



ਆਈ. ਕੇ. ਗੁਜਰਾਲ ਪੰਜਾਬ ਟੈਕਨੀਕਲ ਯੂਨੀਵਰਸਿਟੀ ਜਲੰਧਰ, ਕਪੂਰਥਲਾ  
I. K. GUJRAL PUNJAB TECHNICAL UNIVERSITY JALANDHAR, KAPURTHALA  
DEPARTMENT OF PHYSICAL SCIENCES

Ref. No. IKGPTU/PS/3046

For WebSite  
By Registered /Speed Post

Dated 19-06-2019

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**Subject: Quotation for Semiconductor Lab equipment/setup at IKGPTU, Main Campus**

Dear Sir/Madam,

University intends to purchase the equipment/setup for the Semiconductor Lab for B.Tech. First year (CSE and ECE) in Department of Physical Sciences by inviting sealed quotations. The supply order will be placed to the firm offering the lowest rates equipment/setup wise. Therefore, you are requested to send the sealed quotation of the equipment/setup by quoting lowest rates (inclusive of all taxes, govt levied duties, etc.) through registered/speed post or by hand. Please subscribe on envelop "Quotation for procurement of setups for Semiconductor Lab in Department of Physical Sciences" and to be opened by committee only. Quotation must reach in the office of Head of Department, Department of Physical Sciences, CB-III, I.K. Gujral Punjab Technical University, Jalandhar - Kapurthala Highway, VPO-Ibban, Kapurthala-144603, upto 3 P.M. on July 12, 2019. Quotation will be opened in the office of Head of Department, Department of Physical Sciences at 4.00 P.M. on the same day. The vendors or their representatives may be present at the time of opening of the quotations. If Government of Punjab/IKGPTU declares holiday on July 12, 2019, quotations will be opened on the next working day. Specification of the items are as per attached Annexure-1.

**Terms and Conditions:**

1. Bidder is at liberty to quote rates of one or more setup(s)/item(s)/make(s) etc. There is no compulsion to quote the rates of all setup(s)/item(s)/make(s), etc.
2. The firm having GST number need only apply.
3. Any quotations other than the specifications mentioned will not be considered.
4. Bidder should quote the rates inclusive of two years comprehensive warranty.
5. University reserves the right to buy/not to buy/increase/decrease any of the setup(s) quantity.
6. The items are to be delivered at Department of Physical Sciences, CB-III, I.K. Gujral Punjab Technical University, Jalandhar - Kapurthala Highway, VPO - Ibban, Kapurthala, within 28 days of issuance of the supply order.
7. No advance payment will be made.
8. University will not be paying anything extra as the quotations invited are inclusive of all taxes/Govt. levied duties/transportation charges etc.
9. The payment will be released only after the receipt of satisfactory report from the Department of Physical Sciences in terms of successful installation and demonstration of supplied equipment from the vendors.

  
HEAD

Department of Physical Sciences

Mail id: [physicalsciences@ptu.ac.in](mailto:physicalsciences@ptu.ac.in)

*"Propelling Punjab to a Prosperous Knowledge Society"*

**I. K. Gujral Punjab Technical University**

Jalandhar-Kapurthala Highway, Kapurthala-144 603 Mob.: +91 94658 84849, 98729 98760

Email : [dमित.sarin@yahoo.com](mailto:dमित.sarin@yahoo.com), [amitsarin@ptu.ac.in](mailto:amitsarin@ptu.ac.in) Website : [www.ptu.ac.in](http://www.ptu.ac.in)

Following are the specification of the equipment required for the Semiconductor Lab in the Department of Physical Sciences.

S.No.	Name of setup	Technical Specifications	Qty
1.	Setup to study the characteristic of Ge-Si junction diode	Mains power : 230V, AC $\pm 10\%$ DC power supply : +12V Ammeter Range : 1 $\mu$ A to 200mA Voltmeter Range : 1mV to 200V Semiconductor diode- Ge-Si, with Display	2
2.	Setup to analyze the suitability of a given Zener diode as a power regulator	Mains Supply : 230V $\pm 10\%$ , 50Hz Transformer : 0 – 9V, 500mA (approximate) Filter : Capacitive 1000mF, 35V Zener Diode : V = 5.6V, I = 178mA Potentiometer, P1: 4.7k ohms Potentiometer, P2: 4.7k ohms	2
3.	Setup to find out the intensity response of a solar cell	Solar Panel : Consists of 6 solar cells Maximum Voltage of each solar cell: 1.5V Maximum Current of each solar cell: 150mA Voltmeter : 0-10V Ammeter : 0-500mA Potentiometer : 5K ohms 2 AA Rechargeable NiCd Battery: 1.2V Bulb : 1.2V, 270mA Fan: 1.5V, 400mA	2
4.	Setup to find out the intensity response of a LED.	Power supply : 230V $\pm 10\%$ , 50 Hz Transmitter Wavelength (nm): 565 nm (For Green light) LED Rotation : 0 -360 degree with resolution of 1 degree Transmitter circuitry : LED Wavelength (nm) : 700 nm (For Red light) Wavelength (nm) : 430 nm (For Blue light) Receiver Wavelength (nm): 940 nm Receiver circuitry: Silicon phototransistor & Zero adjustment circuit	2
5.	Setup to determine the energy band gap of a Ge- semiconductor.	Mains : 230V $\pm 10\%$ , 50 Hz DC Power Supply +15V, 2.5A +5V, 0.5 A Diode: P-N junction Germanium Type Switch 1 Pole, 2 Ways Toggle Type DPM Type: LCD Display Oven Height: 77 mm Width : 74 mm Coil : Nichrome Wire Thermometer : Graduated scale up to 100°C Fuse: 0.5A	2
6.	Setup to determine the energy band gap of a Si- semiconductor.	Mains : 230V $\pm 10\%$ , 50 Hz DC Power Supply +15V, 2.5A +5V, 0.5 A Diode: P-N junction Silicon Type	2



		Switch 1 Pole, 2 Ways Toggle Type DPM Type: LCD Display Oven Height: 77 mm Width : 74 mm Coil : Nichrome Wire Thermometer : Graduated scale up to 100°C Fuse: 0.5A	
7.	Setup to determine the resistivity of a semiconductor by four probe method.	Four Probes Contacts: Spring loaded Space between Probes : 2 mm $\pm$ 2% Probes : Collinear Sample Material : Germanium Crystal Type : P type Oven: Maximum Temperature: 200°C Heater Resistance : 37V Heater Voltage : 45 V (approx.) Measurement Unit LCD Display Range: 0-2 V Constant Current Generator: Current Range: 0 to 20 mA Resolution : 1 mA Open Circuit Voltage: 18 V Oven Power Supply Input: 230 V AC $\pm$ 10%, 50 Hz	2
8.	Setup to study voltage regulation and ripple factor for a half-wave and a full-wave rectifier without and with different filters.	Mains Supply : 230V $\pm$ 10%, 50Hz Transformer Rating : 9V center tapped (300mA) Half wave Rectifier output : +4V DC approximate Center-Trapped Rectifier: +8V DC approximate Bridge Rectifier Output : +8V DC approximate Filter : LC Type Load: Resistive 220W, 0.5W	2

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