
		LED_BUILTIN -13		
		Length - 68.6 mm		
		Width - 53.4 mm		
		Weight - 25 g		
09	Documents to be supplied	<ul style="list-style-type: none"> • Comprehensive manufacturer's technical literature for the system. • Reference for the used cases at reputed academic institution in similar or higher capacities. • Manufacturers Authorization. • Brief description of the laboratory Practicals which can be carried out. • Company profile of the supplier with. • Comprehensive manufacturer's technical literature. • User Guides. • 03 sets of Instructor Guides. • 02 sets of students Manual for each module 		
10	Warranty	Minimum of 1 years' comprehensive warranty (Excluding consumables) for all supplied items from the date of commissioning should be provided. If free services are provided, same should be clearly indicated. Warranty period will be extended by the total non-operational days owing to warranty defects.		

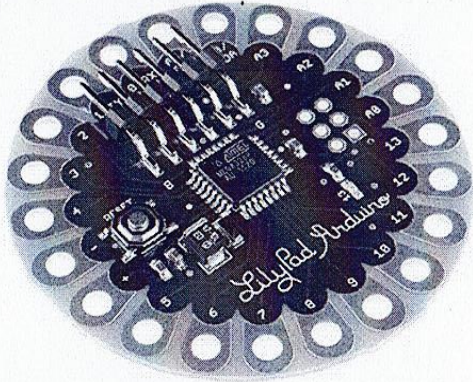
ANNEX - B

SPECIFICATION FOR REDBOARD PROGRAMMED WITH ARDUINO

Srl No.	Description	Required Specification	Bidder's Compliance.	
			Yes/No	If "No" your Offer
1	Make/Brand	Specify		
2	Model	Specify		
3	Country of Origin	Specify		
4	Country of Manufacture	Specify		
5	Year of Manufacture	Specify		
6	Product Image			
7	Features	• ATmega328 microcontroller with Optiboot (UNO) Bootloader		
		• USB Programming Facilitated by the Ubiquitous FTDI FT231X		
		• Input voltage - 7-15V		
		• 0-5V outputs with 3.3V compatible inputs		
		• 14 Digital I/O Pins (6 PWM outputs)		
		• 6 Analog Inputs		
		• ISP Header		

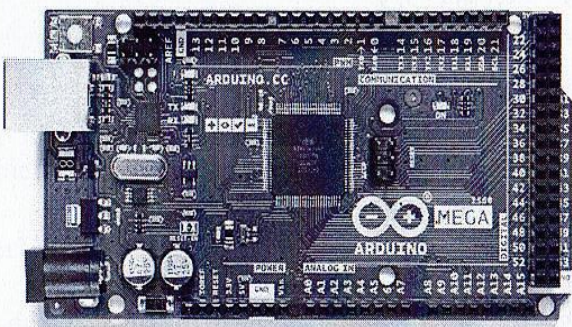
		<ul style="list-style-type: none"> • 32k Flash Memory 		
		<ul style="list-style-type: none"> • 16MHz Clock Speed 		
		<ul style="list-style-type: none"> • All SMD Construction 		
		<ul style="list-style-type: none"> • R3 Shield Compatible 		
		<ul style="list-style-type: none"> • Red PCB! 		
10	Documents to be supplied	<ul style="list-style-type: none"> • Comprehensive manufacturer's technical literature for the system. • Reference for the used cases at reputed academic institution in similar or higher capacities. • Manufacturers Authorization. • Brief description of the laboratory Practicals which can be carried out. • Company profile of the supplier with. • Comprehensive manufacturer's technical literature. • User Guides. • 03 sets of Instructor Guides. • 02 sets of students Manual for each module 		
11	Warranty	Minimum of 1 years' comprehensive warranty (Excluding consumables) for all supplied items from the date of commissioning should be provided. Warranty period will be extended by the total non-operational days owing to warranty defects.		

SPECIFICATION FOR LILYPAD ARDUINO 328 MAIN BOARD

Srl No.	Description	Required Specification	Bidder's Compliance.	
			Yes/No	If "No" your Offer
1	Make/Brand	Specify		
2	Model	Specify		
3	Country of Origin	Specify		
4	Country of Manufacture	Specify		
5	Year of Manufacture	Specify		
6	Product Image			
7	Features	<ul style="list-style-type: none"> • Microcontroller : ATmega328V. • Operating Voltage Range: 2.7-5.5 V. • Input Voltage : 2.7-5.5 V. • Digital I/O Pins :14 Nos (of which 6 provide PWM output) • Analog Input Pins : 6 Nos. • DC Current per I/O Pin :40 mA. • Flash Memory : 16 KB (of which 2 KB used by bootloader) • SRAM : 1 KB. 		
10	Documents to be supplied	<ul style="list-style-type: none"> • Comprehensive manufacturer's technical literature for the system. • Reference for the used cases at reputed academic institution in similar or higher capacities. • Manufacturers Authorization. • Brief description of the laboratory Practicals which can be carried out. • Company profile of the supplier with. • Comprehensive manufacturer's technical literature. • User Guides. 		

		<ul style="list-style-type: none">• 03 sets of Instructor Guides.• 02 sets of students Manual for each module		
11	Warranty	Minimum of 1 years' comprehensive warranty (Excluding consumables) for all supplied items from the date of commissioning should be provided. Warranty period will be extended by the total non-operational days owing to warranty defects.		


SPECIFICATION FOR ARDUINO MEGA 2560 REV3

Srl No.	Description	Required Specification	Bidder's Compliance.	
			Yes/ No	If "No" your Offer
1	Make/Brand	Specify		
2	Model	Specify		
3	Country of Origin	Specify		
4	Country of Manufacture	Specify		
5	Year of Manufacture	Specify		
6	Product Image			
7	Features	<ul style="list-style-type: none"> • 1.0 pinout: SDA and SCL pins - near to the AREF pin - and two other new pins placed near to the RESET pin, the IOREF that allow the shields to adapt to the voltage provided from the board. In future, shields will be compatible both with the board that use the AVR, which operate with 5V and with the board that uses ATSAM3X8E, that operate with 3.3V. The second one is a not connected pin, that is reserved for future purposes. 		
		<ul style="list-style-type: none"> • Stronger RESET circuit. 		
		<ul style="list-style-type: none"> • Atmega 16U2 replace the 8U2. 		
8	Technical Specifications	Microcontroller - <u>ATmega2560</u>		
		Operating Voltage – 5V		
		Input Voltage (recommended) - 7-12V		

		Input Voltage (limit) - 6-20V		
		Digital I/O Pins - 54 (of which 15 provide PWM output)		
		Analog Input Pins - 16		
		DC Current per I/O Pin – 20 mA		
		DC Current for 3.3V Pin – 50 mA		
		Flash Memory - 256 KB of which 8 KB used by bootloader		
		SRAM - 8 KB		
		EEPROM - 4 KB		
		Clock Speed - 16 MHz		
		LED_BUILTIN - 13		
		Length - 101.52 mm		
		Width - 53.3 mm		
		Weight - 37 g		
10	Documents to be supplied	<ul style="list-style-type: none"> • Comprehensive manufacturer's technical literature for the system. • Reference for the used cases at reputed academic institution in similar or higher capacities. • Manufacturers Authorization. • Brief description of the laboratory Practicals which can be carried out. • Company profile of the supplier with. • Comprehensive manufacturer's technical literature. • User Guides. • 03 sets of Instructor Guides. • 02 sets of students Manual for each module 		
11	Warranty	Minimum of 1 years' comprehensive warranty (Excluding consumables) for all supplied items from the date of commissioning should be provided. Warranty period will be extended by the total non-operational days owing to warranty defects.		

ANNEX - E

SPECIFICATION FOR ARDUINO LEONARDO

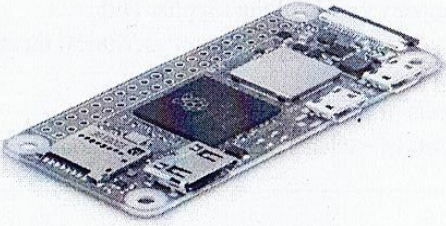
Srl No.	Description	Required Specification	Bidder's Compliance.	
			Yes/ No	If "No" your Offer
1	Make/Brand	Specify		
2	Model	Specify		
3	Country of Origin	Specify		
4	Country of Manufacture	Specify		
5	Year of Manufacture	Specify		
6	Product Image			
7	Features	<ul style="list-style-type: none"> The Arduino Leonardo is a microcontroller board based on the ATmega32u4. 		
		<ul style="list-style-type: none"> It has 20 digital input/output pins (of which 7 can be used as PWM outputs and 12 as analog inputs), a 16 MHz crystal oscillator, a micro USB connection, a power jack, an ICSP header, and a reset button. 		
		<ul style="list-style-type: none"> It contains everything needed to support the microcontroller; simply connect it to a computer with a USB cable or power it with a AC-to-DC adapter or battery to get started. 		
8	Technical Specifications	Board – Name - Arduino® Leonardo		
		SKU - A000057		

		Microcontroller - ATmega32u4		
		USB connector - Micro USB (USB-B)		
		Pins - Built-in LED Pin -13		
		- Digital I/O Pins -20		
		- Analog input pins -12		
		- PWM pins - 7		
		Communication - UART - YES		
		- I2C - YES		
		- SPI - YES		
		Power - I/O Voltage – 5V		
		- Input voltage (nominal) – 7-12V		
		- DC Current per I/O Pin - 10mA		
		- Power Supply Connector - Barrel Plug		
		Clock speed – Processor - ATmega32U4 16 MHz		
		Memory - ATmega32U4 - 2.5KB SRAM, 32KB FLASH, 1KB EEPROM		
		Dimensions – Weight – 20g		
		Width – 53.3 mm		
		Length – 68.6 mm		
10	Documents to be supplied	<ul style="list-style-type: none"> • Comprehensive manufacturer's technical literature for the system. • Reference for the used cases at reputed academic institution in similar or higher capacities. • Manufacturers Authorization. • Brief description of the laboratory Practicals which can be carried out. • Company profile of the supplier with. • Comprehensive manufacturer's technical literature. • User Guides. • 03 sets of Instructor Guides. • 02 sets of students Manual for each module 		

11	Warranty	Minimum of 1 years' comprehensive warranty (Excluding consumables) for all supplied items from the date of commissioning should be provided. Warranty period will be extended by the total non-operational days owing to warranty defects.		
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SPECIFICATION FOR RASPBERRY PI ZERO 2W

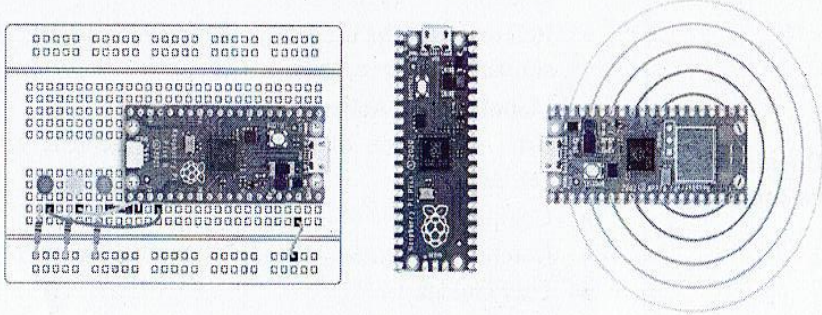
Annex F

Srl No.	Description	Required Specification	Bidder's Compliance.	
			Yes/No	If "No" your Offer
1	Make/Brand	Raspberry Pi		
2	Model	Raspberry Pi Zero 2 W		
3	Country of Origin	Specify		
4	Country of Manufacture	Specify		
5	Year of Manufacture	Specify		
6	Product Image			
7	Features	• Use Micro USB power supply		
		• Any standard USB keyboard and mouse will work		
		• Micro SD cards		
		• Use Ethernet cable to connect internet		
		• Can plug into a display either a computer monitor or a television through HDMI cable		
8	Technical Specifications	• Video output is via a mini HDMI port		
		• Form factor : 65mm × 30mm		
		• Processor : Broadcom BCM2710A1, quad-core 64-bit SoC (Arm Cortex-A53 @ 1GHz)		
		• Memory: 512MB LPDDR2		
		• Connectivity : • 2.4GHz IEEE 802.11b/g/n wireless LAN,Bluetooth 4.2,BLE,onboard antenna		
		• 1 × USB 2.0 interface with OTG		
		• HAT-compatible 40-pin I/O header footprint		
		• microSD card slot		
		• Mini HDMI port		
		• CSI-2 camera connector		
8	Technical Specifications	• Video : • HDMI interface		
		• Composite video		
8	Technical Specifications	• Multimedia : • H.264, MPEG-4 decode (1080p30)		
		• H.264 encode (1080p30)		
8	Technical Specifications	• OpenGL ES 1.1, 2.0 graphics		
		• Input power: 5V DC 2.5A		
8	Technical Specifications	• Operating temperature : -20°C to +70°C		

9	Accessories	<ul style="list-style-type: none"> • Included Accessories 		
		1. MicroSD card slot		
		2. CSI-2 camera connector		
		3. USB On-The-Go (OTG) port		
		4. unpopulated footprint for a HAT-compatible 40-pin GPIO header		
10	Documents to be supplied	5. 2.4GHz 802.11 b/g/n wireless LAN and Bluetooth 4.2		
		<ul style="list-style-type: none"> • Comprehensive manufacturer's technical literature for the system. • Reference for the used cases at reputed academic institution in similar or higher capacities. • Manufacturers Authorization. • Brief description of the laboratory Practicals which can be carried out. • Company profile of the supplier with. • Comprehensive manufacturer's technical literature. • User Guides. • 03 sets of Instructor Guides. • 02 sets of students Manual for each module 		
11	Warranty	Minimum of 1 years' comprehensive warranty (Excluding consumables) for all supplied items from the date of commissioning should be provided. Warranty period will be extended by the total non-operational days owing to warranty defects.		

SPECIFICATION FOR RASPBERRY PI PICO

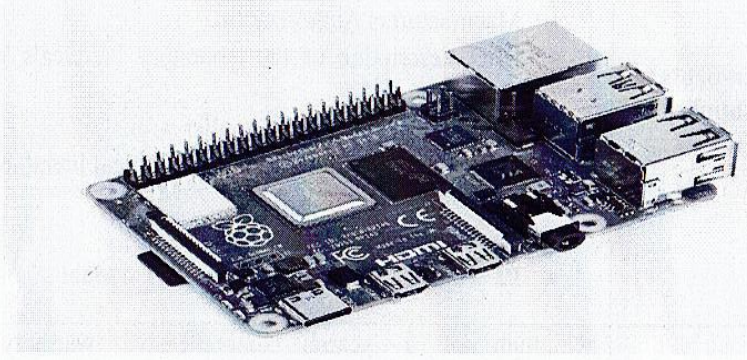
Annex G

Srl No.	Description	Required Specification	Bidder's Compliance.	
			Yes/No	If "No" your Offer
1	Make/Brand	Raspberry Pi		
2	Model	Raspberry Pi Pico		
3	Country of Origin	Specify		
4	Country of Manufacture	Specify		
5	Year of Manufacture	Specify		
6	Product Image			
7	Features	<ul style="list-style-type: none"> • manufactured on a modern 40nm process node • 3-pin ARM Serial Wire Debug (SWD) port • microcontroller with 2MB Flash • Micro-USB B port for power and data • Exposes 26 multi-function 3.3V General Purpose I/O (GPIO) • 23 GPIO are digital-only and 3 are ADC capable • Can be surface mounted as a module • Various options for easily powering the unit from micro-USB, external supplies or batteries • High quality, low cost, high availability • Dual-core cortex M0+ at up to 133MHz • 264kB multi-bank high performance SRAM • On-board USB1.1 (device or host) • 30 multi-function General Purpose IO (4 can be used for ADC) • 12-bit 500ksps Analogue to Digital Converter (ADC) • Various digital peripherals: 2 × UART, 2 × I2C, 2 × SPI, 16 × PWM channels • 1 × Timer with 4 alarms, 1 × Real Time Counter • 2 × Programmable IO (PIO) blocks, 8 state machines total • Flexible, user-programmable high-speed IO • Can emulate interfaces such as SD Card and VGA 		

8	Technical Specifications	<ul style="list-style-type: none"> • Form factor: 21 mm × 51 mm • CPU: Dual-core Arm Cortex-M0+ @ 133MHz • Memory: 264KB on-chip SRAM; 2MB on-board QSPI flash • Interfacing: 26 GPIO pins, including 3 analogue inputs • Input power: 1.8–5.5V DC • Operating temperature: -20°C to +85°C 		
9	Accessories	<ul style="list-style-type: none"> • Included Accessories 1. 2 × UART 2. 2 × SPI controllers 3. 2 × I2C controllers 4. 16 × PWM channels 5. 1 × USB 1.1 controller and PHY with host and device support 6. 8 × PIO state machines 		
10	Documents to be supplied	<ul style="list-style-type: none"> • Comprehensive manufacturer's technical literature for the system. • Reference for the used cases at reputed academic institution in similar or higher capacities. • Manufacturers Authorization. • Brief description of the laboratory Practicals which can be carried out. • Company profile of the supplier with. • Comprehensive manufacturer's technical literature. • User Guides. • 03 sets of Instructor Guides. • 02 sets of students Manual for each module 		
11	Warranty	Minimum of 1 years' comprehensive warranty (Excluding consumables) for all supplied items from the date of commissioning should be provided. Warranty period will be extended by the total non-operational days owing to warranty defects.		

SPECIFICATION FOR RASPBERRY PI 4

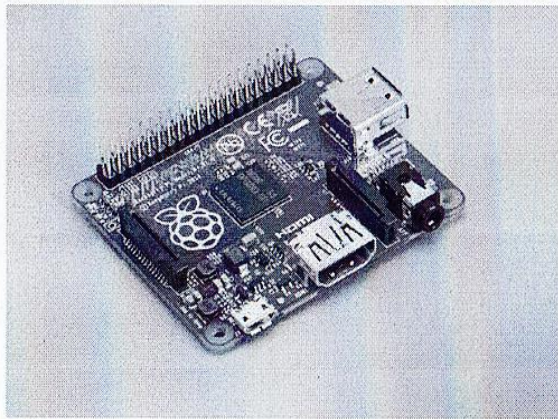
Annex H

Srl No.	Description	Required Specification	Bidder's Compliance.	
			Yes/No	If "No" your Offer
1	Make/Brand	Raspberry Pi (Trading) Ltd		
2	Model	Raspberry Pi 4 Model B		
3	Country of Origin	Specify		
4	Country of Manufacture	Specify		
5	Year of Manufacture	Specify		
6	Product Image			
7	Features	<ul style="list-style-type: none"> • Multimedia: H.265 (4Kp60 decode), H.264 (1080p60 decode, 1080p30 encode), OpenGL ES, 3.0 graphics 		
		<ul style="list-style-type: none"> • Micro SD card slot for loading operating system and data storage 		
		<ul style="list-style-type: none"> • 64-bit quad-core processor 		
		<ul style="list-style-type: none"> • dual-display support at resolutions up to 4K via a pair of micro-HDMI ports 		
		<ul style="list-style-type: none"> • 8GB of RAM 		
		<ul style="list-style-type: none"> • dual-band 2.4/5.0 GHz wireless LAN, Bluetooth 5.0, 		
		<ul style="list-style-type: none"> • Gigabit Ethernet 		
		<ul style="list-style-type: none"> • USB 3.0 and PoE capability 		
		<ul style="list-style-type: none"> • 4-pole stereo audio and composite video port 		
		<ul style="list-style-type: none"> • 2-lane MIPI CSI camera port 		
8	Technical Specifications	<ul style="list-style-type: none"> • Processor: Broadcom BCM2711, quad-core Cortex-A72 (ARM v8) 64-bit SoC @ 1.5GHz 		
		<ul style="list-style-type: none"> • Memory: 1GB, 2GB, 4GB or 8GB LPDDR4 (depending on model) with on-die ECC 		
		<ul style="list-style-type: none"> • GPIO: Standard 40-pin GPIO header 		

		<ul style="list-style-type: none"> • Input power: 5V DC via USB-C connector (minimum 3A), 5V DC via GPIO header (minimum 3A), Power over Ethernet (PoE)–enabled • Environment: Operating temperature 0–50°C 		
9	Accessories	<ul style="list-style-type: none"> • Included Accessories <ol style="list-style-type: none"> 1. 2.4 GHz and 5.0 GHz IEEE 802.11b/g/n/ac wireless LAN 2. Bluetooth 5.0, BLE 3. Gigabit Ethernet 4. 2 × USB 3.0 ports 5. 2 × USB 2.0 ports. 		
10	Documents to be supplied	<ul style="list-style-type: none"> • Comprehensive manufacturer's technical literature for the system. • Reference for the used cases at reputed academic institution in similar or higher capacities. • Manufacturers Authorization. • Brief description of the laboratory Practicals which can be carried out. • Company profile of the supplier with. • Comprehensive manufacturer's technical literature. • User Guides. • 03 sets of Instructor Guides. • 02 sets of students Manual for each module 		
11	Warranty	Minimum of 1 years' comprehensive warranty (Excluding consumables) for all supplied items from the date of commissioning should be provided. Warranty period will be extended by the total non-operational days owing to warranty defects.		

SPECIFICATION FOR RASPBERRY PI 1

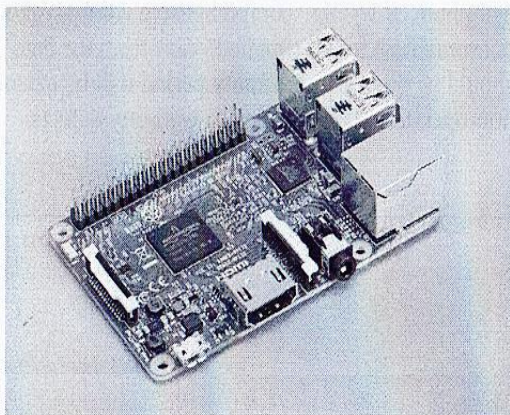
Annex I

Srl No.	Description	Required Specification	Bidder's Compliance.	
			Yes/No	If "No" your Offer
1	Make/Brand	Raspberry Pi (Trading Ltd)		
2	Model	Raspberry Pi 1 Model A+		
3	Country of Origin	Specify		
4	Country of Manufacture	Specify		
5	Year of Manufacture	Specify		
6	Product Image			
7	Features	• 256 MB of RAM		
		• HDMI output		
		• audio output		
		• RCA composite video output		
		• one USB port		
		• weight - 23 g		
		• size - 2.5" × 2.2" × 0.47"		
8	Technical Specifications	• Processor - BCM2835		
		• 40 GPIO pins		
		• push-push micro SD version		
		• Lower power consumption		
		• Better audio - audio circuit incorporates a dedicated low-noise power supply		
9	Documents to be supplied	• Smaller neater form factor		
		• Comprehensive manufacturer's technical literature for the system.		
		• Reference for the used cases at reputed academic institution in similar or higher capacities.		
		• Manufacturers Authorization.		
		• Brief description of the laboratory Practicals which can be carried out.		
		• Company profile of the supplier with.		

		<ul style="list-style-type: none"> • Comprehensive manufacturer's technical literature. • User Guides. • 03 sets of Instructor Guides. • 02 sets of students Manual for each module 		
10	Warranty	Minimum of 1 years' comprehensive warranty (Excluding consumables) for all supplied items from the date of commissioning should be provided. Warranty period will be extended by the total non-operational days owing to warranty defects.		

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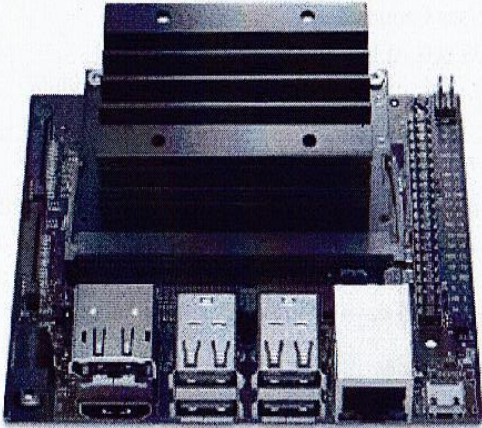
SPECIFICATION FOR RASPBERRY PI 3 Annex J

Srl No.	Description	Required Specification	Bidder's Compliance.	
			Yes/No	If "No" your Offer
1	Make/Brand	Raspberry Pi (Trading) Ltd		
2	Model	Raspberry Pi 3 Model B		
3	Country of Origin	Specify		
4	Country of Manufacture	Specify		
5	Year of Manufacture	Specify		
6	Product Image			
7	Features	• BCM43438 wireless LAN and Bluetooth Low Energy (BLE) on board		
		• 100 Base Ethernet		
		• 40-pin extended GPIO		
		• 4 USB 2 ports		
		• 4 Pole stereo output and composite video port		
		• Full size HDMI		
		• CSI camera port		
		• Micro SD port		
8	Technical Specifications	• Dimensions – 85*56*17mm		
		• Quad Core 1.2GHz Broadcom BCM2837 64bit CPU		
		• 1GB RAM		
		• Upgraded switched Micro USB power source up to 2.5A		
		• Micro USB power supply (2.1 A)		
		• Broadcom BCM 2837 chipset running at 1.2 GHz		

9	Documents to be supplied	<ul style="list-style-type: none"> • Comprehensive manufacturer's technical literature for the system. • Reference for the used cases at reputed academic institution in similar or higher capacities. • Manufacturers Authorization. • Brief description of the laboratory Practicals which can be carried out. • Company profile of the supplier with. • Comprehensive manufacturer's technical literature. • User Guides. • 03 sets of Instructor Guides. • 02 sets of students Manual for each module 		
10	Warranty	<p>Minimum of 1 years' comprehensive warranty (Excluding consumables) for all supplied items from the date of commissioning should be provided. Warranty period will be extended by the total non-operational days owing to warranty defects.</p>		

SPECIFICATION FOR JETSON NANO DEVELOPER KIT Annex K

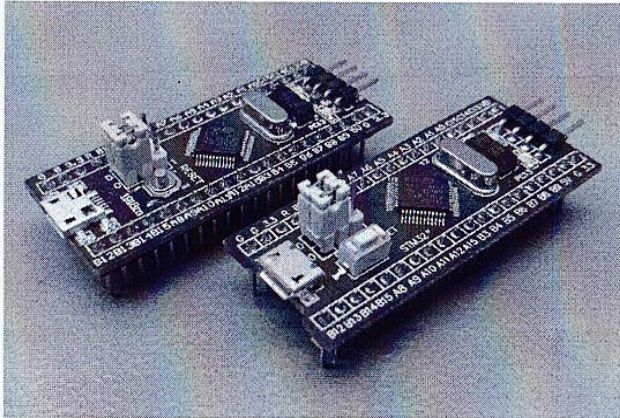
16

Srl No.	Description	Required Specification	Bidder's Compliance.	
			Yes/No	If "No" your Offer
1	Make/Brand	Specify		
2	Model	Jetson Nano Developer Kit		
3	Country of Origin	Specify		
4	Country of Manufacture	Specify		
5	Year of Manufacture	Specify		
6	Product Image			
7	Features	• microSD card (32GB)		
		• USB keyboard and mouse		
		• Micro-USB power supply 5V 2A		
		• DC power adapter 5V 4A		
		• Quad-core ARM® Cortex®-A57 MPCore processor		
8	Technical Specifications	• GPIOs, I2C, I2S, SPI, UART		
		• Gigabit Ethernet, M.2 Key E		
		• 4x USB 3.0 Type-A connectors		
		• 1x USB 2.0 Micro-B connector		
		• 100mm x 79mm x 30.21mm		
		• Memory- 4GB 64-bit LPDDR4		
		• Video encoder- 1x 4K30 2x 1080p60 4x 1080p30 9x 720p30 (H.264/H.265)		
		• Video decoder- 1x 4K60 2x 4K30 4x 1080p60 8x 1080p30 18x 720p30 (H.264/H.265)		
• Display - 1x HDMI 2.0, 1x DP 1.2				
• Operating temperature : -20°C to +70°C				

2


9	Accessories	<ul style="list-style-type: none"> • Included Accessories 		
		1. reference carrier board		
		2. Small paper card with quick start and support information		
		3. Folded paper stand		
10	Documents to be supplied	<ul style="list-style-type: none"> • Comprehensive manufacturer's technical literature for the system. • Reference for the used cases at reputed academic institution in similar or higher capacities. • Manufacturers Authorization. • Brief description of the laboratory Practicals which can be carried out. • Company profile of the supplier with. • Comprehensive manufacturer's technical literature. • User Guides. • 03 sets of Instructor Guides. • 02 sets of students Manual for each module 		
11	Warranty	Minimum of 1 years' comprehensive warranty (Excluding consumables) for all supplied items from the date of commissioning should be provided. Warranty period will be extended by the total non-operational days owing to warranty defects.		

SPECIFICATION FOR STM 32 BLUE PILL BOARD Annex L

Srl No.	Description	Required Specification	Bidder's Compliance.	
			Yes/No	If "No" your Offer
1	Make/Brand	Specify		
2	Model	STM 32 Blue Pill Board		
3	Country of Origin	Specify		
4	Country of Manufacture	Specify		
5	Year of Manufacture	Specify		
6	Product Image			
7	Features	• Operating Temperature Range (-40 °C to 85 °C)		
		• 64 KB flash memory.		
		• Number of GPIO pins - 37		
		• RAM - 20kB		
8	Technical Specifications	• Operating voltage-2.7V to 3.6V		
		• CPU Frequency - 72 MHz		
		• Number of PWM pins-12		
		• Analog Input Pins-10 (12 bit resolution)		
		• 12C Peripherals - 2		
		• SPI Peripherals - 2		
		• CAN 2.0 Peripheral- 1		
• Timers 3(16-bit), 1				
10	Documents to be supplied	<ul style="list-style-type: none"> • Comprehensive manufacturer's technical literature for the system. • Reference for the used cases at reputed academic institution in similar or higher capacities. 		

		<ul style="list-style-type: none"> • Manufacturers Authorization. • Brief description of the laboratory Practicals which can be carried out. • Company profile of the supplier with. • Comprehensive manufacturer's technical literature. • User Guides. • 03 sets of Instructor Guides. • 02 sets of students Manual for each module 		
11	Warranty	Minimum of 1 years' comprehensive warranty (Excluding consumables) for all supplied items from the date of commissioning should be provided. Warranty period will be extended by the total non-operational days owing to warranty defects.		

SPECIFICATION FOR ST LINK DEBUGGER FOR THE BLUE PILL Annex M

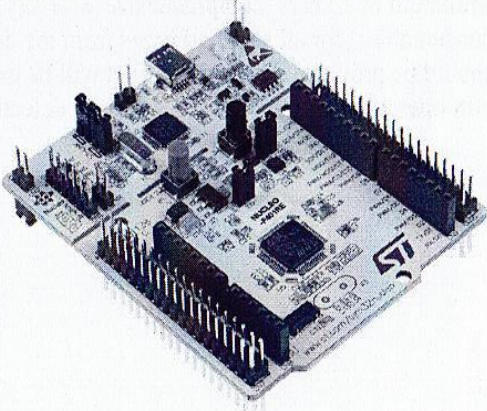
Srl No.	Description	Required Specification	Bidder's Compliance.	
			Yes/No	If "No" your Offer
1	Make/Brand	Specify		
2	Model	ST link debugger for the blue pill board		
3	Country of Origin	Specify		
4	Country of Manufacture	Specify		
5	Year of Manufacture	Specify		
6	Product Image			
7	Features	• KEIL RVMDK V4.21 and above		
		• Support the firmware upgrade automatically		
		• Easy interface to use pure copper plating 2.54 spacing horn		
		• IAR EWARM V6.20 and above		
		• IAR EWSTM8 V1.30 and above		
8	Technical Specifications	• ST - LINK Utility 2.0 and above		
		• STVP 3.2.3 and above		
		• Increase the 5 v power output		
		• STVD 2 and above		
9	Accessories	• Included Accessories		
		1. 1 xST-Link V2 STM8 STM32 Emulator / Download / Programmer		
		2. 10 x dupont cable		

10	Documents to be supplied	<ul style="list-style-type: none"> • Comprehensive manufacturer's technical literature for the system. • Reference for the used cases at reputed academic institution in similar or higher capacities. • Manufacturers Authorization. • Brief description of the laboratory Practicals which can be carried out. • Company profile of the supplier with. • Comprehensive manufacturer's technical literature. • User Guides. • 03 sets of Instructor Guides. • 02 sets of students Manual for each module 		
11	Warranty	<p>Minimum of 1 years' comprehensive warranty (Excluding consumables) for all supplied items from the date of commissioning should be provided. Warranty period will be extended by the total non-operational days owing to warranty defects.</p>		

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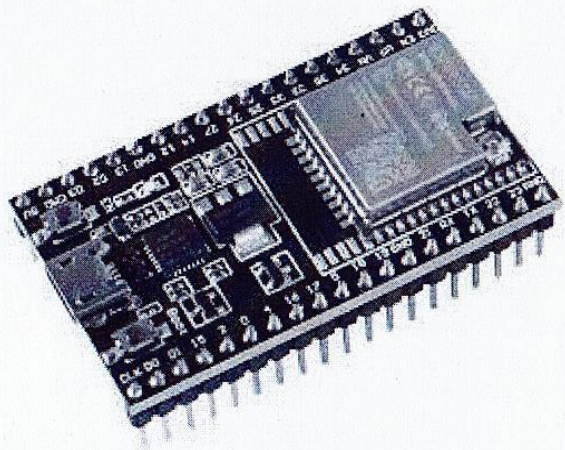
SPECIFICATION FOR STM32 Nucleo-64 Annex N

Srl No.	Description	Required Specification	Bidder's Compliance.	
			Yes/No	If "No" your Offer
1	Make/Brand	Specify		
2	Model	STM32 Nucleo-64 MB1136		
3	Country of Origin	Specify		
4	Country of Manufacture	Specify		
5	Year of Manufacture	Specify		
6	Product Image			
7	Features	<ul style="list-style-type: none"> • STM32 microcontroller in LQFP64 package 		
		<ul style="list-style-type: none"> • USB communication (LD1), user LED (LD2), power LED (LD3) 		
		<ul style="list-style-type: none"> • Two push-buttons: USER and RESET 		
		<ul style="list-style-type: none"> • On-board ST-LINK/V2-1 debugger and programmer with SWD connector 		
		<ul style="list-style-type: none"> • 24 MHz or 48 MHz HSE 		
8	Technical Specifications	<ul style="list-style-type: none"> • supported by STM32-based software modules 		
		<ul style="list-style-type: none"> • Flexible board power supply: <ul style="list-style-type: none"> – USB VBUS or external source (3.3 V, 5 V, 7-12 V) – Power management access point 		
		<ul style="list-style-type: none"> • Two types of extension resources <ul style="list-style-type: none"> – ARDUINO® Uno V3 connectivity – ST morpho extension pin headers for full access to all STM32 I/Os 		
		<ul style="list-style-type: none"> • USB re-enumeration capability • Virtual COM port <ul style="list-style-type: none"> – Mass storage – Debug port 		

10	Documents to be supplied	<ul style="list-style-type: none"> • Comprehensive manufacturer's technical literature for the system. • Reference for the used cases at reputed academic institution in similar or higher capacities. • Manufacturers Authorization. • Brief description of the laboratory Practicals which can be carried out. • Company profile of the supplier with. • Comprehensive manufacturer's technical literature. • User Guides. • 03 sets of Instructor Guides. • 02 sets of students Manual for each module 		
11	Warranty	<p>Minimum of 1 years' comprehensive warranty (Excluding consumables) for all supplied items from the date of commissioning should be provided. Warranty period will be extended by the total non-operational days owing to warranty defects.</p>		

SPECIFICATION FOR ESP32-COMPLETEBOARD

Annex O

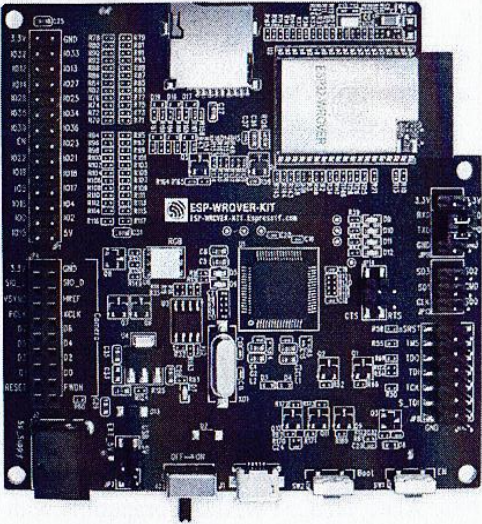
Srl No.	Description	Required Specification	Bidder's Compliance.	
			Yes/No	If "No" your Offer
1	Make/Brand	Specify		
2	Model	Esp32-Completeboard		
3	Country of Origin	Specify		
4	Country of Manufacture	Specify		
5	Year of Manufacture	Specify		
6	Product Image			
7	Features	<ul style="list-style-type: none"> • Compliant with Bluetooth v4.2 BR/EDR and Bluetooth LE specifications • Enhanced Power Control 		
8	Technical Specifications	<ul style="list-style-type: none"> • 448 KB ROM, 520 KB SRAM • LED PWM up to 16 channels • 34 × programmable GPIOs • 12-bit SAR ADC up to 18 channels • 2 × 8-bit DAC • 10 × touch sensors 		
10	Documents to be supplied	<ul style="list-style-type: none"> • Comprehensive manufacturer's technical literature for the system. • Reference for the used cases at reputed academic institution in similar or higher capacities. • Manufacturers Authorization. • Brief description of the laboratory Practicals which can be carried out. • Company profile of the supplier with. • Comprehensive manufacturer's technical literature. 		

		<ul style="list-style-type: none"> • User Guides. • 03 sets of Instructor Guides. • 02 sets of students Manual for each module 		
11	Warranty	Minimum of 1 years' comprehensive warranty (Excluding consumables) for all supplied items from the date of commissioning should be provided. Warranty period will be extended by the total non-operational days owing to warranty defects.		

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ANNEX - P

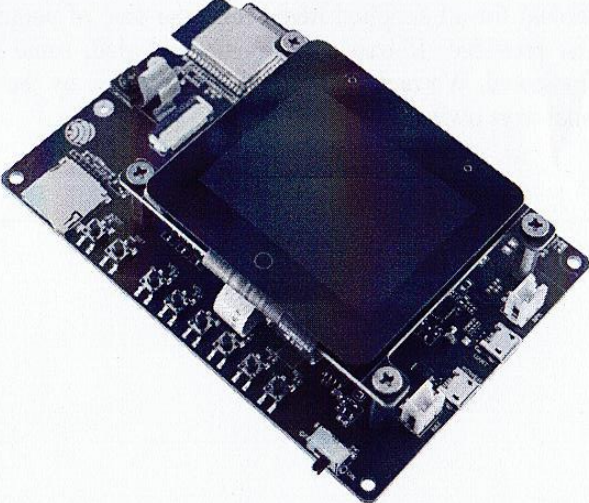
SPECIFICATION FOR ESP32-WROVER-KIT V3

Srl No.	Description	Required Specification	Bidder's Compliance.	
			Yes/No	If "No" your Offer
1	Make/Brand	Specify		
2	Model	Specify		
3	Country of Origin	Specify		
4	Country of Manufacture	Specify		
5	Year of Manufacture	Specify		
6	Product Image			
7	Features	• Micro-SD card interface		
		• OV7670 camera interface		
		• 3.2" SPI LCD panel		
		• RGB LED		

		<ul style="list-style-type: none"> • USB bridge with JTAG interface 		
		<ul style="list-style-type: none"> • external 32.768 kHz crystal for RTC 		
		<ul style="list-style-type: none"> • Micro-SD card interface 		
		<ul style="list-style-type: none"> • OV7670 camera interface 		
		<ul style="list-style-type: none"> • 3.2" SPI LCD panel 		
		<ul style="list-style-type: none"> • RGB LED 		
		<ul style="list-style-type: none"> • USB bridge with JTAG interface 		
8	Technical Specifications	<ul style="list-style-type: none"> • Certification- • RF certification - See certificates for ESP32-WROVER, Wi-Fi certification - Wi-Fi Alliance, Bluetooth certification – BQB, Green certification - RoHS/REACH. 		
		<ul style="list-style-type: none"> • Test- • Reliability - HTOL/HTSL/uHAST/TCT/ESD 		
		<ul style="list-style-type: none"> • Wi-Fi – • Protocols - 802.11 b/g/n (802.11n up to 150 Mbps), A-MPDU and A-MSDU aggregation and 0.4 μs guard interval support. Center frequency range of operating channel - 2412 ~ 2484 MHz. 		
		<ul style="list-style-type: none"> • Bluetooth- • Protocols - Bluetooth v4.2 BR/EDR and Bluetooth LE specification. Radio - NZIF receiver with -97 dBm sensitivity, Class-1, class-2 and class-3 transmitter, AFH. Audio - CVSD and SBC. 		
		<ul style="list-style-type: none"> • Hardware – • Module interfaces - SD card, UART, SPI, SDIO, I2C, LED PWM, Motor PWM, I2S, IR, pulse counter, GPIO, capacitive touch sensor, ADC, DAC, TWAI® (compatible with ISO 11898-1, i.e. CAN Specification 2.0), Integrated crystal - 40 MHz crystal, Integrated SPI flash - 4 MB, Integrated PSRAM - 8 MB, • Operating voltage/Power supply - 2.3 V ~ 3.6 V, Operating current - Average: 80 mA, Minimum current delivered by power supply - 500 mA, Recommended operating ambient temperature - -40 °C ~ 85 °C, Package size - (18.00±0.10) mm × (31.40±0.10) mm × (3.30±0.10) mm, Moisture sensitivity level (MSL) - Level 3. 		

ANNEX -Q

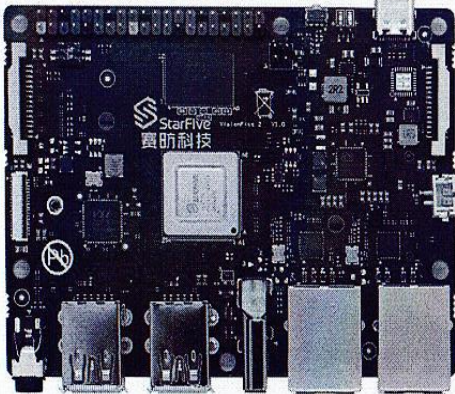
SPECIFICATION FOR ESP32-S3-KORVO-2 V3.0

Srl No.	Description	Required Specification	Bidder's Compliance.													
			Yes/ No	If "No" your Offer												
1	Make/Brand	Specify														
2	Model	Specify														
3	Country of Origin	Specify														
4	Country of Manufacture	Specify														
5	Year of Manufacture	Specify														
6	Product Image															
7	Features	<ul style="list-style-type: none"> It is equipped with a two-microphone array which is suitable for voice recognition and near/far-field voice wake-up applications. 														
8	Technical Specifications	<table border="1"> <thead> <tr> <th>Product Attribute</th> <th>Attribute Value</th> </tr> </thead> <tbody> <tr> <td>Manufacturer:</td> <td>Espressif</td> </tr> <tr> <td>Product Category:</td> <td>Audio IC Development Tools</td> </tr> <tr> <td>Product:</td> <td>Development Boards</td> </tr> <tr> <td>Tool Is For Evaluation Of:</td> <td>ESP32-S3</td> </tr> <tr> <td>Packaging:</td> <td>Bulk</td> </tr> </tbody> </table>	Product Attribute	Attribute Value	Manufacturer:	Espressif	Product Category:	Audio IC Development Tools	Product:	Development Boards	Tool Is For Evaluation Of:	ESP32-S3	Packaging:	Bulk		
		Product Attribute	Attribute Value													
		Manufacturer:	Espressif													
		Product Category:	Audio IC Development Tools													
		Product:	Development Boards													
Tool Is For Evaluation Of:	ESP32-S3															
Packaging:	Bulk															
9	Documents to be supplied	<ul style="list-style-type: none"> Reference for the used cases at reputed academic institution in similar or higher capacities. Manufacturers Authorization. 														

9	Accessories	<ul style="list-style-type: none"> • Included Accessories 		
		1. 3.2 inch LCD V4.1		
		2. 4 MB SPI PSRAM,Support for an LCD		
		3. MicroSD Card		
10	Documents to be supplied	<ul style="list-style-type: none"> • Comprehensive manufacturer's technical literature for the system. • Reference for the used cases at reputed academic institution in similar or higher capacities. • Manufacturers Authorization. • Brief description of the laboratory Practicals which can be carried out. • Company profile of the supplier with. • Comprehensive manufacturer's technical literature. • User Guides. • 03 sets of Instructor Guides. • 02 sets of students Manual for each module 		
11	Warranty	Minimum of 1 years' comprehensive warranty (Excluding consumables) for all supplied items from the date of commissioning should be provided. If free services are provided, same should be clearly indicated. Warranty period will be extended by the total non-operational days owing to warranty defects.		

ANNEX - R

SPECIFICATION FOR VISION FIVE 2

Srl No.	Description	Required Specification	Bidder's Compliance.	
			Yes/No	If "No" your Offer
1	Make/Brand	Specify		
2	Model	Specify		
3	Country of Origin	Specify		
4	Country of Manufacture	Specify		
5	Year of Manufacture	Specify		
6	Product Image			
7	Features	<ul style="list-style-type: none"> • Version, two true Gigabits (1000Mbps) LAN Ports 		
		<ul style="list-style-type: none"> • Four options: <ul style="list-style-type: none"> ○ VisionFive 2 - 8GB RAM Single Board Computer with WiFi 6 USB Dongle ○ VisionFive 2 - 8GB RAM Single Board Computer ○ VisionFive 2 - 4GB RAM Single Board Computer with WiFi 6 USB Dongle ○ VisionFive 2 - 4GB RAM Single Board Computer 		

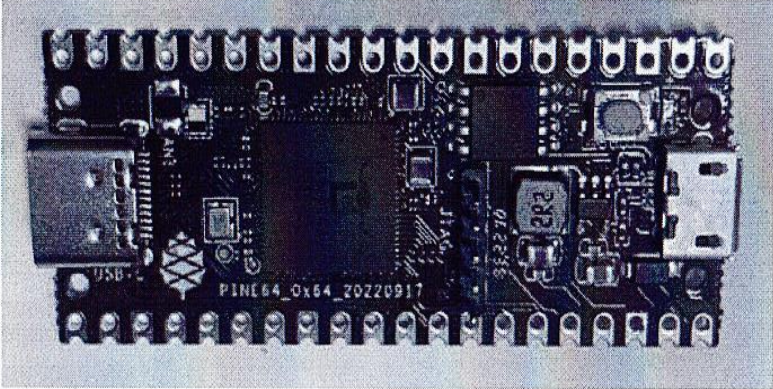
		<ul style="list-style-type: none">• Brief description of the laboratory Practicals which can be carried out.• Company profile of the supplier with.• Comprehensive manufacturer's technical literature.• User Guides.• 03 sets of Instructor Guides.• 02 sets of students Manual for each module		
10	Warranty	<ul style="list-style-type: none">• Minimum of 1 years' comprehensive warranty (Excluding consumables) for all supplied items from the date of commissioning should be provided. If free services are provided, same should be clearly indicated. Warranty period will be extended by the total non-operational days owing to warranty defects. Comprehensive manufacturer's technical literature for the system.		

8	Technical Specifications	<ul style="list-style-type: none"> • Processor: <ul style="list-style-type: none"> ○ StarFive JH7110 with RISC-V U74, 64-bit, Quad-core with 2 MB L2 cache and S7 monitor core, supporting RV64GC ISA, running up to 1.5 GHz ○ IMG BXE-4-32 MC1 with work frequency up to 600 MHz (400 MHz by default) 		
		<ul style="list-style-type: none"> • Memory: <ul style="list-style-type: none"> ○ 8GB, 4GB of LPDDR4 (up to 2800Mbps) 		
		<ul style="list-style-type: none"> • Storage: <ul style="list-style-type: none"> ○ MicroSD Card slot ○ eMMC via the eMMC socket ○ M.2 M-Key NVMe 2280 SSD 		
		<ul style="list-style-type: none"> • Wireless Connectivity: <ul style="list-style-type: none"> ○ USB WiFi Dongle ○ Wireless module via M.2 slot 		
		<ul style="list-style-type: none"> • Video Output: <ul style="list-style-type: none"> ○ 1 × 2-lane MIPI DSI display port, supporting up to 1080p@30fps ○ 1 × 4-lane MIPI DSI display port, supporting up to 2K@30fps in both single display and dual display modes ○ 1 × HDMI 2.0, supporting up to 4K@30fps or 2K@60fps 		
		<ul style="list-style-type: none"> • Camera: <ul style="list-style-type: none"> ○ 1x 2-lane MIPI CSI camera port, supporting up to 4K (3840 x 2160) pixels @30fps 		
		<ul style="list-style-type: none"> • Encoder/Decoder: <ul style="list-style-type: none"> ○ Video Decoder supports up to 4K@60fps; Supports multi-stream for H264/H265 ○ Video encoder supports up to 1080p@30fps and multi-stream for H265 ○ JPEG encoder/decoder 		
		<ul style="list-style-type: none"> • Peripherals: <ul style="list-style-type: none"> ○ 2 x USB 3.0 ports ○ 2 x USB 2.0 ports ○ 40 Pin GPIO Header (28 x GPIO, I2C, I2S, SPI, UART) ○ 2x RJ45 Ethernet Connector 		

		<ul style="list-style-type: none"> ▪ For the final released version, both LAN ports are 1000Mbps (Gigabits) ○ 3.5 mm Audio jack (4-pole stereo audio output) ○ M.2 Connector ○ eMMC Socket ○ 2-pin fan header ○ MicroSD card slot for system boot and data storage ○ Reset and Power Button 		
9	Documents to be supplied	<ul style="list-style-type: none"> • Comprehensive manufacturer's technical literature for the system. • Reference for the used cases at reputed academic institution in similar or higher capacities. • Manufacturers Authorization. • Brief description of the laboratory Practicals which can be carried out. • Company profile of the supplier with. • Comprehensive manufacturer's technical literature. • User Guides. • 03 sets of Instructor Guides. • 02 sets of students Manual for each module 		
10	Warranty	<p>Minimum of 1 years' comprehensive warranty (Excluding consumables) for all supplied items from the date of commissioning should be provided. If free services are provided, same should be clearly indicated. Warranty period will be extended by the total non-operational days owing to warranty defects.</p>		

ANNEX - S

SPECIFICATION FOR PINE 64-OX64

Srl No.	Description	Required Specification	Bidder's Compliance.	
			Yes/ No	If "No" your Offer
1	Make/Brand	Specify		
2	Model	Specify		
3	Country of Origin	Specify		
4	Country of Manufacture	Specify		
5	Year of Manufacture	Specify		
6	Product Image			
7	Features	<ul style="list-style-type: none"> • A Bouffalo Lab BL808 RISC-V SoC with single 64-bit 480MHz RV64 C906 core and two 32-bit 320MHz RV32 E907 + 150MHz E902 cores • 728KB internal SRAM and 64MB internal PSRAM 		
8	Technical Specifications	<ul style="list-style-type: none"> • SoC – Bouffalo Lab BL808 with: <ul style="list-style-type: none"> ○ CPU <ul style="list-style-type: none"> ▪ Alibaba T-head C906 64-bit RISC-V core @ 480MHz ▪ Alibaba T-head E907 32-bit RISC-V core @ 320MHz ▪ Alibaba T-head E902 32-bit RISC-V @ 150MHz 		

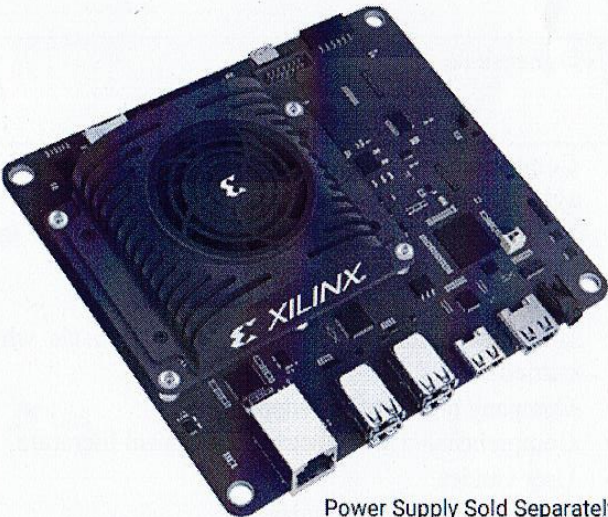
		<ul style="list-style-type: none"> ○ Memory – 728KB SRAM, 64MB embedded DRAM 		
		<ul style="list-style-type: none"> ○ AI accelerator – NPU BLAI-100 (Buffalo Lab AI engine) for video/audio detection/recognition 		
		<ul style="list-style-type: none"> • Wireless <ul style="list-style-type: none"> • 2.4 GHz 802.11 b/g/n Wi-Fi 4 • Bluetooth 5.x dual mode (classic + BLE) • IEEE 802.15.4 for Zigbee • 10/100M Ethernet through add-on board 		
		<ul style="list-style-type: none"> ○ Display <ul style="list-style-type: none"> ▪ Up to 4-lane MIPI DSI ▪ Up to 8-bit MIPI DBI ▪ 16-bit MIPI DPI ▪ QSPI 		
		<ul style="list-style-type: none"> ○ Audio Codec – 2x ADC, 1x DAC, sample rate: 8 to 192KHz, 24-bit 		
		<ul style="list-style-type: none"> ○ Camera <ul style="list-style-type: none"> ▪ 2-lane MIPI CSI and DVP interfaces ▪ MJPEG and H.264 encoder up to 1920×1080 @ 30fps + 640×480 @ 30fps 		
		<ul style="list-style-type: none"> ○ Package – 88-pin QFN 		
		<ul style="list-style-type: none"> • Storage <ul style="list-style-type: none"> ○ 16Mbit (2MB) or 128Mbit (16MB) XSPI NOR flash <p>MicroSD socket with support for SDHC and SDXC</p> 		
		<ul style="list-style-type: none"> • Camera & audio – 2-lane MIPI CSI co-located with USB-C port for camera module including microphone and speaker 		



		<ul style="list-style-type: none"> • Antenna – 2.4GHz chip antenna soldered on board, footprint for u.FL connector 		
		<ul style="list-style-type: none"> • USB – 1x USB 2.0 OTG Type-C port with MIPI CSI “alternative” mode 		
		<ul style="list-style-type: none"> • Expansion – 2x 20-pin headers with castellated holes with GPIO, SPI, I2C, and UART, possible I2S and GMII expansion 		
		<ul style="list-style-type: none"> • Debugging – 5-pin JTAG header 		
		<ul style="list-style-type: none"> • Misc – BOOT button, red power LED 		
		<ul style="list-style-type: none"> • Power Supply – 5V/0.5A via USB Type-C port or micro USB port 		
		<ul style="list-style-type: none"> • Dimensions – 51 x 21 x 19mm 		
9	Documents to be supplied	<ul style="list-style-type: none"> • Comprehensive manufacturer's technical literature for the system. • Reference for the used cases at reputed academic institution in similar or higher capacities. • Manufacturers Authorization. • Brief description of the laboratory Practicals which can be carried out. • Company profile of the supplier with. • Comprehensive manufacturer's technical literature. • User Guides. • 03 sets of Instructor Guides. • 02 sets of students Manual for each module 		
10	Warranty	<p>Minimum of 1 years' comprehensive warranty (Excluding consumables) for all supplied items from the date of commissioning should be provided. If free services are provided, same should be clearly indicated. Warranty period will be extended by the total non-operational days owing to warranty defects.</p>		

ANNEX - T

SPECIFICATION FOR KRIA KV260 VISION AI STARTER KIT

Srl No.	Description	Required Specification	Bidder's Compliance.	
			Yes/ No	If "No" your Offer
1	Make/Brand	Specify		
2	Model	Specify		
3	Country of Origin	Specify		
4	Country of Manufacture	Specify		
5	Year of Manufacture	Specify		
6	Product Image	 <p>Power Supply Sold Separately</p>		
7	Features	• Multi-camera support: Up to 8 interfaces.		
		• 3 MIPI sensor interfaces, USB cameras.		
		• Built-in ISP component.		
		• HDMI, DisplayPort outputs.		
		• 1Gb Ethernet.		
		• USB 3.0/2.0.		
		• Extend to any sensor or interface.		

		<ul style="list-style-type: none"> • Access Pmod ecosystem. 		
8	Technical Specifications	Parameter - KV260		
		Device - Zynq™ UltraScale+™ MPSoC		
		Form factor - SOM + Carrier Card + Thermal Solution		
		Starter kit dimensions - 119mm x 140mm x 36mm		
		Thermal cooling solution - Active (Fan + Heatsink)		
		System logic cells -256K		
		Block RAM blocks - 144		
		UltraRAM blocks - 64		
		DSP slices - 1.2K		
		Ethernet interface - One 10/100/1000 Mb/s		
		DDR memory - 4GB (4 x 512Mb x 16 bit) [non-ECC]		
		Primary boot memory - 512Mb QSPI		
		Secondary boot memory - SDHC card		
		Device Security - hardware Zynq UltraScale+ MPSoC root of trust (RoT) in support of secure boot. Infineon TPM2.0 in support of measured boot.		
		Image sensor processor - OnSemi AP1302 ISP		
		IAS MIPI sensor interfaces - x2		
		Raspberry Pi camera interface - x1		
		Pmod 12-pin interface - x1		
USB3.0/2.0 interface - x4				
DisplayPort 1.2a - x1				
		HDMI 1.4 - x1		
09	Documents to be supplied	<ul style="list-style-type: none"> • Comprehensive manufacturer's technical literature for the system. • Reference for the used cases at reputed academic institution in similar or higher capacities. • Manufacturers Authorization. • Brief description of the laboratory Practicals which can be carried out. • Company profile of the supplier with. • Comprehensive manufacturer's technical literature. • User Guides. • 03 sets of Instructor Guides. • 02 sets of students Manual for each module 		
10	Warranty	Minimum of 1 years' comprehensive warranty (Excluding consumables) for all supplied items from the date of commissioning should be provided. If free services are provided, same should be clearly indicated. Warranty period will be extended by the total non-operational days owing to warranty defects.		

1. **Scope of Learning**

All these modules are use extensively for the Research and Development activies in the world

. So, Engineering student can use them for their project related modules such as :

Engineering Product Design, Final Year Project, Individual Design Project, Internet of Things and other projects.

SPECIMEN FORM OF BID SECURITY

By this Bond we (hereinafter called "the Bidder") and We (name of bank or insurance company) whose registered office is at (hereinafter called "the Surety") are held and firmly bound onto (hereinafter called the Authority") in the sum of for the payment of which sum the Bidder and the Surety bind themselves their successors and assigns jointly and severally by those presents.

Whereas the authority has invited the Tender and other persons to compete tenders in similar terms for the supply of and to submit the same for the consideration of the Authority, and the Bidder proposes to submit to the Authority a Bid (hereafter called "the Bid") in accordance with such invitation, the Bond shall provide security to the Authority that the Bidder will honour certain obligations to be undertaken by him in the Tender in accordance with the following conditions.

Now the Conditions of this Bond are:

- (a) That it shall remain in full force and effect until the earliest of
 - (i) (Date), being () days from (submission date), the date stipulated by the Authority for the submission of tenders, or any prolongation of such date above notified to the Authority by the Bidder and the Surety in writing.
 - (ii) In the event of acceptance of the Tender by the Authority, the date upon which the Bidder provides a performance security to the Authority in accordance with the terms of the contract thereby made between them, or
- (b) Subject to this Bond being in full force and effect, the Surety shall pay the full amount specified in this Bond upon receipt of first written demand form the Authority stating that.
 - (i) The Bidder has withdrawn his Tender during the validity of this Bond, or
 - (ii) The Bidder has failed to provide a performance security to the Authority in accordance with the terms of the tender within 14 days from receipt of intimation of award of the Tender.

No alteration in the terms of the Tender, nor any forbearance of forgiveness in or in respect of neither any matter or thing concerning the Tender on the part of the Authority, nor any objection from the bidder shall in any way release the Surety from any liability under this Bond.

The benefit of this Bond shall not be assignable by the Authority and upon its ceasing to be in full force and effect the Authority shall return the same to the Bidder.

This Bond shall be governed by the laws of Sri Lanka

I executed as a deed on this () day of () 20 ()

For and on behalf of the Bidder

Signed by -----

In the capacity of -----

and by -----

In the capacity of -----

Seal (where applicable)

For and on behalf of the Surety

Signed by -----

In the capacity of -----

and by -----

In the capacity of -----

Seal (where applicable)

DELIVERY SCHEDULE

(IT IS MANDATORY TO FILL THE FOLLOWING SCHEDULE BY THE BIDDER)

TENDER NO :

ITEM :

QTY :

DURATION	QTY
EX STOCK QTY (WITHIN 01 WEEK)	
01MONTH	
02 MONTHS	
03 MONTHS	
04 MONTHS	
TOTAL	

NAME OF THE BIDDER :

SIGNATURE OF BIDDER :

DATE :

COMPANY SEAL :