



Bharatiya Vidya Bhavan's  
**SARDAR PATEL INSTITUTE OF TECHNOLOGY**

(Autonomous Institute Affiliated to Mumbai University)

Munshi Nagar, Andheri (W) Mumbai-400 058

procurement@spit.ac.in



+91-9820436099



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**Annexure-III**

**PART-A (Electrical and Electronic Equipment's)**

<b>LIST OF EQUIPMENTS:</b>		
<b>Item 1:- 50MHz 2 CH. DSO</b>		<b>Qty Required : 10 Units</b>
<b>Sr. No</b>	<b>Parameter Name</b>	<b>Technical Specification</b>
1.	Instrument Criteria	Digital Storage Oscilloscope , 50MHz Bandwidth , 2Analog CH.
2.	Input Channel Characteristics	The DSO should have 20K record length on each channelsimultaneously
		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/divtime scale with ±20ppm Time base Accuracy or better.
3.	Control and Measurement Facilities	<ul style="list-style-type: none"><li>• Should have individual vertical control for each Channel.</li></ul>
		<ul style="list-style-type: none"><li>• Auto Set Feature, Cursor measurement and Automatic Measurement of Time and Amplitude parameters with facilityto Enable / Disable of by password protection as and when require.</li></ul>
		<ul style="list-style-type: none"><li>• Dedicated control knobs in the front panel for Zoom, and navigate on the scope Acquisition</li></ul>
		<ul style="list-style-type: none"><li>• In-built help Function, Graphical representation with description of all measurement parameters should be available.</li></ul>
		<ul style="list-style-type: none"><li>• Facility to load Experimental Documents drawings and images in the DSO and should be able to Read through the Documentsin the DSO screen without needing PC connection.</li><li>• Automated Measurements-32</li></ul>

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		<ul style="list-style-type: none"> <li>Should have Snapshot feature to display All available Measurement Parameters on the Screen at a time.</li> </ul>
		<ul style="list-style-type: none"> <li>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.</li> </ul>
		<ul style="list-style-type: none"> <li>Should support Gating , MATH and FFT measurement. Dual window FFT with simultaneous time and frequency domain views</li> </ul>
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 . Wave Inspection Navigation, Built in help system.
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, probe interface, serial bus interface.
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

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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.	Tektronix, Aplab, Rishabh
<b><u>Special Instruction :</u></b>		
Ø Vendor Should submit Compliance statement for each parameter along with Complete product data sheet marking the Specification. Should clearly mention deviation from the tender specs, if any and Demonstrate for the Technical Parameter on their Quoted Instrument as & when asked by Technical Team from the Respective Dept. of the Institute for Technical Evaluation.		
Ø Vendor Should Provide OEM Authorization Certificate for the Quoted Instrument Brand. OEM or Vendor should have Service Centre in Maharashtra State for Quick Service / Support.		

Item 2:- Single Output- DC regulated Power Supply		Qty Required : 10 Units
Sr. No	Parameter Name	Specification
1.	Output Voltage	0-15V/0-32V
2.	Output Current	0-2A
3.	Load & Line Regulation	0.05% max.
4.	Ripple & Noise	1 mV (r. m. S.) Max.
5.	Features	<ul style="list-style-type: none"><li>• Protected Against Overload &amp; Short Circuit by Means of Automatic Crossover Characteristics.</li><li>• Continuous Metering of Output Voltage &amp; Current.</li></ul>
6.	Operating Temperature Range	0-55
7.	Warranty	1 year standard
8.	Recommended Brand	Aplab, Rishabh

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<b>Item 3:- 0.3Hz to 3MHz, Dual output Channel Function Generator Qty Required : 30 Units</b>		
<b>Sr. No.</b>	<b>Parameter Name</b>	<b>Specification</b>
1.	Frequency Range	0.01Hz to 1MHz in 8 decade ranges.
2.	Frequency Indication	±1% ±1 digit.
3.	Output Impedance	50 ohms
4.	Frequency Indication Accuracy	±1% +1 digit
5.	Output Waveforms	Sinusoidal, Triangle, Square, Ramp, Pulse, TTL (Sync) & DC Outputs.
6.	Sine Distortion	<1% (typical).
7.	Square Wave Rise / Fall Time	<75nsec.
8.	Frequency Stability	<0.5% of the set frequency (after ½ Hour warm up).
9.	Duty Cycle	10% to 90% variable.
10.	Maximum Output Voltage • Into 50 ohms • Open Circuit	10V p-p output. 20V p-p output.
11.	Amplitude Indication	3 digit seven segment display (Vp-p) ±5%.
12.	Amplitude Flatness	±0.5dB upto 100KHz range / ±1.0dB for 1MHz range.
13.	Attenuator	Two step attenuators of 20dB & 40dB. Fine attenuation of 20dB through vernier control. (Total 80 dB attenuation).
14.	Attenuator Accuracy	±0.5dB per 20dB at 1KHz.
15.	DC Offset	±10V ±5% (DC + AC peak) in open circuit ±5V ±5% (DC + AC peak) in 50 ohms.
16.	Warranty	Instrument should be covered under min. 5 years of Standard Comprehensive Warranty including LCD Display.
17.	Recommended Brands, not limited to.	Aplab

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<b>Mandatory Instruction:</b>
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 4:- Basic Spectrum Analyzer		Qty Required : 01 Unit
Sr. No.	Parameter Name	Specification
1.	Frequency Range	9khz-7GHz
2.	Measurement Range	<ul style="list-style-type: none"> <li>+20 dBm to -160 dBm measurement range</li> <li>Fast sweeps (2 per second) over entire 6.2 GHz span for quick detection of unknown signals</li> <li>Acquisition bandwidth of 40 MHz enables wideband vector analysis of modern standards</li> <li>Minimum signal duration as short as 15 µsec captured with 100% probability of intercept</li> </ul>
3.	Warranty	Instrument should be covered under min. 5 years of Standard Comprehensive Warranty including LCD Display.
4.	Recommended Brands, not limited to.	Tektronix, Agilent, Aplab
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 5:- Optical Fiber Communication kit		Qty Required : 02 Units
Sr. No.	Specification	
1.	<ul style="list-style-type: none"><li>Optical Fiber Communication kit 2501A.</li><li>Simplex Analog and Digital Trans receiver</li><li>660 nm channel with Transmitter &amp; Receiver</li><li>AM-FM-PWM modulation / demodulation On Board Function Generator</li><li>Crystal Controlled Clock</li><li>Functional Blocks indicated on-board mimic Input-output &amp; test points provided on board</li><li>On board voice link, built in DC power supply Numerical Aperture measurement jig and mandrel for bending loss included</li><li>Switched faults on Transmitter &amp; Receiver</li></ul>	
2.	Warranty	Instrument should be covered under min. 5 years of Standard Comprehensive Warranty including LCD Display.
3.	Recommended Brands, not limited to.	Scientech
<b>Mandatory Instruction :</b>		
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.		

Item 6:- NI DAQ analog card PXI-6229		Qty Required : 01 Unit
Sr. No.	Specification	
1.	32 single ended AI (16-Bit, 250 kS/s), 4 AO, 48 DIO, PXI Multifunction I/O Module, 16-bit differential.	
2.	Warranty	Instrument should be covered under Standard Comprehensive Warranty.
3.	Recommended Brands, not limited to.	NI, India
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Vendor Should Provide Authorization Certificate for the Quoted Brand of the Instrument.

Item 7:- BLDC Pump		Qty Required : 01 Unit
Sr. No.	Specification	
1.	5HP, 3phase BLDC pump	
2.	Warranty	Instrument should be covered under StandardComprehensive Warranty.
3.	Recommended Brands, not limited to.	Made in India preferred.
<b>Mandatory Instruction :</b>		
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.		

Item 8:- IM Pump		Qty Required : 01 Unit
Sr. No.	Specification	
1.	5HP, 3phase IM pump	
2.	Warranty	Instrument should be covered under StandardComprehensive Warranty.

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3.	Recommended Brands, not limited to.	Made in India preferred.
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Vendor Should Provide Authorization Certificate for the Quoted Brand of the Instrument.		

<b>Item 9:- Digital Multimeter</b>		<b>(05 Units-Desktop, 05 Units-Handheld)</b>
<b>Sr. No.</b>	<b>Specification</b>	
1.	<ul style="list-style-type: none"> <li>• Multimeter 3<sup>3/4</sup> / 4<sup>1/2</sup> digit, Frequency: 0.1Hz ~ 30MHz</li> <li>• DC Voltage: 0.1mV ~ 1000V, AC Voltage: 0.1mV ~ 750V</li> <li>• DC Current: 200µA / 2000µA / 20mA / 200mA / 10A, AC Current 200µA / 2000µA / 20mA / 200</li> <li>• Resistance 200W/ 2KW/ 20KW/ 200KW/ 2MW/ 20M mA / 10A</li> <li>• Capacitance 20nF / 200nF / 2µF / 20µF / 200µF / 2mF / 20mF</li> <li>• USB interface</li> </ul>	
2.	Warranty	Instrument should be covered under Standard Comprehensive Warranty.
3.	Recommended Brands, not limited to.	Aplab, Rishabh, Tektronix
<b>Mandatory Instruction :</b>		
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Vendor Should Provide Authorization Certificate for the Quoted Brand of the Instrument.		

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<b>Item 10:- IC Tester (analog and digital)</b>		<b>Qty Required : 02 Units</b>
<b>General Specifications</b>		
<ul style="list-style-type: none"> <li>Handy Universal IC Tester support upto 40 pins</li> <li>Should Tests a wide range of Digital IC's, Microprocessor and Peripherals, Analog IC's , Opamp, 555</li> </ul>		
Warranty	Instrument should be covered under StandardComprehensive Warranty.	
Recommended Brands, not limited to.	Nvistech or any other (Made in India)	
<b>Mandatory Instruction :</b>		
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 as & when asked by Technical Teamfrom the Respective Dept. of the Institute for Technical Evaluation .		
Vendor Should Provide Authorization Certificate for the Quoted Brand of the Instrument.		

<b>Item 11:- ARM LPC2148 Development Boards</b>		<b>Qty Required : 20 Units</b>
<b>General Specifications</b>		
<ul style="list-style-type: none"> <li>Development Boards with Peripheral interfacing like SPI, I2C, UART, LCD, Motors, Graphical LCD, Keypad and LEDS.</li> <li>Power supply cable, Adaptor, programmer</li> </ul>		
Warranty	Boards should be covered under StandardComprehensive Warranty.	
Recommended Brands, not limited to.	Pantech Solutions	
<b>Mandatory Instruction :</b>		
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Vendor Should Provide Authorization Certificate for the Quoted Brand of the Instrument.

<b>Item 12:- PIC18F4520 Development Boards</b>		<b>Qty Required : 20 Units</b>
<b>General Specifications</b>		
<ul style="list-style-type: none"><li>Development Boards with Peripheral interfacing like SPI, I2C, UART, LCD, Motors, Graphical LCD, Keypad and LEDS.</li><li>Power supply cable, Adaptor, programmer</li></ul>		
Warranty	Boards should be covered under Standard Comprehensive Warranty.	
Recommended Brands, not limited to.	Dynalog, Pantech Solutions	
<b>Mandatory Instruction :</b>		
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**PART-B (Software)**

<b>Item 1: Microchip Programmer</b>	<b>Qty Required: 10</b>
<b>Item 2: TI Programmer</b>	<b>Qty Required: 10</b>

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