



GAUHATI UNIVERSITY
DEPARTMENT OF INSTRUMENTATION & USIC
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From: **Dr. K. C. Sarma**
Professor & Head

Ref. Instr&USIC/NIQ/17/21

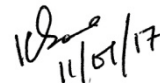
Date :11.01.2017

Notice Inviting Quotation for Supplying Laboratory Equipment

Sealed quotations from the registered dealers/suppliers are invited for supplying the items in the annexed sheet with mentioned specification to the Department of Instrumentation & USIC,G.U. The quotations must be submitted to the HOD; Department of Instrumentation & USIC,G.U. within 10 days from the date of notification of this NIQ in G.U. website. VAT; Unit Price; Model No.etc should be shown clearly in the quotations. **Company's Price List must be enclosed.**

Terms and Condition:

1. Gauhati University (GU) reserves the right to modify/cancel the requirements without any further notice.
2. All quotations will be treated as per GU rules and regulations.
3. Quoted rates MUST be valid for at least 90 days.
4. Separate quotations must be provided for each list.
5. Quotation without company's price list will be rejected.


(K.C. Sarma)
Professor & Head
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Copy to :-

1. System Administrator, GU, with a request to upload in GU Website
2. Department Notice Board.

Laboratory Item for Department of Instrumentation and USIC, Gauhati University

List-1

Item	Specification
1. PID Temperature Controller	Power Supply: 12 Vdc or 230 Vac Input Type of sensor: J, K programmable Unit of Measurement: °C or °F programmable with factory calibration Cold Junction: Automatic compensation 0 to 50°C Relay output & DC Pulse
2. PID Temperature Controller	Power Supply: 12 Vdc or 230 Vac Input Type of sensor: Pt 100, 2-wire programmable Unit of Measurement: °C or °F programmable with factory calibration Relay output & DC Pulse
3. PID Temperature Controller	Power Supply: 12 Vdc or 230 Vac Input Type of sensor: PTC: 990 Ω @ 25°C NTC: 10 kΩ @ 25°C programmable Unit of Measurement: °C or °F programmable with factory calibration With Relay output Relay output & DC Pulse
4. Fluke Digital Multimeter	AC Volts (40 Hz to 500Hz)- 0-600V DC Volts – 0-600V AC Millivolts- 0-600mV Diode Test- 2.000 V Resistance – upto 40 MOhm Capacitance- upto 1000μF Frequency -10 Hz – 100 kHz Duty Cycle- 1%-99% AC Current(40 Hz to 200 Hz)- upto 10 A DC Current- upto 10 A
5. Soldering Station	A) Soldering Iron 1) ESD safe, lead free iron with printed ceramic heater 2)Microcontroller based smart circuit design. 3)Sleep function to save energy and conserve the bit. B) Hot Air Gun: 1)High Capacity heater with temperature sensor for uniform and fast heating. 2)Blower on the handle with speed control makes it light weight, efficient and easy to use. 3)When placed in the cradle, the hot air gun heater switches off automatically and starts fan to cool it.
6. Oscilloscope Probe	Band Width: At least 60MHz Attenuation Ratio: 1X / 10X Input Resistance: (1MΩ/10MΩ)±2%
7. Function Generator Cable	Coaxial Cable BNC Connector Male to Crocodile Clip
8. Dremel Workstation with rotary tool kit	1. Bosch-Dremel 4000-4/65 Rotary Tool Kit 2. Bosch-Dremel 220 Workstation

List-2

9. TI LaunchPad Development Kit	32-bit Delfino MCU @ 200 MHz, 1MB Flash / 164kB RAM with ECC. Includes 24 PWM channels (16 high resolution), 4x 16/12-bit ADC, 3x 12-bit DAC, 3x eQEP modules, 169 GPIO pins. Includes CLA real-time control coprocessor to respond to peripheral triggers and service time-critical functions
10. TI LaunchPad Development Kit	Dual 32-bit Delfino MCUs @200MHz, 1MB Flash/164KB RAM. Position Manager Enabled. 4 16/12-bit ADCs with on PCB instrumentational amplifiers. 3x 12-bit output DACs and 8 windowed comparators for asynchronous output triggering. 24 PWMs (16 high resolution), 6 eCAP modules mapped to any GPIO, and 3 eQEP modules. 8 Sigma Delta Demodulator Inputs
11. TI LaunchPad Development Kit	32-bit ARM Cortex M3 @ 48MHz, 128KB Flash / 28KB SRAM. Includes 12-bit ADC, 4x general purpose timer modules, 8 channel analog mux, AES128 module, OTA firmware upgrade support. 2.4GHz RF Transceiver compatible with BLE 4.1, IEEE 802.15.4 PHY, and MAC
12. TI LaunchPad Development Kit	Dual-band wireless SoC with 48-MHz Cortex-M3 MCU, 128KB Flash/8K SRAM. Single-chip solution with a complete RF system, an on-chip DC-DC converter, and Ultra-Low-Power Sensor Controller. Supports both Sub-1 GHz protocols for best possible RF range and 2.4 GHz protocols, including Bluetooth low energy
13. Booster Pack for TI LaunchPad Development Kit	Capacitive touch elements including scroll wheel, button and proximity sensor 9 on-board LEDs for instant feedback Timer-based UART communication enables interface to PC Open source graphical user interface (GUI) available Includes a pre-programmed MSP430G2452IN20 with demo application Fully supported by the MSP430 Capacitive Touch Sense Library
14. Booster Pack for TI LaunchPad Development Kit	Ambient light sensor Infrared temperature sensor Inertial Measurement Unit (IMU) sensor – accelerometer and gyroscope Magnetometer Environmental sensor - pressure, ambient temperature and humidity Works with TI LaunchPad
15. Booster Pack for TI LaunchPad Development Kit	8-52V supply input with up to 4.5A continuous output current from each H-bridge Built in 1/256-step microstepping indexer for ultra-smooth movement SPI interface for driver settings and status reporting Complete stepper motor drive stage in ultra-small form factor (1.75" x 2.00") Fully protected drive stage including overcurrent, overtemperature, and under voltage protection
16. Booster Pack for TI LaunchPad Development Kit	Wi-Fi Network Processor in QFN package Industry's first devices to be Wi-Fi CERTIFIED™ at the chip level by the Wi-Fi Alliance™

	<p>2 20-pin stackable connectors (BoosterPack headers) to connect to TI LaunchPads and other BoosterPacks</p> <p>On-board chip antenna with option for U.FL-based testing</p> <p>Power from on-board LDO using USB OR 3.3V from MCU LaunchPad</p> <p>2 push buttons</p> <p>4 LEDs</p> <p>Jumper with 0.1 Ohm resistor for current measurement</p> <p>0.8 megabit serial flash</p> <p>40 MHz crystal, 32 KHz crystal and oscillator</p> <p>U.FL and chip antenna</p> <p>USB</p> <p>4 Layer PCB with 6 mm spacing and track width</p>
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List-3

17. Vacuum Cleaner (Eureka Forbes Euroclean WD X2)	<p>Voltage: 230 V AC, 50 Hz</p> <p>Input Power (IEC): 1300 W</p> <p>Suction of motor: At least 2300 mm of wc (22.55 Kpa)</p> <p>Blower efficiency: At least 1400 lt/min</p> <p>Dust Capacity: At least 8.0 litres</p>
18. Bar Code Reader	<p>Interface Types: Keyboard Wedge, USB</p> <p>Symbology Supported: Code 39/Full ASCII, Codabar, Code 11, Code 32, Industrial 2 of 5, Interleave 2 of 5, Matrix 2 of 5, Code 93, Code 128, EAN 128, MSI, EAN 8, EAN13, UPCA & E, Plessey, MSI</p> <p>Keyboard Interface: IBM PC/XT/AT & compatible, PS2-30, PS-55</p> <p>Indicator Buzzer: Programmable Tone</p>
19. Wireless LAN Router	<p>Gigabit LAN, WAN with USB 2.0 port connections</p> <p>Dual-Band Wireless</p> <p>High-Speed Wired and Wireless Connectivity</p> <p>IPv6 support</p>

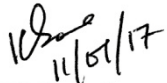
List-4

20. Digital Storage Oscilloscope	<ol style="list-style-type: none"> 1. Analog Channel: 2 at 100MHz each 2. Sampling Rate 1GS/s 3. Record Length at least 10M points 4. Input impedance: $1\text{ M}\Omega \pm 2\%$, $11.5\text{ pF} \pm 2.5\text{ pF}$ 5. Input sensitivity range: 2 mV/Div to 5 V/Div 6. Segment Memory Acquisition, Waveform search function Add/Subtract/Multiply/Divide waveforms, Autoset, FFT, FFTrms, d/dt, Zoom FFT, Data Log Function for Waveform observation in long period of time, Digital Filter Function 7. Accessories 2 x 1:1/1:10 switchable probes, USB cable, PC Communication Software
21. DC Power Supply	<ol style="list-style-type: none"> 1. Total output Power at least 200Watt 2. No. of outputs: 4: 0-30V @3A, tracking series voltage 0-60V @ 6A 2.2v to 5.2 v@1A8-15v@1A 3. Display: 4 three and half digit display 4. Protection: Overload and reverse polarity protection 5. Regulation : 0.01% line and load regulation <p>Warranty: At least 3 Years</p>

22. Function Generator	<p>1. No. of Channel-2 (Identical dual channel output, CH2 must provide the same Specs. & features as CH1)</p> <p>2. Waveforms: Sine, Square, Pulse, Ramp, Noise, Arbitrary</p> <p>3. Both Channel must support Sum, Couple, Tracking and Phase Operation(-180° to $+180^{\circ}$), Frequency Counter 150MHz, Trigger Delay, External Trigger input & Ext. Modulation input, Trigger output.</p> <p>4. Frequency Range: 1uHz to 25 Mhz (Minimum)</p> <p>5. Harmonic Distortion: $<-50\text{dBc}$ till 25Mhz</p> <p>6. Arbitrary Function -</p> <table border="0"> <tr> <td>Sample rate</td> <td>-</td> <td>200MS/s</td> </tr> <tr> <td>Repetition rate</td> <td>-</td> <td>100MHz</td> </tr> <tr> <td>Waveform length</td> <td>-</td> <td>16K</td> </tr> <tr> <td>Amplitude Resolution</td> <td>-</td> <td>14 bit</td> </tr> </table> <p>7. Interface- LAN, USB Host/Device Interface for Remote control & Waveform Editing</p> <p>8. Accessory -USB cable, PC Waveform Editing Software.</p> <p>Warranty:At least 3 Years</p>	Sample rate	-	200MS/s	Repetition rate	-	100MHz	Waveform length	-	16K	Amplitude Resolution	-	14 bit
Sample rate	-	200MS/s											
Repetition rate	-	100MHz											
Waveform length	-	16K											
Amplitude Resolution	-	14 bit											
23. LCR Meter	<p>1. Test Frequency-10Hz to 100KHz (continuously variable)</p> <p>2. Test Frequency Accuracy $\pm 0.01\%$</p> <p>3. Test Frequency Resolution 1Hz</p> <p>4. Basic Accuracy - 0.05%</p> <p>5. Parameter Ranges</p> <table border="0"> <tr> <td>L</td> <td>-</td> <td>0.00001uH - 9999.99H</td> </tr> <tr> <td>C</td> <td>-</td> <td>0.00001pF - 9999.99mF</td> </tr> <tr> <td>D</td> <td>-</td> <td>0.00001 - 9.99999</td> </tr> <tr> <td>Q</td> <td>-</td> <td>0.00001 - 99999.9</td> </tr> </table> <p>6. Display - 3.5" Color TFT LCD</p> <p>7. Interface - USB(host), RS-232, Handler</p> <p>8. Accessories - Test Fixture, power cord, PC Software</p>	L	-	0.00001uH - 9999.99H	C	-	0.00001pF - 9999.99mF	D	-	0.00001 - 9.99999	Q	-	0.00001 - 99999.9
L	-	0.00001uH - 9999.99H											
C	-	0.00001pF - 9999.99mF											
D	-	0.00001 - 9.99999											
Q	-	0.00001 - 99999.9											

List-5

24. NI DAQ	<p>1. Analog Input: at least 8 Single ended and 4 Differential</p> <p>2. Resolution: 16 bit</p> <p>3. Sampling: 50kS/s or higher</p> <p>4. Bandwidth: At least 300kHz</p> <p>5. Input Impedance: 1Gohm or higher</p> <p>6. Analog output: at least 2</p> <p>7. USB Powered</p> <p>8. Required connectors</p> <p>9. Warranty: at least 5 Years</p>
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