



**NATIONAL INSTITUTE OF TECHNOLOGY DELHI**  
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5<sup>th</sup> November, 2014

### **NOTICE INVITING QUOTATION**

Subject: Procurement of Equipments for the various Laboratories of Departments of Electronics & Communication Engineering and Electrical and Electronics Engineering for various Labs. of NITD.

Sealed Quotations are invited from the reputed firms/manufacturers for the supply of the following Equipment for the use of various Labs. of the Departments of Electronics & Communication Engineering and Department of Electrical and Electronics Engineering of the National Institute of Technology, Delhi (NITD): -

#### **Electronic Instrumentation Lab:**

#### **Instrument's Technical Specification:**

| <b>Item</b>   | <b>Description</b>   | <b>Qty</b> |
|---|--|------------|
| PC Based Data Acquisition system with sensors                           | <ul style="list-style-type: none"><li>• Temp Sensors (LM35, Pt100), Proximity switches</li><li>• LDR (LM 324 &amp; LDR) &amp; IR Sensors (with transmitter &amp; receiver with Encoder/decoder), Proximity switches (Inductive/capacitive)</li><li>• Photo electric sensors with signal conditioning and other required circuitry, With PC Interface thru USB Bus with data acquisition system</li><li>• Having 8 channel 12-Bit Analog Inputs, 2 Analog outputs</li><li>• 20 Digital input output lines with 2 no of relays.</li><li>• Complete Software Control &amp; it supports Lab view software</li><li>• On board: 8 digital output (LED's) on board 8 digital input switch buzzer for indication Facility for external signal interface,</li><li>• It supports Software or Hardware Timed Acquisition</li><li>• 2 Analog outputs, 20 Digital I/O (Up to 50 Hz per I/O)</li><li>• 32-Bit Counter, with Watchdog Timer Function USB 2.0/1.1 Low Speed Interface Optional : On Board Programming facility</li></ul> | 03         |
| Universal Transducer Trainer (Universal Sensor/Instrumentation Trainer) | <ul style="list-style-type: none"><li>• On board : LVDT , Microphone, Hall Sensor, Strain Gauge, Ultrasonic Trans receiver,</li><li>• Temp Sensor; Lm35, Thermistor, Thermocouple, Humidity sensor etc.</li><li>• Light Sensor:- Photo Diode, Photo Tx., Photo Voltaic Cell, Photo Conductive Cell, LDR</li><li>• Signal conditioning: Instrumentation Amplifier, Class Amplifier, Differential Amplifier.</li><li>• Square Wave generator, Band Pass Filter, Variable Resistor: Servo Potentiometer, Slide Resister, Rotatry Resister, Wire Wound, Carbon Track</li><li>• Buzzer, Voltmeter (0-15v), Test Point on each sections</li></ul>  | 02         |

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|                      |  |    |
| LVDT Trainer-20mm    | <p>AC-AC spring loaded 20mm LVDT<br/> PIC microcontroller based system<br/> LCD 16*2 display unit to show lvdt output results<br/> 5KHZ Frequency generator with test points to adjust frequency<br/> Test points for test Lvdt calibration using multimeter<br/> On board power reset switch with LED indicator<br/> Buzzer indicator for finding LVDT null point<br/> Operational amplifier and signal conditioning circuit with test points<br/> Optional: Programming cable to program and develop customized solution<br/> System come with operating user Manual, connecting cables &amp; power supply</p> | 02 |
| Load cell Trainer    | <p>Capacity of 10kg, Easy to plug and play unit<br/> Power ON/OFF switch with Led indication<br/> Operational amplifier and signal conditioning circuit<br/> LCD 16*2 based unit to display load status<br/> Test points to measure different signals and voltage<br/> System come with operating user Manual, connecting cables &amp; power supply<br/> Optional: On Board Programming facility</p>   | 02 |
| Strain Gauge Trainer | <p>Rectangular foil type strain gauge sensor 350 ohm Bonded on a flexible metal strip and connected in wheat stone bridge configuration<br/> On board Power supply of +5V DC<br/> On board instrumentation Amplifier AD620 section<br/> 16*2 LCD Display for displacement readings<br/> Microcontroller 8051 on board for processing<br/> Test point for Strain Gauge and Amplifier output with easy to plug banana connectors<br/> Optional: On Board programming facility</p>  | 02 |
| Touch Panel Trainer  | <p>Touch sensor controller 8051 16*2 LCD display to show value of X,Y Co-ordinates value<br/> On board power supply section with power indicator and test point<br/> Working Voltage 3-5 V DC<br/> Output Reading Rate Every 50 Mili Seconds Data Format (fixed length) 22 Byte ASCII<br/> The baud rate of output is 9600 bps. It output X,Y and Z values<br/> The XY are co-ordinates of touch and Z is pressure value<br/> Optional: On Board Programming facility</p>  | 02 |
| Color Sensor Trainer | <ul style="list-style-type: none"> <li>• RGB color sensor</li> <li>• 8051 compatible</li> <li>• 16*2 LCD display to show value of color</li> <li>• Can detect different color up to 10 color</li> <li>• On board color strip provided for experiments</li> <li>• On board power supply section with power indicator</li> <li>• Test point for observations</li> <li>• Optional: On Board Programming facility</li> </ul>   | 02 |
| Pressure Trainer Kit | <p>On board pressure sensor kits, with 2 PSI fs, Output is ratio metric to the power supply<br/> Facility to generate and monitor pressure on LCD Display In Both engineering units mmHg as well as psi Units Wide temp compensation range<br/> LED Indicators; Facility for interface, with microcontrollers<br/> Optional: On board Programming facility</p>   | 02 |

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|--|--|----|
| Temperature Sensor Trainer with RTD/Thermocouple /Thermister   | On board power jack, lcd 16*2 display to observe temperature of different temperature sensors<br>Input banana sockets to test Lm35,RTD, THERMISTOR, and J type thermocouple sensor<br>Switches facility to switch from one sensor to other,<br>Operational amplifier and signal conditioning circuit to compulsive output<br>Inbuilt ADC conversion<br>Pic16f/18f compatible hardware<br>Over/under temperature alert indicator<br>Plastic light weight base<br>Easy to operate trainer with help of user manual and video tutorial.<br>Square wave is either without or with Interrupt<br>Optional: on Board Programming facility | 02 |
| Water Flow Measurement Trainer                                 | <ul style="list-style-type: none"> <li>• 1~12 L/min Flow rate range measurement</li> <li>• Flow control provision</li> <li>• Flow rate display unit</li> <li>• On board BNC socket for CRO connectivity</li> <li>• Provision for measurement of frequency and test points to measure voltage using Multimeter</li> <li>• Inbuilt power supply</li> <li>• Durable water container and water pump</li> <li>• Optional: <ul style="list-style-type: none"> <li>1) On Board Programming facility</li> <li>2) Ultrasonic measurement</li> </ul> </li> </ul>   | 02 |
| Humidity Sensor Trainer  | Microcontroller based humidity control system<br>Humidity sensor module with resistance type<br>Linear dc Output voltage for 0-100% RH<br>On board SYH-2/SYHW-2 Sensors<br>Wide temp. compensation range, LCD display<br>Optional: On Board Programming facility   | 02 |
| Photo Transducer Kit Photo Cell, Photo Transistor, Photo Diode | The concept circuit of Optical Trainer printed on P.C.B. ,Inbuilt power supply source<br><b>Transducers</b> Photoconductive Cell, Photovoltaic Cell, Photo transistor,LED ,Photo diode<br><b>Light Source</b> - Filament Lamp, Signal Conditioning Circuitry<br>Potentiometers, Output Circuits, Interconnections - 4mm banana sockets, AC Mains Operated, Operating Manual<br><b>Output device-</b> , Moving Coil Meters, Analog voltmeter and current meter.   | 02 |

1. **Warranty/Guarantee:-** Suppliers must give the comprehensive warranty in writing that everything to be supplied by them hereunder shall be free from all defects and faults in material, workmanship and material shall be in full conformity with the specification, The period of warranty shall not be less than one year from the date of supply of these Lab. equipments.
2. Rates to be quoted should be final and nothing extra shall be paid over the quoted rates.
3. The sealed quotations shall be subscribed as “**QUOTATIONS FOR THE SUPPLY OF LAB. EQUIPMENTS FOR THE DEPARTMENTS OF ECE AND EEE.**” and shall be addressed to Deputy Registrar, National Institute of Technology, Delhi, IAMR Campus, Narela, Delhi-110040,
4. The last date of receipt of these quotations will be **21<sup>st</sup> NOVEMBER, 2014**

Deputy Registrar,  
NIT, Delhi