



**Central Purchase unit**  
**National Institute of Technology Srinagar (J&K) -190006**

Email: [cpu@nitsri.ac.in](mailto:cpu@nitsri.ac.in)

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**Document for Tender No. 32 Dated 26.11.2018**

**"Tender Notice for Invitation of bids for supply of Various equipments for  
Different Labs of Electrical Engg.Department"**

**-0-0-0-**

1. Sealed Bids are invited for supply of setting up of various equipment having detailed Specifications as given in Annexure –I, in a 2- bid format on the terms & conditions and as per the instructions given below from para-2, from interested eligible bidders:
- 2. Techno-Commercial Bid, Containing the following documents in Envelope- A:-**
  - (a) Proof of being Original equipment manufacturer or Distributor/Marketing agent/ Authorized dealer in the shape of copy of agreement and registration under law in force.
  - (b) *The OEM (Original Equipment Manufacturer) of offered product should be ISO 9001:2015 and ISO 14001:2015 certified or certified by any other national or international regulatory body. The products quoted must also be certified.*
  - (c) PAN card & Tax registration document of the firm.
  - (d) ITR's of previous 3-years.
  - (e) *Proof of annual turnover of the firm for last three years in such trade, which shall not be less than Rs.50.00 lacs., with at-least one such contract worth not less than Rs. 20.00 lacs or two such contracts worth Rs. 30.00 Lacs to reputed Institutes/ organizations/ Departments during last three years.*
  - (f) Proof of availability of after-sale support & service centre at Srinagar.
  - (g) Bid security for Rs. 1.50 lacs in the form of CDR/BD/DD/TDR/FDR pledged to Officer In-charge, Central Purchase Unit NIT Srinagar (J&K) and tender document fee Rs.1,000/- in the form of DD, favoring of Director, NIT Srinagar. Tender without bid security /document fee shall be rejected.
  - (h) Bid form in the format given in Annexure-II duly filled.
  - (i) List of organizations/ Institutions where such equipment has been supplied & installed successfully during last 3-years.
- 3. Price Bid Containing the following in Envelope-B:-**
  - (a) Prices offered and quoted both in words & figures. Prices must be offered /quoted in the format enclosed as Annexure-III in INR only. The rates quoted should be covered with transparent tape.
  - (b) The rate quoted should be FOR NIT Srinagar (J&K).
  - (c) Bid price should be without over writing. However minor over writing should be clearly signed by the bidder. In case of any discrepancy between price quoted in figures and words, the price quoted in words will prevail. Bid price should be firm for the bid validity period.
  - (d) All duties, taxes and levies ( GST or other charges) payable, must be quoted separately. GST as applicable to Educational & Research Institutes shall be charged. Any document required for this purpose from us must be mentioned in the offer which shall be provided along-with the Supply order.

(e) As per SRO 129 of Government of Jammu & Kashmir, the institute is Exempted from State entry tax. The Institute will provide Entry tax exemption certificate to successful bidder with supply order. The

**4. Validity of Bids**

Bids shall remain valid at least for 120 days from the date of opening of the bids.

**5. Evaluation of Bids.**

(a) The purchaser shall first evaluate and compare the technical bids as per following criteria to determine the techno-commercially qualified bidders:

- (i) Properly filled and signed as per given formats
- (ii) Conform to terms and conditions and technical specifications.
- (iii) Are accompanied with Bid security and all other documents

(b) *In the 2<sup>nd</sup> step, the financial bids of only those bidders who qualify from the above process will be evaluated to determine the final successful bidder.*

*If required samples can be asked from the technically and commercially qualified bidders for approval by an expert committee framed by NIT Srinagar authorities. The samples shall have to be delivered at the Institute premises by the bidders within 10 days of the date of intimation by NIT Srinagar through email in this regard. Those failing to submit samples will not considered for financial evaluation.*

**6. Award of contract**

(a) Contract shall be awarded to the bidder whose bid is commercially-technically qualified and is offered at lowest reasonable evaluated price.

(b) Successful bidder shall be notified about the award of the contract through a supply order where- in terms and conditions of supply shall be incorporated.

**7. Payment & Performance Guarantee:**

100% (90% + 10%) payment shall be made after successful receipt of goods in good condition and accepted as per prescribed specifications by the nominated committee and after successful installation & commissioning. 10% will however be retained as security deposit against performance guarantee for the warranty period.

**8. Warranty and after sale service:**

(a) All items shall carry comprehensive standard warranty of 02 years from the date of installation & commissioning as well as service support after expiry of warranty.

**9. Settlement of disputes.**

Settlement of disputes if any shall be subject to the jurisdiction of Srinagar Courts only.

**11. Liquidated Damages.**

If the bidder after accepting the purchase order of goods/equipments or services, fails to deliver any or all of the goods/equipments or to perform the services with-in the specified period, a penalty of 0.50%(half percent) of the price value of the item per week or part-thereof shall be imposed. The maximum penalty shall be limited to 10% of the cost. Once maximum is reached, NIT Srinagar shall proceed on its own to consider the termination of the supply order, on the risk & responsibility of the defaulting bidder.

**12. Submission of Bids.**

(a) ***The last date for submission of bids is 19-12-2018 up-to 4.00PM.***

(b) Bids should be properly sealed.

(c) The two envelopes A & B should be separately sealed and superscripted as Techno-Commercial Bid & Price Bid. On Each envelope the due date of submission, Name of equipment/item/department; tender number and name of bidder should also be written .

These two sealed envelopes should be sealed in a bigger Envelop with the address of the Tender receiving Officer; Tender Number; due date of submission, Name of equipment/item/department and name of bidder.

(d) Bids should be addressed to Officer In-charge, Central Purchase Unit NIT Srinagar (J&K)

(e) Bids not from Srinagar shall be dispatched sufficiently well in advance so as to reach the destination as per scheduled time & date. NIT Srinagar shall not be responsible for any delay caused by Post or Courier agency.

**13. Bid opening.**

(a) The Technical Bid (Envelope- A) will be opened first on 20.12.2018 at 2.30 pm in the office room of the undersigned in the administrative block of the Institute.

Price Bid (Envelope-B) of the qualified bidders as detailed above will be opened subsequently. Interested bidders can attend the Bid opening.

**14.** Notwithstanding above, the purchaser reserves the right to reject any or all the bids received in response to this N.I.T. or withdraw it without assigning any reasons thereof.

**15.** For any future information or corrigendum or addendum regarding this tender, please be in touch with our website: [www.nitsri.ac.in](http://www.nitsri.ac.in).

**16.** any clarification may sought on the following emails:

- HOD Electrical Engineering Department: bhatdee@nitsri.net
- Central purchase Unit: cpu@nitsri.ac.in

Officer In-charge  
Central Purchase unit, NIT Srinagar  
Email: cpu@nitsri.ac.in

N.B.

1. Before preparing your valuable bid kindly go through the document fully and take care of all the requirements.
2. Bidders from outside Srinagar may please send their Bids well in advance so that these are received in time.

**No. NIT/CPU/18/ 4471**

**Dated 26.11/2018**

**Annexure-I**  
**“Name & Specifications of equipments for  
different Labs of Electrical Engg. Department”**

**1. Control Systems Lab:**

<b>S.No</b>	<b>Name of item</b>	<b>Specifications</b>	<b>Quantity</b>
1	Temperature Control System	<ul style="list-style-type: none"> <li>• Temperature controller with facilities for P, I, D and relay control blocks</li> <li>• Operating temperature: Ambient to 90°C</li> <li>• Separate controls for P, I, D channel gains</li> <li>• Two settings for relay hysteresis</li> <li>• Fast 25W oven fitted with IC temperature sensor</li> <li>• Digital display of set and measured</li> <li>• Temperature on a 3½ digit built-in DVM</li> <li>• Buffered output for recorder</li> <li>• IC regulation in controller circuit power supplies</li> <li>• Supporting literature and patch cords included</li> <li>• 220V±10%, 50Hz mains operation</li> <li>• Supporting literature and patch cords included</li> <li>• 220V±10%, 50Hz mains operation</li> </ul>	02 Nos

2	DC Position Control System	<ul style="list-style-type: none"> <li>• Position control of a 12V, 1A d.c. gear motor (50 rpm)</li> <li>• Provision for positive and negative tachogenerator feedback</li> <li>• Tacho constant: 2V/1000 rpm approximately.</li> <li>• Calibrated dials for reference and output position: resolution 1°</li> <li>• uP based waveform capture card</li> <li>• Literature and patch cords included</li> <li>• Built-in 3½ digit DVM for signal measurements</li> <li>• Built-in step signal and IC regulated power supplies for electronic circuits</li> <li>• Servo-potentiometers with full 360° rotation</li> <li>• Separate unit for motor in a see-through cabinet</li> <li>• Literature and patch cords included</li> <li>• 220V±10%, 50Hz mains operation</li> </ul>	02
3	DC Speed Control System	<ul style="list-style-type: none"> <li>• Speed control of a 12V, 4W permanent magnet d.c. motor</li> <li>• Speed range: 0 to 3000 rpm (typical)</li> <li>• Opto-interrupter based speed sensing</li> <li>• 4-digit speed display in rpm</li> <li>• Electronic tachogenerator for feedback</li> <li>• Separate unit for motor in a see-through cabinet</li> <li>• Smooth, non-contact eddy current brake for loading</li> <li>• Built-in 3½ digit DVM for signal measurements</li> <li>• Built-in IC regulated internal power supply</li> <li>• Supporting literature and patch cords included</li> <li>• 220V±10%, 50Hz mains operation</li> </ul>	02
4	PID Controller	<ul style="list-style-type: none"> <li>• Simulated blocks – dead time (transportation lag), integrator, time constants, error detector and gain</li> <li>• PID Controller (configurable as P, PI, PD or PID) Prop. Band : 5% to 50% (Gain 2-20) Integral time : 10msec-100msec Derivative time : 2-20msec</li> <li>• Built-in 3½ digit DVM for d.c. measurements</li> <li>• Built-in signal sources</li> <li>• Set value : -1V to +1V</li> <li>• Square wave : 1V p-p (min.) at 40Hz</li> <li>• Triangular wave : 1V p-p (min.) at 40Hz</li> <li>• Built-in IC regulated power supply</li> <li>• Detailed literature and patch chords included</li> <li>• 220V±10%, 50Hz mains operation</li> </ul>	02

5	Linear System Simulator	<ul style="list-style-type: none"> <li>• Simulated first, second and third order system of type-0 and type-1</li> <li>• Calibrated variable gain amplifier (Resolution 1:1000)</li> <li>• Built-in signal sources: <ul style="list-style-type: none"> <li>• Square wave and Triangular</li> <li>• Frequency: 45-90Hz</li> <li>• Amplitude: 0-2.5V approximately</li> </ul> </li> <li>• Trigger output for perfectly steady display on CRO</li> <li>• Uncommitted amplifier for phase adjustment</li> <li>• Provision for disturbance inputs</li> <li>• Detailed literature and patch chords included</li> <li>• 220V±10%, 50Hz mains operation</li> </ul>	02
6	AC Servomotor Study	<ul style="list-style-type: none"> <li>• 2-phase AC servomotor - 12V/ 50Hz per phase</li> <li>• Small generator for loading</li> <li>• 4-digit speed display</li> <li>• 3-digit time constant display</li> <li>• 3½ digit RMS voltmeter</li> <li>• 3½ digit DC panel meter</li> <li>• Voltage regulated internal supplies</li> <li>• Detailed literature and patch cords included</li> <li>• 220V±10%, 50Hz mains operation</li> </ul>	02
7	Compensation Design	<ul style="list-style-type: none"> <li>• Simulated 'uncompensated' system having adjustable damping. Peak percent overshoot <math>M_p</math>, variable from 20% to 50%, and steady P state error variables from 50% to 0.5%</li> <li>• Compensation network implementation through built-in variable gain amplifier.</li> <li>• Gain is adjustable from 1 to 11</li> <li>• Built-in square and sine wave generators for transient and frequency response studies.</li> <li>• Frequency adjustable from 25Hz – 800Hz (approx.)</li> <li>• Literature and patch cords included</li> <li>• 220V±10%, 50Hz mains operation</li> </ul>	02

8	Study of Temperature Transducers	<p>Temperature-output voltage characteristics of the following transducers in the temperature range of room temperature to 150° C and determination of their parameters</p> <ul style="list-style-type: none"> <li>• Chromel - Alumel thermocouple</li> <li>• Copper - Constantan thermocouple</li> <li>• Thermistors</li> <li>• Positive Temperature Coefficient</li> <li>• Negative Temperature Coefficient</li> <li>• Semiconductor sensor (type AD590), upto 90°C only</li> </ul> <p><u>Specifications:</u> Temperature controlled oven upto 150°C with digital temperature display</p> <ul style="list-style-type: none"> <li>• Digital voltmeter on the panel for sensor output measurement</li> <li>• Built-in interfacing circuit and switched gain instrumentation amplifier</li> <li>• IC regulated power supplies and detailed manual</li> <li>• Literature and patch cords included</li> <li>• 220V±10%, 50Hz mains operation</li> </ul>	02
10	Banana to BNC Connecting Lead	120 cm, standard durable connecting lead for digital storage oscilloscopes	10

## 2. Power Systems Lab

S. No.	Description of Items/ Specification	Quantity
1	Inductor with tapings of (1,5,10,15,20,30) MH	04
2	Digital Meters:- <ul style="list-style-type: none"> <li>• Voltmeter</li> <li>• Ammeters</li> <li>• Watt Meters</li> </ul>	05 05 05
3	Loads (Resistive, Inductive) 3 phase loads	01+01
4	Voltage Sensor, LV 25	04
5	Current Sensor, LV 50	08
6	Autotransformer (Variable 3 Phase): 25-35, 415V	01
7	Microcontroller DSP-F28335	01
8	Current Probe	02
9	Voltage Probe	02

### 3. Measurement Lab

<b>S. No</b>	<b>Description of Items</b>	<b>Specifications</b>	<b>Quantity</b>
1	SINGLE PHASE WATTMETER	15-30 A, 300-600 V, 4500 * 4 WATTS, Accuracy= $\pm 0.5\%$ of FSD	06
2	THREE PHASE WATTMETER	3P-2EW, 10-20 A, 250-500 V, 5000*4 WATTS Accuracy= $\pm 0.5\%$ of FSD	04
3	THREE PHASE WATTMETER	3P-3EW, 5-10 A, 440 V, 4000*4 WATTS Accuracy= $\pm 0.5\%$ of FSD	03
4	ENERGY METER	10-40 A, 400 V, 50HZ	02
5	STOPWATCH		05
6	ANDERSON BRIDGE		03
7	MAXWELL'S L/C BRIDGE		03
8	WHEATSTONE BRIDGE (generic American)		03
9	SINGLE PHASE AND THREE PHASE VARIABLE R-LOAD	230V, 10A, step variation=0.5A	03
10	SINGLE PHASE AND THREE PHASE VARIABLE L-LOAD	230V, 10A, step variation=0.5A	03
11	SINGLE PHASE AND THREE PHASE VARIABLE C-LOAD	230V, 10A, step variation=0.5A	03
12	TRANSMISSION LINE KIT	LONG TRANSMISSION LINE KIT	02
13	SINGLE PHASE AND THREE PHASE POWER FACTOR METER	5/10A, 110/440V Accuracy $\pm 0.5\%$ of FSD Range=0.5(lag)-1-0.5(lead)	02
14	VERNIER POTENTIOMETER		03
15	AC AMMETER	3 <sup>1/2</sup> Digit, 4 DIGIT, 7 SEGMENT DISPLAY 0-5 A/10 A ACCURACY= $\pm 0.5\%$ OF FSD	05
16	AC VOLTMETER	4 <sup>1/2</sup> Digits, 4 digits, 7 segment display Accuracy: $\pm 0.5\%$ of FSD	05
17	Pressure Measurement Tutor	Range 0 to 10 kg/cm Display 3-1/2 digit LED Resolution 0.1 kg/cm Excitation 5 Volts DC Power source 230V +/-10%, 50 Hz.	01
18	Displacement Measurement Tutor	Range: Upto 2500 RPM Display 3-1/2 digit LED Resolution 1 RPM Power source 230V +/-10%, 50 Hz.	<b>01</b>



#### 4. Power Electronics Lab

<b>S. No</b>	<b>Item Description</b>	<b>Quantity</b>
1.	AC Filter Inductor, 3 mH, 100 Hz, 20 A	03
2.	AC Filter Capacitor, 500 V, 20 $\mu$ F	06
3.	Motor Generator Set, Three-Phase Squirrel Cage Induction Motor Coupled with DC Shunt Generator, Induction motor ratings: 230 V, 4 Pole, 3HP (2.2 kW), DC Shunt Generator: 220 V, 1500 RPM, 3 HP	01
4.	Differential Voltage Probe, $V_{max} > 1400V$ , $BW > 30MHz$ , Attenuations (1/100 and 1/1000), $CMRR @ 1MHz$ should be $> 50 dB$	01
5.	Three phase Variable Inductor Bank, 30 A, 50 Hz	01

#### 5. Electric Machines Laboratory

<b>S. No.</b>	<b>Item Description</b>	<b>Specifications</b>	<b>Quantity</b>
1	Digital Voltmeter	DC, 0-800 V, 4.5-digit display, Absolute accuracy less than 1 % of reading, Settling time less than 0.5 s, Input impedance greater 1 M $\Omega$ , Laboratory equipment having a rugged enclosure with connecting terminals	20
2	Digital Voltmeter	AC, 0-600 V, 4.5-digit display, Absolute accuracy less than 1 % of reading, Settling time less than 0.5 s, Input impedance greater 1 M $\Omega$ , Laboratory equipment having a rugged enclosure with connecting terminals	20
3	Digital Ammeter	DC, 0-50 A, 3.5-digit display, Absolute accuracy less than 1 % of reading, Settling time less than 0.5 s, Input impedance less than 1 m $\Omega$ , Laboratory equipment having a rugged enclosure with connecting terminal	20
4	Digital Ammeter	AC, 0-50 A, 3.5- digit display, Absolute accuracy less than 1 % of reading, Settling time less than 0.5 s, Input impedance less than 1 m $\Omega$ , Laboratory equipment having a rugged enclosure with connecting terminals	20
5	Digital Wattmeter and Power Factor Meter	Single Phase, 40-60 Hz, 600 V, 10 A, Range: 0- 2000 W and 0.1-1.0 power factor lag/lead, 4.5-digit display, Absolute accuracy less than 2 % of reading, Settling time less than 0.5 s, Burden less than 4 VA, Laboratory	05

		equipment having a rugged enclosure with connecting terminals	
6	Digital Wattmeter and Power Factor Meter	Three Phase, 40-60 Hz, 600 V, 20 A, Range: 0- 20 kW and 0.1-1.0 power factor lag/lead, 4.5-digit display, Absolute accuracy less than 2 % of reading, Settling time less than 0.5 s, Burden less than 12 VA, Laboratory equipment having a rugged enclosure with connecting terminals	02
7	Digital Tachometer	Contact type, hand held, 0-9999 RPM, 4-digit display, memory based, Sampling time 0.2 s, Accuracy less than 1 % of reading, Resolution 1 RPM, Battery powered	05
8	Digital Stroboscopic Light for RPM measurement	Hand-held, 0-9999 RPM, Accuracy less than 1% of reading, Resolution 1 RPM	01
9	Tubular Rheostat	Continuous duty 2 A, 250 $\Omega$	10
10	Tubular Rheostat	Continuous duty 5 A, 50 $\Omega$	10
11	Tubular Rheostat	Continuous duty 10 A, 20 $\Omega$	05
12	Tubular Rheostat	Continuous duty 20 A, 5 $\Omega$	05
13	Continuously-Variable Autotransformer (VARIAC)	Single-phase, 50 Hz, 0-270 V, 5 A	03
14	Continuously-Variable Autotransformer (VARIAC)	Single-phase, 50 Hz, 0-270 V, 15 A	03
15	Single Phase Resistive Load	Portable, Linear characteristic, 240 V, 10 A, Step variation 0.5 A	03
16	Regulated DC Power Supply	Variable voltage and current settings, 0-30 V, 0- 30 A	01
17	Digital Clamp Meter	Fluke 325	
18	Digital Bench Multimeter	Fluke 8808a	01

## 6. Basic Electrical Engineering Laboratory

<b>S. No</b>	<b>Item Description</b>	<b>Specifications</b>	<b>Quantity</b>
<b>1</b>	Electrodyanometer Wattmer	1. a) 1 phase: Current range 2.5/5A (Low Pf) 150/300/600V	02
		b) 1Phase: Current range 5/10 A (High pf) 150/30/600V.	02
<b>2</b>	Rheostats	1. 0 to 10 ohms, 10A	05
		2. 0 to 25 ohms, 5A	05
		3. 0 to 45 ohms, 2A	05
		4. 0 to 100 ohms, 5A	05
<b>3</b>	Inductive load	Single Phase, 230 V, 30 A	01
<b>4</b>	Resistive loads	Single Phase, 230 V, 30 A	02
<b>5</b>	Capacitive loads	Single Phase, 230 V, 30 A	01
<b>6</b>	RLC Load bank	Single Phase, 230 V, 30 A	01
<b>7</b>	Analog Ammeter	Current Rating 0 – 10 A	10
<b>8</b>	Alligator connectors	Standard Quality with proper insulation	30

**Annexure-II**  
**BID FORM**  
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To,  
Officer In-charge,  
Central Purchase unit,  
NIT Srinagar.

Ref: Tender No. \_\_\_\_\_ issued under No.: NITS/CPU/ 2018/.....  
Dated..... for-----  
For .....Department

Sir,

With reference to above invitation for bids, we would like to say that we have gone through your bid document thoroughly and hence offer our competitive Technical/Price Bid in sealed envelope for the supply of various goods/equipment listed in your document.

The following documents constitute our Bid:

- |   |         |
|---|---------|
| • Technical specification/ literature attached:-                        | Yes/No  |
| • Valid tax clearance certificate attached:-                            | Yes/ No |
| • OEM/ Authorized Dealership / certificate attached                     | Yes/ No |
| • Revenue stamp affixed.  | Yes/ No |
| • Rates covered with transparent tape:-                                 | Yes/ No |
| • Bid document fee deposited:-  | Yes/ No |
| • Call Deposit Receipt enclosed:-                                       | Yes/ No |
| • Bid price in Indian Rupees:-  | Yes/ No |
| • FOR Srinagar:-  | Yes/No  |
| • Bid without correction/overwriting:-                                  | Yes/ No |
| • Price Bid schedule in the requisite format                            |         |
| • List of organization where this equipment has been supplied/Installed |         |

Kindly feel free for any enquiries and clarifications.

Yours Sincerely

From M/S.....

Place:

Telephone No.....Email:

Date.....

**Annexure-III**  
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**Price Schedule**  
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<b>S. No</b>	<b>Name of equipment/ Goods /item</b>	<b>Basic cost</b>	<b>GST</b>	<b>Any other tax</b>	<b>Total unit price</b>	<b>Quantity</b>	<b>Total Price</b>
1							
2							
3							
4							
5							

