



INVITATION FOR QUOTATION

21 SEP 2024

Our Ref No. : DBATU/store/Ele.Engg//2024/2713

Date: 21/09/2024

Quotation For: Measurement lab kit

Due On: 07/10/2024

Date of Opening: 08/10/2024

Time: 11:30 am

To,

Sub: QUOTATION FOR THE SUPPLY OF STORE

Dear Sir,

Your quotation for the items listed overleaf, may please be submitted to the under signed, so as to reach this Office not later than 07/10/2024

While submitting your quotation, the following procedure may please be observed and other points borne in mind.

1. The maker's name must be specified.
2. The "Terms and Conditions" for supply and delivery of stores, should be clearly indicated in the quotation, stating whether rates are, inclusive of all taxes, Packing and forwarding charges Freight charges, etc. or not, however rates offered as including all taxes will be more welcome.
3. If packing and forwarding charges are to be charged separately, it should be so clearly stated in your quotation.
4. Please mention clearly whether consignment would be Ex-Godown, Ex-Shop, of F.O.R. dispatching stations. Preferably terms offered as "Delivery of consignment of stores, on F.O.R."
5. Envelope should be super-scribed "Quotation for reference No..... of dated....." It should also be superscripted as per the format given above.
6. The quotation would be opened as per date and timing given above, if desired by you, you may depute an authorized representative with a letter of authority to be present at the time of opening of the quotation at this Office on the aforesaid day, date & time.
7. Your quotation must be valid for a minimum 30 (Thirty) working days from the date of its opening.
8. Quotation received after the date of opening may not be taken into consideration.
9. Items tendered should confirm to the specification shown in the attached list when and where, full or no specifications are indicated against items in the list. Kindly furnish your full specification in accordance with accepted standards against each item tendered. Where reference to catalogue is made, the relevant catalogues/ Pamphlets/ Literature should accompany the quotation.
10. Your quotation should be for all new items and not for second hand.
11. Please state whether items will be available Ex-Stock. If not the minimum period for delivery, or for supplying the items or stores.
12. It should be clearly stated whether GST, Insurance, Freight or packing and forwarding charges, or any other taxes and duties, etc. leviable.
13. It would be appreciated if illustrated catalogues/Literature etc. is furnished with the quotation.
14. Expression to as "Complete with standard Equipment" complete with standard accessories "Equipment to" As good as should be avoided. If at all their use is unavoidable then it should be

very specifically indicated as to what exactly they mean and what exactly would be supplied under them. Any ambiguity or vagueness should be avoided.

15. For convenience, kindly adopt while quoting the same serial Nos. as given in the list detailed below.

Thanking You.

Yours faithfully,

Registrar

Dr. Babasaheb Ambedkar Technological University, Lonere

### List of Items

Sr. No.	Description	Make	Approx. Qty Req.	Rate per / Each / Unit	Remark
01	Extension of range of Ammeter/Voltmeter using shunt/Series resistance and calibration of the meter using standard Ammeter/Voltmeter.		01		
02	Measurement of low/medium resistance using Kelvin Double bridge and Wheatstone's bridge		01		
03	Measurement of Induction & Capacitance using Maxwell bridge.		01		
04	Measurement of Induction using Anderson bridge.		01		
05	Measurement of Capacitance using Schering bridge.		01		
06	Measurement of temperature using RTD and Thermistor.		01		
07	Measurement of Pressure and weight using Piezoelectric Transducer.		01		
08	Measurement of Displacement using LVDT & RVDT		01		
09	Measurement of Active and Reactive power in a balanced and unbalanced three phase System using two and one Wattmeter Method		01		
10	Determination of hysteresis loop of an iron ring specimen using DSO/CRO		01		



# ELECTRICAL & ELECTRONICS MEASUREMENT LAB SPECIFICATION'S

Sr. No.	Description
1	<ul style="list-style-type: none"><li>❖ <b>Extension of range of Ammeter/Voltmeter using shunt/Series resistance and calibration of the meter using standard Ammeter/Voltmeter.</b></li><li>▪ The kit should be with following specs: -<ul style="list-style-type: none"><li>➤ DC Power supply: 0 to 15V DC variable</li><li>➤ Voltmeter Standard: 0 to 20V DC</li><li>➤ Ammeter Standard: 0 to 1A DC</li><li>➤ Voltmeter Under calibration: 0 to 20V DC</li><li>➤ Ammeter Under calibration: 0 to 1A DC</li><li>➤ Different types Resistive Load.</li><li>➤ Terminal Tag: 2mm</li><li>➤ patch cords.</li><li>➤ Operating manual.</li><li>➤ Colorful circuit diagram on front facia.</li><li>➤ Unit working power supply: 230V, 50Hz.</li><li>➤ Power ON-OFF switch with red indicator.</li><li>➤ Fuse protection.</li><li>➤ Sturdy powder coated MS/wooden box with bottom leg support.</li></ul></li></ul>
2	<ul style="list-style-type: none"><li>❖ <b>Measurement of low/medium resistance using Kelvin Double bridge and Wheatstone's bridge.</b></li><li>▪ The kit should be with following specs: -<ul style="list-style-type: none"><li>➤ DC Power supply: 0 to 15V DC variable</li><li>➤ Function generator (Sine) 200Khz.</li><li>➤ Galvanometer.</li><li>➤ Different types of Resistive Load bank.</li><li>➤ External loose Unknow R components = 5 each.</li><li>➤ 10K<math>\Omega</math> potentiometer is a helical 10 turn pot mounted with dial for easy measurement</li><li>➤ Terminal Tag: 2mm</li><li>➤ patch cords.</li><li>➤ Operating manual.</li><li>➤ Colorful circuit diagram on front facia.</li><li>➤ Unit working power supply: 230V, 50Hz.</li><li>➤ Power ON-OFF switch with red indicator.</li><li>➤ Fuse protection.</li><li>➤ Sturdy powder coated MS/wooden box with bottom leg support.</li></ul></li></ul>
3	<ul style="list-style-type: none"><li>❖ <b>Measurement of Inductance &amp; Capacitance using Maxwell bridge.</b></li><li>▪ The kit should be with following specs: -<ul style="list-style-type: none"><li>➤ DC Power supply: 0 to 15V DC variable</li><li>➤ Function generator (Sine) 200Khz.</li><li>➤ Galvanometer.</li><li>➤ Different types of Resistive Load bank.</li><li>➤ Different types of Inductive Load bank.</li><li>➤ Different types of Capacitive Load bank.</li><li>➤ External loose Unknow LC components = 5 each.</li><li>➤ 10K<math>\Omega</math> potentiometer is a helical 10 turn pot mounted with dial for easy measurement</li><li>➤ Terminal Tag: 2mm</li><li>➤ patch cords.</li></ul></li></ul>

	<ul style="list-style-type: none"> <li>✔ Operating manual.</li> <li>✔ Colorful circuit diagram on front facia.</li> <li>✔ Unit working power supply: 230V, 50Hz.</li> <li>✔ Power ON-OFF switch with red indicator.</li> <li>✔ Fuse protection.</li> <li>✔ Sturdy powder coated MS/wooden box with bottom leg support.</li> </ul>
4	<ul style="list-style-type: none"> <li>❖ <b>Measurement of Inductance using Anderson bridge.</b></li> <li>▪ The kit should be with following specs: - <ul style="list-style-type: none"> <li>✔ DC Power supply: 0 to 15V DC variable</li> <li>✔ Function generator (Sine) 200Khz.</li> <li>✔ Galvanometer.</li> <li>✔ Different types of Resistive Load bank.</li> <li>✔ Different types of Inductive Load bank.</li> <li>✔ Different types of Capacitive Load bank.</li> <li>✔ External loose Unknow L components = 5 each.</li> <li>✔ 10K<math>\Omega</math> potentiometer is a helical 10 turn pot mounted with dial for easy measurement</li> <li>✔ Terminal Tag: 2mm</li> <li>✔ Patch cords.</li> <li>✔ Operating manual.</li> <li>✔ Colorful circuit diagram on front facia.</li> <li>✔ Unit working power supply: 230V, 50Hz.</li> <li>✔ Power ON-OFF switch with red indicator.</li> <li>✔ Fuse protection.</li> <li>✔ Sturdy powder coated MS/wooden box with bottom leg support.</li> </ul> </li> </ul>
5	<ul style="list-style-type: none"> <li>❖ <b>Measurement of Capacitance using Schering bridge.</b></li> <li>▪ The kit should be with following specs: - <ul style="list-style-type: none"> <li>✔ DC Power supply: 0 to 15V DC variable</li> <li>✔ Function generator (Sine) 200Khz.</li> <li>✔ Galvanometer.</li> <li>✔ Different types of Resistive Load bank.</li> <li>✔ Different types of Inductive Load bank.</li> <li>✔ Different types of Capacitive Load bank.</li> <li>✔ External loose Unknow C components = 5 each.</li> <li>✔ 10K<math>\Omega</math> potentiometer is a helical 10 turn pot mounted with dial for easy measurement</li> <li>✔ Terminal Tag: 2mm</li> <li>✔ Patch cords.</li> <li>✔ Operating manual.</li> <li>✔ Colorful circuit diagram on front facia.</li> <li>✔ Unit working power supply: 230V, 50Hz.</li> <li>✔ Power ON-OFF switch with red indicator.</li> <li>✔ Fuse protection.</li> <li>✔ Sturdy powder coated MS/wooden box with bottom leg support.</li> </ul> </li> </ul>
6	<ul style="list-style-type: none"> <li>❖ <b>Measurement of temperature using RTD and Thermistor.</b></li> <li>▪ The kit should be with following specs: - <ul style="list-style-type: none"> <li>✔ DC Regulated Power supply: +/- 12V DC Fix.</li> <li>✔ Voltmeter Standard: 0 to 20V DC</li> <li>✔ RTD &amp; Thermistor</li> <li>✔ Different type test points.</li> <li>✔ Temperature generator box with fan &amp; lamps.</li> <li>✔ Terminal Tag: 2mm</li> </ul> </li> </ul>



- Patch cords.
- Operating manual.
- Colorful circuit diagram on front facia.
- Unit working power supply: 230V, 50Hz.
- Power ON-OFF switch with red indicator.
- Fuse protection.
- Sturdy powder coated MS/wooden box with bottom leg support.

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❖ **Measurement of Pressure and weight using Piezoelectric Transducer.**

- The kit should be with following specs: -
  - DC Regulated Power supply: +/- 12V DC Fix.
  - Voltmeter Standard: 0 to 20V DC
  - Pressure Sensor & Piezoelectric Transducer.
  - Different type test points.
  - Pressure generator & Piezoelectric Transducer setup.
  - Terminal Tag: 2mm
  - patch cords.
  - Operating manual.
  - Colorful circuit diagram on front facia.
  - Unit working power supply: 230V, 50Hz.
  - Power ON-OFF switch with red indicator.
  - Fuse protection.
  - Sturdy powder coated MS/wooden box with bottom leg support.

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❖ **Measurement of Displacement using LVDT & RVDT.**

- The kit should be with following specs: -
  - DC Regulated Power supply: +/- 12V DC Fix.
  - Voltmeter Standard: 0 to 20V DC
  - LVDT Sensor & RVDT Sensor.
  - Different type test points.
  - LVDT & RVDT Sensor setup.
  - Terminal Tag: 2mm
  - patch cords.
  - Operating manual.
  - Colorful circuit diagram on front facia.
  - Unit working power supply: 230V, 50Hz.
  - Power ON-OFF switch with red indicator.
  - Fuse protection.
  - Sturdy powder coated MS/wooden box with bottom leg support.

❖ **Measurement of Active Power and Reactive power in a balanced and unbalanced 3 phase System using two and one Wattmeter Method.**

❖ **Measurement of Active power (with balance and unbalance load)**

- Modular Panel with Colorful overlays showing circuit diagram & its connection tag numbers for easy understanding, connections & servicing by swapping at site.
- MS/Aluminum profile sturdy flat panel (table top) system, carrying various high voltage components with minimize shock possibility.

• **Control panel specifications:**

• **Three phase Power Supply & DOL Starter:**

- MCB 4 pole, 4 Amp, 415V AC, 50Hz.
- RYB power input Indicator (22 mm) 1 each.
- Contactor 9 Amp. 415V, 50 Hz, 3 Pole, 1 NO.

- Contactor Coil: 230V, 11VA.
- Bimetallic over load thermal Relay.
- Relay Range 1.4A - 2.3A. (Set: 2.3 Amp.)
- Start-Stop Push Button Switch.
- DOL ON Red Indicator (22mm)
- **Multi-function Bi-directional Power Measurement (3 nos.):**
- Digital Bi-directional Multi-function meter (96X96mm).
- 3 Phase 3/4 wire, Voltage line to line & line to neutral.
- Measurement of 415V, 3 ph. & 230V, 1 ph. parameters.
- Measures V, I, Hz, PF, KW, KVA, KVA<sub>r</sub>, Energy in KWh.
- Current for all 3 ph. up to 5A. (Inbuilt CT 5A:5A x 3 Nos.)
- LCD/LED display, Reverse Power Indication.
- Aux. Supply 230VAC, 45-65Hz, 5W
- **ON OFF ON, FWD/REV:**
- Three Ph. ON-OFF-ON with FWD/REV, 3 pole 3-way switch with Centre OFF, 6A/440V.
- Power ON Red Indicator (22 mm)
- **Three Phase Lamp (R) Load:**
- Lamp Load, 3kW, 415V / 230V, 50Hz.
- ON-OFF switches, 3 steps per phases.
- Fan cooled, castor wheels, MS power coted.
- Terminal Tag: 2mm
- patch cords.
- Operating manual.
- Colorful circuit diagram on front facia.
- Unit working power supply: 415V, 50Hz.
- Power ON-OFF switch with RYB indicator.
- MCB protection.

- ❖ **Measurement of Active power (with balance and unbalance load)**
- Modular Panel with Colorful overlays showing circuit diagram & its connection tag numbers for easy understanding, connections & servicing by swapping at site.
- MS/Aluminum profile sturdy flat panel (table top) system, carrying various high voltage components with minimize shock possibility.
- **Control panel specifications:**
- **Three phase Power Supply & DOL Starter:**
- MCB 4 pole, 4 Amp, 415V AC, 50Hz.
- RYB power input Indicator (22 mm) 1 each.
- Contactor 9 Amp. 415V, 50 Hz, 3 Pole, 1 NO.
- Contactor Coil: 230V, 11VA.
- Bimetallic over load thermal Relay.
- Relay Range 1.4A - 2.3A. (Set: 2.3 Amp.)
- Start-Stop Push Button Switch.
- DOL ON Red Indicator (22mm)
- **Multi-function Bi-directional Power Measurement:**
- Digital Bi-directional Multi-function meter (96X96mm).
- 3 Phase 3/4 wire, Voltage line to line & line to neutral.
- Measurement of 415V, 3 ph. & 230V, 1 ph. parameters.
- Measures V, I, Hz, PF, KW, KVA, KVA<sub>r</sub>, Energy in KWh.
- LCD/LED display, Reverse Power Indication.
- Aux. Supply 230VAC, 45-65Hz, 5W



- **ON OFF ON, FWD/REV:**
- Three Ph. ON-OFF-ON with FWD/REV, 3 pole 3-way switch with Centre OFF, 6A/440V.
- Power ON Red Indicator (22 mm)
- **Three Phase Lamp (R) Load:**
- Lamp Load, 3kW, 415V / 230V, 50Hz.
- ON-OFF switches, 3 steps per phases.
- Fan cooled, castor wheels, MS power coted.
- Terminal Tag: 2mm
- Patch cords.
- Operating manual.
- Colorful circuit diagram on front facia.
- Unit working power supply: 415V, 50Hz.
- Power ON-OFF switch with RYB indicator.
- MCB protection.

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- ❖ **Determiration of hysteresis loop of an iron ring specimen using DSO/CRO.**
- The kit should be with following specs: -
  - DC Power supply: 0 to 15V DC variable
  - Voltmeter Standard: 0 to 20V DC
  - Ammeter Standard: 0 to 1A DC
  - Different types Resistive Load.
  - Terminal Tag: 2mm
  - patch cords.
  - Operating manual.
  - Colorful circuit diagram on front facia.
  - Unit working power supply: 230V, 50Hz.
  - Power ON-OFF switch with red indicator.
  - Fuse protection.
  - Sturdy powder coated MS/wooden box with bottom leg support.