



Ref. CBPBU/REG/QN/435-16

Date: 16.11.2016

QUOTATION NOTICE

(for Department of Physics)

Urgent Sealed Tender is hereby invited from Scientific/Electronics Instruments Suppliers by the Registrar (Actg.) on behalf of Cooch Behar Panchanan Barma University, Cooch Behar. The List of articles are given below. The suppliers have to submit up to date I.Tax, P.Tax, VAT Clearance Certificate along with sealed Tender. The rate should be quoted both figures and words. The last date of submission of Tender is on **30.11.2016** up to **3:30 p.m.** the same will be opened at **4:00 p.m.** The intending person /company who wants to submit tender may be present at the time of opening of the Tender.

The undersigned has reserved the right to accept or reject any or all the Tenders without assigning any reasons.

Sl. No.	Name of the Experiments	No. of Qty.
1	To study the variation of output voltage with frequency and load resistance for a given class-B Push Pull amplifier and to obtain the variation of output power with frequency and load resistance.	1
2	<u>Trainer kit for designing of Clipping & Clamping Circuit</u> using Diode with Model circuit diagram printed on board with necessary terminals and Diodes Resistances and switches. A bread Board will also be provided on the board to construct the circuit.	1
3	<u>To design an astablemultivibrator using BJT: & Op – Amp</u> Complete set consists of two Transistors, Resistors and Capacitors. One Model circuit diagram is provided on board with 5 Volt Power Supply and one ± 12 Volt Supply for using Op – Amp as astableMultivibrator. Complete unit encased in an elegant metal cabinet with printed circuit diagram and one Bread Board will be provided on board for designing and fabricating the circuit with external circuit components by the students.	1
4	<u>Uni-junction Transistor Characteristic Apparatus:</u> The Apparatus consists one two variable Power Supply to control the emitter – base voltage VBE & VBB in suitable range. Three Digital meters of $3\frac{1}{2}$ Digit 7 segment LED display two suitable range of volt meter for measuring VBE & VBB are provided on the panel and one current meter of suitable range for measuring collector current in mA order. An UJT is fitted on the panel with necessary terminals and potentiometer. One Bread board will be provided on the panel of the experiment kit to design with spare of UNT using arbitrary Function Generator for observing Peak Voltage and Valley Voltage with the help of CRO.	1
5	<u>Trainer kit for Emitter follower:</u> C – C mode Emitter follower with printed circuit diagram and necessary terminals and components with one CL – 100 Transistor fitted on board. One + 12 Volt DC power supply with respect to ground will be provided on board with one variable Load resistance. A Bread Board will also be provided on board for external connection. Complete set without Oscillator & CRO.	1



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6	To construct using OPAMP, (i) Differentiator (ii) Integrator (iii) adder-subtractor circuits. To study their performance for different time varying inputs	1
7	To determine CMRR, input offset voltage, output offset voltage, input bias current and slew rate of an OP- AMP.	1
8	To study OP-AMP as voltage comparator. Plot a curve in input and output voltages and show how the output switches from positive to negative value	1
9	To design and construct a Wein-Bridge oscillator using OPAMP and to study its output waveform and frequency for various RC values	1
10	To study OP-AMP as a function generator, i.e. as (a). square wave generator (b). triangular wave generator	1
11.	To construct Half-Adder and Full-Adder circuits using logic gates and to perform some simple 2's complement Adder-Subtractor operations (Two decimal digits). Complete set consists of +5V Power supply with eight Input and eight output Logic signals and clock Pulse Oscillator and eight bouncer and de-bouncer switches. A bread board is fitted on the centre of the trainer kit with basic logic gates.	1
12	a) To construct X-OR gate using NAND gates and to verify truth table. (b) To convert two input NAND gate to two input OR gate. (c) To construct NOR gate by using other gates and hence verify the truth table.	1
13	AC milivoltmeter ACM 102(SES)	1
14	***CRO : 30 MHz dual chanel , dual trace with component tester , LCD screen (scientific make , model- SM-410)	1
15	Function Generator 3Hz to 3MHz Microcontroller base Sine, Square & Triangular	1
16	Power supply (6 V , 2A)	1
17	Discrete components & connecting wires	1
18	Multimeter	2
19	Determination of ultrasonic velocity in liquids using an ultrasonic interferometer Optiregion / Triode Make : The coated interferometer consists of : a) High Frequency Generator & Ultrasonic Oscillator Mains Voltage : 220 Volt, 50 Hz, Range : Single frequency, 2 MHz, accuracy 0.3%. Glow lamp / Pilot lamp 6.3V / 0.3A, Fuse 500 microA. b) Measuring cell containing precision micrometer on top side. Maximum displacement of the reflector 20 mm. Required quantity of liquid to be filled in the cell 1200 cc. Least count of micrometer 0.01 mm c) RF cable length of cable between Generator & Cell 50 cms. approx.	1
20	To calibrate the given condenser and to determine the values of unknown resistance and capacitance. : Make Optiregion.: a) Scientech Technologies Make 30 MHz Cathode Ray Oscilloscope, Model No. Scientech 801	1



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21	GEIGER COUNTING SYSTEM (Microcontroller based) (Research Model)GC 602A ESSENTIAL ACCESSORIES FOR G.M. SYSTEM: 1" wide end window GM detector (GM 125) Sliding Bench with detector holder and source holder for GM125 Detector (SB207) Radioactive Source Kit (One Gamma Source i.e.Cs-137 & One Beta Source i.e.Tl-204)(SK 21 0) ADDITIONAL ACCESSORIES TO CARRYOUT THE FOLLOWING EXPERIMENTS : Aluminum Absorber Set (For beta particle range & maximum energy determination Experiment) Aluminum absorber set AA270 Detector holder, absorber holder & lead block (For back scattering of Beta particles experiment) (Without detector) AS272	1
22	Electron Spin Resonance Spectrometer, Model ESR-105 Complete in all respect, except a CRO.	1
23	Resistivity of Semiconductors by Four Probe Method at Different Temperatures and Determination of the Band-gap, Model DFP-03 Complete in all respect	1
24	Determination of e/m ratio using a magnetron : SES Roorkee Make e/m Experiment Setup, Model No. EMX- 01. The experiment done by measurement of electron charge to mass ratio based upon Thomson's method. The e/m tube is bulb-like and contains a filament, a cathode, a grid, a pair of deflection plates and an anode	1
25	Study of x-ray diffraction of a simple salt by the powder method and determination of its structure : SES Roorkee Make X-Ray Diffraction Simulation Experiment, Model No. XDE-01, complete in all respect.	1

Sd/-
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Copy forwarded for information with the request to display the Notice in his office Notice Board for wide publicity to:-

1. The District Magistrate, Cooch Behar
2. The Sub-Divisional Officer, Cooch Behar
3. University Website.

Registrar (Actg.)