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SARDAR PATEL INSTITUTE OF TECHNOLOGY
(Autonomous Institute Affiliated to Mumbai University)

Munshi Nagar, Andheri (W) Mumbai-400 058

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Annexure-III

PART-A (Electrical and Electronic Equipment's)

LIST OF EQUIPMENTS:	
Item 1:- FPGA Development Board and Modules	**Qty Required : 10 Units**

Sr. No.	Specification
1.	**FPGA Chip:** Model: Xilinx Logic Cells: Minimum 33,280 Block RAM: At least 1.8 Mb DSP Slices: Minimum 90 **Memory**: External DDR3 RAM: Minimum 512 MB. Flash Memory: At least 128 Mb. **Connectivity:** USB 3.0 for programming and data transfer. GPIO headers: 50+ pins. JTAG header for debugging. Ethernet: 10/100 Mbps. UART for serial communication. **Display**: TFT Display: 3.2-inch or larger, with touch interface support. Resolution: Minimum 320x240 pixels. **Camera Interface:** Support for CMOS camera modules. MIPI CSI-2 or parallel interface. **Power Supply:** Input voltage: 5V or 12V DC. Low power consumption. **Software/Tool Support:** Compatible with Xilinx Vivado Design Suite. Support for Verilog/VHDL and high-level synthesis tools. B. CMOS VGA Camera and TFT Display Module Resolution: VGA (640x480) or higher. Interface: Parallel or I2C/SPI. Features: Auto white balance, exposure control, and image processing support. **TFT Display Module:** Size: Minimum 3.2 inches. Resolution: 320x240 or higher. Interface: SPI/I2C or parallel.

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		Touch: Resistive/Capacitive. C. CMOS 5MP Camera Module **Camera Sensor:** Model: OV5640 or equivalent. Resolution: 5 MP. Interface: MIPI CSI-2 or parallel. Features: Auto-focus, white balance, and low-light support. D. Sensor Add-ons **Gesture Sensor:** Technology: Infrared-based or capacitive gesture detection. Interface: I2C/SPI. Range: Up to 10 cm. **Ultrasonic Sensor:** Range: 2 cm to 4 m. Accuracy: ±3 mm. Interface: GPIO/I2C. **Touch Sensor:** Technology: Capacitive touch sensing. Interface: GPIO/I2C. **Accelerometer:** Model: ADXL345 or equivalent. Interface: I2C/SPI. Features: 3-axis acceleration, tap detection. **E. Motor** Type: DC or Stepper motor. Voltage: 6V to 12V. Torque: Minimum 1 kg-cm. Control: PWM or I2C-based motor driver module.
2.	Warranty	Instrument should be covered under Standard Comprehensive Warranty.
3.	Recommended Brands, not limited to.	Made in India preferred.

Mandatory Instruction :

Vendor Should submit Compliance statement for each parameter along with Complete product data sheet, clearly mentioning deviation from the tender specs, if any and Demonstrate for the Technical Parameter mentioned in the Tender on their Quoted Instrument, as & when asked by Technical Team from the Respective Dept. of the Institute for Technical Evaluation.

Vendor Should Provide Authorization Certificate for the Quoted Brand of the Instrument.

Certificates for the genuineness of the warranty and service center(s) in India should be provided by the manufacturer.

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Item 1:- Soc Development Board Units		Qty Required :10
Sr. No.	**Specification**	

1.	1. Device Zynq
	2. Memory: 512MB DDR3
	3. Storage MicroSD
	4. Video HDMI In & Out ports
	5. Audio ADAU1761 codec with HP + Mic, Line in
	6. Network 10/100/1000 Ethernet
	7. Expansion USB host (PS)
	8. GPIO 1x Arduino Header
	9. 2x Pmod*
	10. 1x RaspberryPi header*
	11. 6x user LEDs
	12. 4x Pushbuttons
	13. 2x Dip switches
	14. Dimensions: 3.44" x 5.51" (87mm x 140mm)
	15. **Display Support**:
	   o Header or connector for 16x2 LCD module.
	16. **Development and Debugging**:
	   o JTAG debugger interface support.
	   o Boot options: Flash, SD card.
	   o Pre-installed bootloader for quick deployment.
	17. **Power Supply**:
	   o Input Voltage: 5V DC.
	   o Power efficiency: Low power consumption.
	18. **Software/Tool Support**:
	   o Compatible with Xilinx Vivado Design Suite.
	   o Support for Verilog, VHDL, and high-level synthesis tools.	

2.	Warranty	Instrument should be covered under Standard Comprehensive Warranty.
3.	Recommended Brands, not limited to.	Made in India preferred.
Mandatory Instruction :		
Vendor Should submit Compliance statement for each parameter along with Complete product data sheet, clearly mentioning deviation from the tender specs, if any and Demonstrate for the Technical Parameter mentioned in the Tender on their Quoted Instrument, as & when asked by Technical Team from the Respective Dept. of the Institute for Technical Evaluation. Vendor Should Provide Authorization Certificate for the Quoted Brand of the Instrument. Certificates for the genuineness of the warranty and service center(s) in India should be provided by the manufacturer.		

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Item 2:- Klystron Tube Specifications		Qty Required : 3 Units
Sr. No	**Parameter Name**	**Technical Specification**
1.	Operating Frequency	X-band: 8.20–12.40 GHz
2.	Waveguide	WR-90
3.	Flange	UG-39/U
4.	Warranty	The item should Cover 5 Years Comprehensive Warranty
5.	Recommended Brands, not limited to.	NVIS 203, LAMBDA
	Special Instruction :	
	Vendor Should submit Compliance statement for each parameter along with Complete product data sheet, clearly mentioning deviation from the tender specs, if any and Demonstrate for the Technical Parameter mentioned in the Tender on their Quoted Instrument, as & when asked by Technical Team from the Respective Dept. of the Institute for Technical Evaluation. Vendor Should Provide Authorization Certificate for the Quoted Brand of the Instrument. Certificates for the genuineness of the warranty and service center(s) in India should be provided by the manufacturer. After-sales service support for repairs/ replacement of non-functional part(s) should be available in India (including all services under warranty).	

Item 3:- Optical Power Meter		Qty Required : 3 Units
Sr. No	**Parameter Name**	**Technical Specification**
1.	Wavelength Range	660 to 950 nm
2.	Power Measurement Range	–60 to 0 dBm
3.	Accuracy	±0.2 dB
4.	Resolution	0.01 dB
5.	Operating Temperature	0–50 °C
6.	Storage Temperature	–20 to +70 °C
7.	Display and Interface	Display LCD with backlight, Auto-shutdown, Battery powered (rechargeable/AA), USB/PC interface, Compact handheld design, Fiber interfaces FC/SC/ST
8.	Warranty	Instrument should be covered under 5 Years Standard Comprehensive Warranty.
9.	Recommended Brands, not limited to.	Optrotech, Serplex, Techtest, Meco, amiciSense,
	Special Instruction :	

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Item 4:- 100 MHz 4 CH. DSO   Qty Required : 4 Units

Sr. No	Parameter Name	Technical Specification
1.	Instrument Criteria	Digital Storage Oscilloscope , 100 MHz Bandwidth , 4 Analog CH.
2.	Input Channel Characteristics	The DSO should have 20K record length on each channel simultaneously
		Max 1GS/s sampling on Channel simultaneously.
		Input impedance 1 MΩ ±2 % in parallel with 14 pF ±2 pF,
		1mV/div to 10V/div vertical scale setting and 2 ns/div to 100 sec/div time scale with ±20ppm Time base Accuracy or better.
3.	Control and Measurement Facilities	• Should have individual vertical control for each Channel. • Auto Set Feature, Cursor measurement and Automatic Measurement of Time and Amplitude parameters with facility to Enable / Disable of by password protection as and when require. • Dedicated control knobs in the front panel for Zoom, and navigate on the scope Acquisition • In-built help Function, Graphical representation with description of all measurement parameters should be available. • Facility to load Experimental Documents drawings and images in the DSO and should be able to Read through the Documents in the DSO screen without needing PC connection. • Should have Snapshot feature to display All available Measurement Parameters on the Screen at a time.

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		• 32 or more Automatic Measurements for Time and Amplitude paraments including Burst Width , Phase , Positive and Negative Pulse Count , Rising and Falling Edge count ,Delay FR , Delay FF and Delay RR measurement.
		• Should support Gating , MATH and FFT measurement. Dual window FFT with simultaneous time and frequency domain views

4.	Acquisition and Trigger	DSO should support Sample, Peak Detect , Average, Hi-Resolution and Roll Acquisition mode
		Trigger Modes as Edge, Pulse Width and Runt. 20nS to 8Sec Trigger Hold Off Range,
		Trigger Source as CH1, CH2, External and AC line trigger.
5.	Display	7-inch TFT color display with adjustable , Interpolation Sin (x)/x display, variable and infinite persistence,
		Display should have 15 Horizontal Div. &10 Vertical Division, Quick Search Function, Built-in Tips for Faster Function, On Screen Scope Basics for New user learning
6.	Save and Recall Function	The DSO should have facility to save and Recall Waveform, Scope Settings in the Internal and External Memory. Should able to display min. two saved waveform along with both Live channel waveform and one Math Waveform.
7.	Interface Ports and Connectivity	USB Host & Device port Connectivity, Should Support PC connectivity.
8.	Regulatory	The DSO should Comply to Electromagnetic compatibility of EC Council Directive 2014/30/EU Safety UL61010-1, UL61010-2-030, CAN/CSA-C22.2 No. 61010.1, CAN/CSA-C22.2 No. 61010-2:030; complies with the Low Voltage Directive 2014/35/EU for Product Safety
9.	Warranty	The DSO should Cover 5 Years Comprehensive Warranty including the In-built Display. Std. Probes Supplied should cover 1 year Replacement Warranty.
10	Recommended Brands, not limited to.	Rigol, Tektronix, Aplab, Rishabh and all others.
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tem 5:- Single 0-300 V/2A DC Regulated Power Supply		Qty Required : 2 Units
Sr. No.	**Parameter Name**	**Specification**
1.	Output Voltage	0-300V
2.	Output Current	0-2A
3.	Load & Line Regulation	0.05% max.
4.	Ripple & Noise	1 mV (r. m. S.) Max.
5.	Features	• Protected Against Overload & Short Circuit by Means of Automatic Crossover Characteristics. • Continuous Metering of Output Voltage & Current.
6.	Operating Temperature Range	0-55
7.	Warranty	1 year standard
8.	Recommended Brand	Crown Electronics, Aplab, Rishabh, ZOMA

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Item 6:- Buck Converter Demonstration Kit	**Qty Required : 3 Units**

Input DC Voltage : 24V/1A

PWM Frequency Variation : 1KHz to 15 KHz (15-20KHz variable)

Duty Cycle Variation : 10% to 80%

Load Assembly : RL1 & RL2 (75Ù& 25W)

Power Isolation Section : Single channel

Power device : IGBT TOSHIBA 20JT101

MOSFET/IGBT Driver : Single channel floating driver TLP250

Inductors : L1 (1.5mH), L2 (404uH), L3 (optional)

Test Points: 16 nos.

Banana Socket insert 2mm: 39 nos.

Dimensions (mm) : Typical W 326 x D 252 x H 52

Power Supply : 110V - 260V AC, 50/60Hz

Weight : 1.5Kg (approximately)

Operating Conditions : 0-40 C, 85% RH

Capacitors : C1 (100µF/63V) , C2 (220µF/63V), C3 (1000µF/63V)

Accessories: 2mm Patch Cord Red 14", 8"-3nos. 2mm Patch Cord Black 8"-6nos. 2mm Patch Cord Blue 16"-4nos. BNC to BNC Cable-1no. BNC to Test Probe-1no. Mains Cord-1no.

Warranty	5 Years standard
Recommended Brand	HEM Electroniques, Scientech

Mandatory Instruction:

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Vendor Should Provide Authorization Certificate for the Quoted Brand of the Instrument.

Certificates for the genuineness of the warranty and service center(s) in India should be provided by the manufacturer.
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Item 7:- Boost Converter Demonstration Kit	**Qty Required : 3 Units**

Input DC Voltage : 24V/1A

PWM Frequency Variation : 1KHz to 22 KHz

Duty Cycle Variation : 10 % to 45%

Load Assembly : RL1 & RL2 (75Ù & 75O)

Power Isolation Section : Single channel

Power device : IGBT TOSHIBA 20JT101

MOSFET/IGBT Driver : MC33153

Inductors : L1 (1.5mH), L2 (404uH), L3 (optional)

Capacitors : C1 (1000µF/63V), C2 (470µF/63V), C3 (220µF/63V)

Test Points: 15 nos.

Banana Socket insert 2mm: 39 nos.

Dimensions (mm) : W 326 x D 252 x H 52 (Typical)

Power Supply : 110V - 260V AC, 50/60Hz

Weight : 1.5Kg (approximately)

Operating Conditions : 0-40 C, 85% RH

Accessories: 2mm Patch Cord Red 16", 8"-2nos. 2mm Patch Cord Black 16" -1no., 2mm Patch Cord Black 8"-2nos., 2mm Patch Cord Blue 8"-3nos., BNC to BNC Cable-1no., BNC to Test Probe-1no. Mains Cord 1no

Mandatory Instruction:

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Vendor Should Provide Authorization Certificate for the Quoted Brand of the Instrument.

Certificates for the genuineness of the warranty and service center(s) in India should be provided by the manufacturer.
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Item 8:- Buck Boost Converter Demonstration Kit	**Qty Required : 3 Units**

Input DC Voltage : 24V/5A

PWM Frequency Variation: 1KHz to 15 KHz (15-20KHz variable)

Duty Cycle Variation : 30% to 65%

Load Assembly : RL1 & RL2 (75Ù & 75Ù)

Power Isolation Section : Single channel

Power device : MOSFET IRF450

MOSFET/ IGBT Driver : TLP250

Inductors : L1 (5.7 µH); L2 (3.8 µH); L3 (1.5mH); L4 (354µH)

Capacitors : C1 (1000µF/63V); C2 (470µF/63V), C3 (1000µF/63V); C4 (470 µF/63V)

Test Points: 23 nos.

Banana Socket: 39 nos.

Dimensions (mm) : W 326 x D 252 x H 52 (Typical)

Power Supply : 110V - 260V AC, 50/60Hz

Weight : 1.5Kg (approximately)

Operating Conditions : 0-40 C, 85% RH

Accessories : 2mm Patch Cord 16"-3 nos., 2mm Patch Cord 8" -9 nos., BNC to Test Probe-1 no., BNC to BNC Cable-1 no., Mains Cord.-1 no.

Mandatory Instruction:

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Item 9:- ADS1298RECGFE-PDK		**Qty Required : 2 Units**
Sr. No.	**Specification**	
1.	Part: ADS1298RECGFE-PDK Manufacturer: Texas Instruments Type: Evaluation / demonstration kit (AFE interface board) Target Use: ECG/EKG front-end system development, bio-signal acquisition and evaluation Based on: ADS1298R AFE ADC IC (8-channel, high-resolution ADC) ADC Resolution 24 bit $\Delta\Sigma$ (Delta Sigma) Channels 8 simultaneous sampling channels Gain Programmable gain amplifiers (PGA) Sampling Rate (per channel) Up to ~32 kSPS Interface SPI compatible Supply Range AVDD: 2.7–5.25 V; DVDD: 1.65–3.6 V Noise Low noise analog front end Features Lead off detection, right leg drive, test signal, integrated oscillator and reference, respiration impedance measurement Typical Use ECG/EEG, bio signal acquisition systems Power Consumption Low power per channel Input Type Differential or single ended signals CMRR/INL High common mode rejection and low integral nonlinearity suitable for precision measurement applications	
2.	Warranty	Instrument should be covered under min. 5 years of Standard Comprehensive Warranty.
3.	Recommended Brands, not limited to.	Texas Instruments

Mandatory Instruction :

Vendor Should submit Compliance statement for each parameter along with Complete product data sheet, clearly mentioning deviation from the tender specs, if any and Demonstrate for the Technical Parameter mentioned in the Tender on their Quoted Instrument, as & when asked by Technical Team from the Respective Dept. of the Institute for Technical Evaluation.
Vendor Should Provide Authorization Certificate for the Quoted Brand of the Instrument.

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Item 10:- MMB0 Modular EVM Motherboard		Qty Required : 2 Units
Sr. No.	**Specification**	
1.	Texas Instruments MMB0 Modular EVM Motherboard, DSP-based modular evaluation motherboard, built around TMS320VC5507 DSP with onboard USB interface, 16 MB SDRAM, standard connectors for plug-in EVM daughter boards (ADC/DAC/other modules), USB interface to host PC, power input barrel jack (6–7 V DC), on-board status LEDs, support for TI Modular EVM System, evaluation and prototyping platform for mixed-signal ICs, compatible with TI EVM/PDK kits	
2.	Warranty	Instrument should be covered under min. 5 years of Standard Comprehensive Warranty.
3.	Recommended Brands, not limited to.	Texas Instruments
Mandatory Instruction :		

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Item 11:- DL350, Scopecorder YOKOGAWA		Qty Required : 4 Units
Sr. No.	**Specification**	
1.	Yokogawa DL350 ScopeCorder, Portable high-speed data acquisition and recorder, A4-sized chassis, 8.4-inch resistive touch screen, Battery/AC/DC operation, Up to 8 isolated analog channels (1 MS/s) or 4 channels (100 MS/s), Up to 100 MS/s sampling, Up to 16-bit resolution, Supports up to 32 scan channels via modules, Compatible with 18+ interchangeable input modules (voltage, current, temperature, vibration, strain, logic, CAN/LIN/SENT), Up to 100 Mpoints per module memory, Continuous SD card recording up to ~50 days, Versatile triggers (level, pulse width, waveform period, window), Power quality analysis, FFT and harmonic analysis, GPS data logging option, USB/Ethernet/SD interfaces, Remote control software support, Operating temperature 0–45 °C, Vibration-resistant rugged design	
2.	Warranty	Instrument should be covered under min. 5 years of Standard Comprehensive Warranty.
3.	Recommended Brands, not limited to.	Interface Private Ltd Pune
Mandatory Instruction :		
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Item 12:- ADALM-PLUTO SDR active learning module		Qty Required : 10
Sr. No.	**Specification**	

1.	**Technical Specifications**
	A. General Features
	   1. **Frequency Range**:
	     o 325 MHz to 3.8 GHz, with a software option to extend to 70 MHz to 6 GHz.
	   2. **Channel Support**:
	     o Full-duplex transceiver with independent transmit (Tx) and receive (Rx) paths.
	   3. **Bandwidth**:
	     o Up to 20 MHz instantaneous bandwidth.
	   4. **RF Performance**:
	     o Output Power: Configurable and capable of at least 0 dBm.
	     o Noise Figure: Optimized for educational and prototyping applications.
	   5. **Antenna**:
	     o SMA connectors for external antennas.
	     o Includes omnidirectional antennas for Tx/Rx.
	B. Connectivity
	   1. **Interface**:
	     o USB 2.0 connection for data transfer and power.
	   2. **Compatibility**:
	     o Works with Windows, Linux, and macOS.
	C. Software Support
	   1. **Driver and Software Tools**:
	     o Compatible with GNU Radio, MATLAB/Simulink, and IIO Oscilloscope.
	     o Includes support for Python APIs and C/C++ programming.
	   2. **Communication Protocols**:
	     o Support for FM, GSM, LTE, and other standard wireless protocols.
	   3. **Documentation and Tutorials**:
	     o Comprehensive online resources, including user manuals, quick-start guides, and example projects.
	D. Additional Features
	   1. **Onboard Processor**:
	     o Integrated ARM Cortex-A9 processor for standalone operations.
	   2. **Power Supply**:
	     o USB-powered.
	   3. **Form Factor**:
	     o Compact and portable for lab and field use	

2.	Warranty	Instrument should be covered under Standard Comprehensive Warranty.
3.	Recommended Brands, not limited to.	Made in India preferred.
Mandatory Instruction : Vendor Should submit Compliance statement for each parameter along with Complete product data sheet, clearly mentioning deviation from the tender specs, if any and Demonstrate for the		

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Technical Parameter mentioned in the Tender on their Quoted Instrument, as & when asked by Technical Team from the Respective Dept. of the Institute for Technical Evaluation.

Vendor Should Provide Authorization Certificate for the Quoted Brand of the Instrument

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After-sales service support for repairs/ replacement of non-functional part(s) should be available in India (including all services under warranty).

Item 13:- sim 900 A Module		Qty Required : 20 units
Sr. No.	**Specification**	
1.	SIM900A Module, Dual-band GSM/GPRS, Frequency 900/1800 MHz (2G), GPRS Class 10, UART interface with AT command control, Supply voltage 3.1–4.8 V (typ 4 V), Idle current ~1.5 mA, Active transmit current ~200 mA (peak up to ~2 A), GPRS data up to 85.6 kbps downlink / 42.8 kbps uplink, SIM card interface 1.8 V/3 V, AT command set GSM 07.05/07.07, SMS text and PDU mode, Voice call support, Supports TCP/IP, FTP/HTTP protocols, Operating temperature -40 °C to +85 °C, Dimensions ~24 × 24 × 3 mm, External antenna support (SMA/U.FL), UART baud rate 1200–115200 bps.	
2.	Warranty	Instrument should be covered under Standard Comprehensive Warranty.
3.	Recommended Brands, not limited to.	Digikey or any other brand. Made in India preferred.
Mandatory Instruction :		

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Item 14:- Development Board ODROID-XU4		Qty Required : 10 units
Sr. No.	**Specification**	
1.	Processor: Samsung Exynos5422 ARM Cortex-A15 Quad @ 2.0 GHz + Cortex-A7 Quad @ 1.4 GHz (big.LITTLE octa-core), Memory: 2 GB LPDDR3 RAM (750 MHz, 12 GB/s) GPU: Mali-T628 MP6 3D graphics accelerator (OpenGL ES 3.1/3.0/2.0/1.1, OpenCL 1.2), Storage: eMMC 5.0 module socket (up to 64 GB) and microSD card slot (up to 128 GB), USB: 2 × USB 3.0 Host, 1 × USB 2.0 Host, Networking: Gigabit Ethernet (RJ-45), Display: HDMI 1.4a output, Audio: HDMI digital audio (optional USB sound card support), Power Input: 5 V, 4 A recommended, Operating System Support: Linux (Ubuntu and variants) and community Android builds, Size: approx. 83 × 58 × 20 mm (cooler mounted)	
2.	Warranty	Instrument should be covered under Standard Comprehensive Warranty.
3.	Recommended Brands, not limited to.	Digikey or any other brand. Made in India preferred.
Mandatory Instruction :		
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Item 15:- Development Board NVIDIA Jetson Nano	Qty Required : 10 units

Sr. No.	Specification	
1.	NVIDIA Jetson Nano 2 GB/4 GB Developer Kit, 128-core NVIDIA Maxwell GPU, Quad-core 64-bit ARM Cortex-A57 CPU up to 1.43 GHz, 2 GB/4 GB LPDDR4 RAM, microSD card storage, Gigabit Ethernet, USB 3.0 & USB 2.0 ports, HDMI output, MIPI CSI-2 camera connector, 40-pin GPIO header (UART, I²C, SPI, PWM), USB-C or 5 V power input, Linux OS support with NVIDIA JetPack SDK, CUDA/cuDNN/TensorRT support	
2.	Warranty	Instrument should be covered under Standard Comprehensive Warranty.
3.	Recommended Brands, not limited to.	Digikey or any other brand. Made in India preferred.

Mandatory Instruction :

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Item 16:- Development Board BeagleBone		**Qty Required : 10 units**
Sr. No.	**Specification**	
1.	BeagleBone Black, AI-64 has dual-core 64- bit Cortex-A72 (up to 2 GHz), 4 GB RAM, 16 GB eMMC, AI accelerator	
2.	Warranty	Instrument should be covered under Standard Comprehensive Warranty.
3.	Recommended Brands, not limited to.	Digikey or any other brand. Made in India preferred.
Mandatory Instruction :		

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Vendor Should Provide Authorization Certificate for the Quoted Brand of the Instrument.

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After-sales service support for repairs/ replacement of non-functional part(s) should be available in India (including all services under warranty).

Item 17:- Development Board		**Qty Required : 10 units**
Sr. No.	**Specification**	
1.	STM 32 B-L475E-IOT01A2 DISCOVERY KIT STM32L4 SPSGRF-868, STM32 L4 Transceiver; 802.11 b/g/n (Wi-Fi, WiFi, WLAN), Bluetooth® Smart 4.x Low Energy (BLE) 868MHz Evaluation Board	
2.	Warranty	Instrument should be covered under Standard Comprehensive Warranty.
3.	Recommended Brands, not limited to.	Digikey or any other brand. Made in India preferred.
Mandatory Instruction :		

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Item 18:- Raspberry Pi development board	Qty Required : 05 Units
Sr. No.	**Specification**
1.	Raspberry Pi 4 Model 8GB or higher version Boards with PiCAM, SD card, HDMI to VGA and power cable.
2.	Warranty — Instrument should be covered under Standard Comprehensive Warranty.
3.	Recommended Brands, not limited to. — Made in India preferred.

Mandatory Instruction :

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Vendor Should Provide Authorization Certificate for the Quoted Brand of the Instrument.

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After-sales service support for repairs/ replacement of non-functional part(s) should be available in India (including all services under warranty).

Item 19:- Analog Discovery Studio Max	Qty Required : 20 Units
Sr. No.	**Specification**
1.	Analog Discovery Studio Max, 14-in-1 mixed-signal electronics lab, 4 analog input channels 14-bit 100 MS/s 50 MHz bandwidth ±25 V input, 2 analog output channels 14-bit 100 MS/s ±10 V output, 16 digital I/O channels 100 MS/s, logic analyzer/pattern generator, digital multimeter 4.5-digit, programmable power supplies ±1 V to ±15 V 500 mA, fixed power rails ±15 V 500 mA, +5 V 2 A, +3.3 V 310 mA, protocol analyzer (UART/SPI/I²C/CAN), breadboardable interface, USB WaveForms software support, LabVIEW/C/Python APIs
2.	Warranty — Instrument should be covered under Standard Comprehensive Warranty.
3.	Recommended Brands, not limited to. — VVDN Technologies Pvt. Ltd. DigiToad Technologies

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List of Software Tools:		
Item 1:- Keil for 8051		**Qty Required : 20 Users**
Sr. No.	**Specification**	
1.	Keil µVision IDE for 8051, C51 Compiler for 8051 microcontrollers, µVision debugger, Code/Project Editor, Simulator support, Flash programming support, Integrated RTOS support, Software packs for 8051 devices, Windows compatible, Supports multiple 8051 variants, Project templates, Code optimization and memory management tools, MDK-Professional	
2.	Warranty	Instrument should be covered under Standard Comprehensive Warranty.
3.	Recommended Brands, not limited to.	GSAS Micro Systems Pvt Ltd, element14 India, Mouser India, Amazon/Flipkart/Robu.in
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Item 2:- Keil for ARM	**Qty Required : 20 Users**

Sr. No.	Specification	
1.	Arm Keil MDK (Microcontroller Development Kit), µVision IDE, Arm C/C++ Compiler, supports Cortex-M/Arm7/Arm9/Cortex-R4 devices, project editor and debugger, CMSIS software packs, Keil RTX real-time OS, middleware libraries (TCP/IP, USB, File System), ULINK debug adapter support, simulation models, Windows development	
2.	Warranty	Instrument should be covered under Standard Comprehensive Warranty.
3.	Recommended Brands, not limited to.	GSAS Micro Systems Pvt Ltd, element14 India, Mouser India, Amazon/Flipkart/Robu.in

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Item 3:- Altium (Schematic and PCB designing)		**Qty Required : 20 Users**
Sr. No.	**Specification**	
1.	Altium Designer PCB design software, unified schematic capture and PCB layout environment, integrated simulation and analysis, 3D PCB visualization, advanced routing and design rule management, high-speed/HDI support, MCAD/ECAD integration, component library and BOM management, Altium 365 collaboration support	
2.	Warranty	Instrument should be covered under Standard Comprehensive Warranty.
3.	Recommended Brands, not limited to.	GSAS Micro Systems Pvt Ltd, element14 India, Mouser India, Amazon/Flipkart/Robu.in
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Item 4:- Ansys HFSS		**Qty Required : 10 Users**
Sr. No.	**Specification**	
1.	Ansys HFSS, 3D full-wave electromagnetic (EM) simulation software, high-frequency structure simulator for antennas, RF/microwave components, high-speed interconnects and PCBs, automatic adaptive meshing, hybrid FEM/IE/SBR+ solvers, antenna design toolkit, radar pre/post processing, EMI/EMC and RFI analysis, signal and power integrity analysis, 5G post-processing, coupled EM system solver, encrypted 3D component support, Ansys Cloud Burst Compute support	
2.	Warranty	Instrument should be covered under Standard Comprehensive Warranty.
3.	Recommended Brands, not limited to.	ARK Infosolutions Private Limited, CADFEM India, A3L Technologies Pvt. Ltd., EXANS Technologies, Electromagnetics Infinity Ltd.

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Item 5:- NI LabVIEW		**Qty Required : 50 Users**
Sr. No.	**Specification**	
1.	NI LabVIEW Academic Edition, graphical system design and development environment, latest 2026 release, G language graphical programming, data acquisition and instrument control, Python/C/C++ integration, drag-and-drop UI, real-time data streaming, multi-threading support, 2D/3D visualization, analysis and signal processing functions, TCP/UDP/WebSocket connectivity, TDMS/JSON/XML data support, cross-platform Windows/macOS/Linux, LabVIEW+ analytics and test executive tools	
2.	Warranty	Instrument should be covered under Standard Comprehensive Warranty.
3.	Recommended Brands, not limited to.	VVDN Technologies Pvt. Ltd.

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