

Ref.No IKGPTU/

Date:

**Subject: Quotation for Basic Electrical Engineering Lab, IKGPTU Mohali Campus-I.**

University intends to purchase lab equipment for Basic Electrical Engineering Lab at IKGPTU Mohali Campus by inviting sealed quotation. The supply order will be placed to the firm offering lowest rates (item wise). You are requested to send the sealed quotation of the items for Basic Electrical Engineering Lab at IKGPTU Mohali Campus by quoting lowest rates (inclusive of all taxes, govt. levies, duties etc.) for Specification of Lab Equipment/items as per attached Annexure.

The quotation must be addressed to:

Registrar,

I.K.Gujral Punjab Technical University,

Jalandhar-Kapurthala highway, Kapurthala (Punjab-144603)

Note: The postal address for sending quotation is:

Head of Department and Mohali Campus Incharge,

Department of Computer Sciences

I.K.Gujral Punjab Technical University, Kapurthala (Punjab-144603)

The quotation must reach by **5:00 pm on 03/02/2020 (Monday)**. All received Quotations will be opened in the office of the Assistant Registrar, MC Store and Purchase IKGPTU, Jalandhar-Kapurthala Highway, Kapurthala (Punjab-144603). The officers or their representative may be present at the time of opening of the quotation.

**Terms & conditions:**

1. Firms having GST number need to apply only.
2. Any quotation of items other than the specifications will not be considered.
3. The University reserves the right to increase or decrease the number of items.
4. The items to be delivered at:  
IKGPTU Mohali Campus,  
C-102/B, Industrial Area, Phase-VII, SAS Nagar (Mohali) - 140 308, Punjab (INDIA)  
within 30 days of issuance of the supply order.
5. No advance payment will be made.
6. Payment will be released after inspection of the deliverer's goods/items and on receipt of the satisfactory report.
7. University will not be paying anything extra as the rates invited are inclusive of all taxes, govt levies, duties etc.
8. Please subscribe on the envelop **Quotation for Basic Electrical Engineering Lab at IKGPTU Mohali Campus and to be opened by committee only.**

Head of Department and Mohali Campus Incharge

CC :

- Registrar (for information please)
- Director, Main Campus (for information please)
- Deputy Controller (ITS for uploading on University website please)

ANNEXURE

Sr. No.	Experiment/Equipment/Item with Specifications
01	<p><b>Verification of Ohms law.</b></p> <ul style="list-style-type: none"> <li>• Variable D.C. regulated power supply of 0 to 12 V.</li> <li>• Two dual range digital panel voltmeter (20V Range) and Ammeter (200 mA)</li> <li>• 04 resistances mounted on the panel and connections are brought out on the sockets.</li> <li>• 01 potentiometer mounted on the panel to change/very the power supply.</li> <li>• Circuit laser drawn on Bakelite sheet and all components mounted on the panel.</li> <li>• 10 interconnectable patch cords.</li> <li>• Operation manual containing operating instruction, theory and circuit (hard and soft copy).</li> </ul>
02	<p><b>Verification of Kirchhoff Current &amp; Voltage Law.</b></p> <ul style="list-style-type: none"> <li>• Variable D.C. regulated power supply of 0 - 12V.</li> <li>• Two dual range digital panel meters, voltmeter (20V Range) and Ammeter (200 mA)</li> <li>• 04-05 resistances for current law and 04-05 resistance for voltage law mounted on the panel and connections are brought out on the sockets.</li> <li>• 01 potentiometer is mounted on the panel to 01 potentiometer mounted on the panel to change/very the power supply.</li> <li>• Circuit laser drawn on Bakelite sheet and all components mounted on the panel.</li> <li>• 10 interconnectable patch cords.</li> <li>• Operation manual containing operating instruction, theory and circuit (hard and soft copy).</li> </ul>
03	<p><b>Study of Transient Response of R-L- C. Circuits.</b></p> <ul style="list-style-type: none"> <li>• Builtin fixed DC Regulated power supply 0 –12V.</li> <li>• Built-in Square Wave Oscillator.</li> <li>• 02 potentiometers mounted on front panel to vary (i) the frequency of square oscillator (ii) the resistance (R).</li> <li>• 10 nos. of stackable type connecting leads.</li> <li>• Circuit is drawn on Bakelite sheet and all the components are mounted on the panel.</li> <li>• Operation manual containing operating instruction, theory and circuit (hard and soft copy).</li> </ul>
04	<p><b>Digital Signal Oscilloscope</b></p> <ul style="list-style-type: none"> <li>• 50 MHz, 2 Channel,</li> <li>• Maximum sample rate:1 GSa/s</li> <li>• Display 7 inch TFT, USB connectivity</li> <li>• Waveform: Add, subtract, multiply, divide, FFT math (Magnitude and phase, Low pass filter</li> <li>• Probes and accessories</li> <li>• Manual containing operating instruction.</li> <li>• Equipment test certificate</li> </ul>
05	<p><b>Trace Hysterersis Loop</b></p> <ul style="list-style-type: none"> <li>• Ability to measure Coercively, Retentively, Saturation magnetization, Various magnetic phase identification Hysteresis loss.</li> <li>• 04-05 Set of samples (Nickel, different grades of Iron)</li> <li>• Circuit laser drawn on Bakelite sheet and all components mounted on the panel.</li> <li>• Interconnectable patch cords.</li> <li>• Operation manual containing operating instruction, theory and circuit (hard and soft copy).</li> </ul>
06	<p><b>Kit for Different Types of Characteristics of Junction (NPN Transistor) Transistor in CB, CE and CC Configuration.</b></p>

Sr. No.	Experiment/Equipment/Item with Specifications
	<ul style="list-style-type: none"> <li>• 02 Power Supplies (Regulated, continuously variable and built in short circuiting proof</li> <li>• Patch cords suitable to the terminals.</li> <li>• Circuit laser drawn on Bakelite sheet and all components mounted on the panel.</li> <li>• 10 interconnectable patch cords.</li> <li>• Operation manual containing operating instruction, theory and circuit (hard and soft copy).</li> </ul>
07 & 08	<p><b>To start and reverse the direction of rotation of (i) DC motor (ii) 3 phase Induction motor.</b></p> <ul style="list-style-type: none"> <li>• DC Motor: Shunt Motor 1HP 230V 1500 rpm with 3-point starter and loading arrangement. Terminals brought out on a bakelite sheet and clearly indicated. Starter and terminals all mounted on a panel.</li> <li>• 3- phase Induction Motor : Squirrel Cage type, 415V,1440 RPM with DOL Starter Qty:01</li> <li>• RPM Meter 96X96 mm, 0-5000RPM. Qty: 01</li> <li>• Analog DC Volt Meter 0-300V &amp; Ammeter 0-10A 96x96mm Qty:01.</li> <li>• Analog AC Volt Meter 0-500V &amp; Ammeter 0-5A, 96x96mm Qty:01.</li> <li>• Terminal for grounding (Earth).</li> <li>• Three phase Reverse forward switch.</li> <li>• Power ON/OFF through MCB, Power on indicator lamp</li> <li>• Built in circuit breaker, provision for manual ON/OFF &amp; Auto control</li> <li>• Circuit laser drawn on Bakelite sheet and all components mounted on the panel.</li> <li>• Interconnectable patch cords.</li> <li>• Operation manual containing operating instruction, theory and circuit (hard and soft copy).</li> </ul>
9	<p><b>To measure the voltage, current drawn, power factor and power consumed by a fluorescent tube, CFL, Incandescent lamp and LED bulb.</b></p> <ul style="list-style-type: none"> <li>• All measuring equipment portable type of 1.5% accuracy.</li> <li>• Panel with all terminals marked.</li> <li>• Circuit is drawn on Bakelite sheet and all the components are mounted on the panel.</li> <li>• Operation manual containing operating instruction, theory and circuit (hard and soft copy).</li> </ul> <p><b>Portable wattmeter:</b> Dynamometer type, with anti-parallax mirror with 150 mm knife edge pointer enclosed in wooden box (300mm(l)X200mm(w) X155-190mm(h) Accuracy: 0.5%, Scale length :150, Division 100-150. Current coil rating 2.5/5A, Potential Coil rating 150/300/600V. <b>Qty:01</b></p> <p><b>Portable Voltmeter:</b> AC/DC Type with anti-parallax mirror with 150 mm knife edge pointer enclosed in wooden box (300mm (l)X200mm(w)X155-190mm(h) Accuracy: 0.5%, Scale length :150, Division 100-150. 0-300/600 V, <b>Qty :1</b></p> <p><b>Portable Ammeter:</b> AC/DC Type with anti-parallax mirror with 150 mm knife edge pointer enclosed in wooden box (300mm(l)X200mm(w) X155-190mm(h) Accuracy: 0.5%, Scale length :150, Division 100-150. 0/2.5A, <b>Qty: 01</b></p> <p><b>Portable Power Factor Meter:</b>Type : Dynamometric, Operating Voltage : 75V to 500V for 1 Ph. 110V / 440V – PT secondary for 3Ph. Burden : &lt;1.25VA upto 75V. Operating Current :0.5A to 10A for 1 Ph. 1A / 5A – CT secondary for 3Ph. Burden ; , &lt;10VA upto 10A. Frequency : 45 ~ 65Hz. Accuracy: Class 1.5 for Watt / Var / . 2° for PF. Insulation Resistance: Greater than 20M <math>\Omega</math> at 500V DC. Dielectric Test : 2kV RMS for 1 minute. Conforms To : I.S. 1248 / I.E.C. 60051(Part 3) for WATT / VAR , (Part 5) for PF. <b>Qty:01</b></p>
10	<p><b>Set up to verify voltage and current relations in Star - Delta connected Systems</b>  <b>Set up for Open Circuit &amp; Short Circuit Test and voltage regulation of a transformer</b></p> <ul style="list-style-type: none"> <li>• 3-phase Transformer 1KVA 440/220V (<b>Qty:01</b>) Terminals of transformer brought out on a bakelite sheet and marked. Equipment test certification to be provided</li> </ul>

Sr. No.	Experiment/Equipment/Item with Specifications
	<ul style="list-style-type: none"> <li>• 1-phase Transformer 1KVA 440/220V <b>(Qty:02)</b> Terminals of transformer brought out on a bakelite sheet and marked. Equipment test certification to be provided</li> <li>• 3- phase Autotransformer: 230/0-470 V, 5 A (Qty:01)</li> <li>• 1- phase Autotransformer: 230/0-470 V, 5 A (Qty:01)</li> <li>• 3-phase power supply cable connected to a MCB on a Board manual ON/Off.</li> <li>• <b>Portable Ammeter (AC)</b> triple scale 0-1/3/10A, Accuracy 1.0%, Dimensions: 250mmX190mmX80mm, scale length 145mm approx. weight 1kg approx., Black engineering plastic housing <b>(Qty:03)</b></li> <li>• <b>Portable Voltmeter (AC)</b> 0-150/300/600V Accuracy 1.0%, Dimensions: 250mmX190mmX80mm, scale length 145mm approx. weight 1kg approx., Black engineering plastic housing<b>(Qty:03)</b></li> <li>• <b>Portable Voltmeter (AC)</b> 0-15/30/75V Accuracy 1.0%, Dimensions: 250mmX190mmX80mm, scale length 145mm approx. weight 1kg approx., Black engineering plastic housing<b>(Qty:01)</b></li> <li>• 3-phase resistive load bank with voltage drop in steps. <b>(Qty:01)</b></li> <li>• 1- phase resistive load bank with voltage drop in steps. <b>(Qty:01)</b></li> <li>• Circuit drawn on bakelite sheet and all components mounted on a panel.</li> <li>• Operation manual containing operating instruction, theory and circuit (hard and soft copy).</li> </ul>
11	<p><b>Digital Multimeter</b></p> <p>True RMS reading on AC mode, Voltage Range: DC 1000 V, AC 750V, Current range 10A AC/DC, Resistance, Frequency and capacitance ranges, with back light display. Comply with IEC61010 Cat IV 600V, display of 6000 counts updates 1.5/Sec, over range indicator, , DC Accuracy :(<math>\pm 0.5\%</math> +2 digits), AC Accuracy 50Hz/60 Hz sine wave only for 600.0mV range (<math>\pm 0.9\%</math> +5 digits). Test leads and probes with silicon cables.</p>