



Department of Physics
Indian Institute of Engineering Science & Technology, Shibpur
(Formerly Bengal Engineering & Science University, Shibpur)
P.O: Botanic Garden, Howrah – 711103, West Bengal, India
Website : <http://www.iiests.ac.in>

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Notice Inviting Quotation

Sealed quotations are invited for supply of the following items/equipment or to carry out works listed below as per mentioned specifications. The relevant bidding document can be downloaded from the website. The document can be also obtained from the Department of Physics (**Contact: Head, Department of Physics**) between 11.00 a.m. and 5.00 p.m. on all working days. The quotation should **include all kinds of taxes/duties and delivery, Installation charges etc** of the items and to be sent to the Office of the **Head, Department of Physics, IEST, Shibpur, Howrah-711103**. Last date of submission of sealed quotation is **7 working days from the date of publication** in the Website of the Institute and tenders will be opened on the next working day at 12 noon.



Item 1: Study of Thermoluminescence of F-centers in Alkali Halide Crystals
Quantity: 1

Technical specifications:

The experimental set-up for creating the thermo luminescence containing oven (up to 200°C) with power supply, Digital Thermometer and Black Box.

- (1) Sample: KBr or KCl single crystal
- (2) Thermoluminescence Temperature Meter,
 - Digital Thermometer
 - Oven Power Supply
- (3) Sample Holder
- (4) Thermo luminescence Oven (0-423K)
- (5) Black Box

FOR MEASUREMENT OF LUMINESCENCE INTENSITY :

- (6) Photomultiplier tube:
- (7) PMT Housing with biasing circuit and coaxial cables etc.
- (8) High Voltage Power Supply, Output : 0-1500V variable (1mA max.) Regulation : 0.05% Display: 3½ digit 7-segment LED
- (9) Nanoammeter, Model Range : 100nA to 100mA full scale in 4 ranges Accuracy : 0.2%. Display: 3½ digit 7-segment LED

Photomultiplier Tube

Specifications of Photomultiplier tube :

Spectral Response	
• Range	300 to 650(nm)
• Peak wave length	400nm
Photo Cathode	Material Sb-Cs
Dynode Structure/No. of Stages	CC/9
Maximum Cathode Voltage	1250Vdc
Maximum Average Anode Current	0.1mA
Cathode Sensitivity	
• Minimum	20µA/lm
• Typical	40µA/lm
Anode Sensitivity	
• Minimum	50A/lm
• Typical	400A/lm
Anode to Cathode Supply Voltage	1000Vdc
Current Amplification	1.0x10 ⁷

Anode Dark Current (after 30min)

- Typical 10nA
- Maximum 50nA



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Item 2: Thermoluminescence Irradiation Unit

Quantity: 1

Technical specifications:

Irradiation units suitable for irradiating alkali halide samples for thermoluminescence experiment:

Complete in all respect including vacuum pump and High Voltage electric field generator.

Specifications :

Pressure	: 15 micron
Extra High Voltage	: 30KV pulsating
Sample Size	: 6mmx6mmx1mm
Input Voltage	: 20V AC, 50Hz

Item 3: Polarization Vs. Electric Field Loop Tracer with Temperature Variation(BH HYSTERESIS TESTER) (Marine India)

Quantity: 1

Technical specifications:

General Specifications

- Field :1KV
- Temperature : RT-200
- XY probes output for oscilloscope
- Overload protections - Current limit :2 mA
- Standard PZT sample
- Sample holder
- Silicon Oil 500 ml

Polarization Specification

- Minimum Charge sensitivity :100 N C
- Minimum PZT area : 1 sqmm
- Minimum Charge measurement : Bulk HV 20 u C
- External sensor input : 5 V bipolar



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Item 4: BH loop tracer with temperature variation (BH HYSTERESIS TESTER) Marine India
Quantity: 1

Technical specifications:

General Specifications

- Magnetic Field :2000 gauss
- Temperature : RT-200
- XY probes output for oscilloscope
- Overload protections
- Current limit 2 mA
- Standard Magnetic ferrite sample
- Sample holder
- Silicon Oil 500 ml

List of Deliverables

- BH Hysteresis Tester unit
- Sample holder
- Temperature stage
- Standard test sample (One ratio one transformer)
- Inter connecting cables and manual BH HYSTERESIS TESTER



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Item 5: Kerr Effect Experimental Setup

Quantity: 1

Technical specifications:

A. Kerr Cell

Specifications: Electrode Gap : 1mm , Voltage Limit : 5KV DC (Max.), Dimension : 50x50x20 mm

B. Halogen Light Source

Specifications: Halogen Bulb: 12V , 50W, Operational voltage : 12V,5A.

C. Polarizer / Analyzer :

Angle : Adjustable (0 -90⁰)

Aperture : 21 mm dia.

Frame : 130 mm dia.

D. High voltage power Supply :

Specifications :

Input voltage : 230 VAC , 50Hz

OutputVoltage : 0- 6 KV DC

: 6.3 V AC/2mp

Display Unit : 3 ½ digit LED

Current Limit : 50 uA &v 2mA (Max.)

E. Power Supply 12 V AC /DC

Specifications :

OutPut : 2,3,4,5,8,10,12VAC Full rectified waves and unregulated DC.

Overload : Resettable thermal trip.

F. Set of six filters

Specifications :

- Red : (625-635nm)
 - Orange :(575-585nm),
 - Yellow(Dark) : 545-555nm)
 - Yellow(Light) : 505-515nm)
 - Green :(515nm-525nm)
 - Blue :(465-475nm).
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Set up consists of the following items:

Item Name	number
Kerr Cell	1
Polarizer/Analyser	2
Halogen light source	1
Objective Screen	1
Prism table	1
High voltage power supply	1
Power supply	1
Optical bench triangular	1
Convex lens holder	1
Set of six filter	1
PinholePhoto Dectector	1
Transversal slider	1
Digital multimeter	1
Fixed optical Slider	1
Fixed Slider	4
Nitro benzene	500 ml

The above equipment will be used in a teaching laboratory, thus, self-explanatory teaching manuals containing details of experiments should be provided.

Item 6:Faraday Effect Experimental Set Up

Quantity: 1

Technical specifications:

A. High voltage power Supply :

Specifications :

Input voltage : 230 VAC , 50Hz

OutputVoltage : 0- 6 KV DC

: 6.3 V AC/2mp

Display Unit : 3 ½ digit LED

Current Limit : 50 uA &v 2mA (Max.)



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B. Power Supply 12 V AC /DC

Specifications :

OutPut : 2,3,4,5,8,10,12VAC Full rectified waves and unregulated DC.

Overload : Resettable thermal trip.

C. Power Supply 0-30 V, 10A

Specifications :

- Input Voltage : AC 220V
- Output Voltage :0-30 V
- Output Current : 0 -10A
- Voltage Display :3 ¹/₂ Digit LED
- Current Display :3 ¹/₂ Digit LED

D. Electromagnet Unit

Specifications :

- Coils : 300 turn
- Current : 10 A(Max.)
- Wire : 18 SWG, Cu.
- Connection : 4mm safety socket
- U Core : 150 x 130 mm (LxH)
40x40 mm cross section
- Pole piece : Length = 80 mm
- Material : Ferromagnetic .

E. Flint Glass

Specifications :

- Material : DEDF glass
- Dimension : 15x15x15mm

F. He- Ne Laser

Specifications :

- Wavelength : 632.8 nm
- Working Current : 4-6mA
- Output power :2mw
- Working Voltage :AC220V
- Input power :2W
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G. Digital Gauss Meter :

Specifications :

- Range : 200 Gauss & 2 KG
- Power : 220V , 50Hz
- Hall probe : InAs

Set up consists of the following items:

Name of the Items	Number
Flint Glass	02
Flint Glass holder	01
Electromagnet unit with slider	01
Polarizer/ Analyzer	02
Object Screen	01
Optical Bench (1m)	01
Fixed Saddle	04
Long width saddle	1
Power Supply (0-30V, 10A)	01
Digital Gaussmeter with probe	01
He-Ne Laser	01
Power cord	04
Hall probe holder	01
Cylindrical Base	01
Hall probe holder	01

The above equipment will be used in a teaching laboratory, thus, self-explanatory teaching manuals containing details of experiments should be provided.



Item 7: Thermal and Electrical Conductivity of Metals
Quantity: 1

Technical specifications:

Name of Items	No.of Items
Conductivity of Cu	01
Conductivity of Al	01
Calorimeter vessel with heater	01
Digital weighing Balance	01
Digital Thermometer	
Temperature sensor	
Power Supply 20 A	01
Micro Voltmeter	01
Heat conductive paste	01
Glass beaker 500ml	01
Data Logger	
Vernier calliper	01
Stop watch	01
Software	
Laboratory Jack	01

A. Conductivity Rod Cu/Al

Specifications :

- Rod dimension : $435 \times 25.4 \text{ mm}^2$
- Current connection : 4mm socket
- Temperature Point : 2 Nos
- Jacket Dimension : $350 \times 50 \text{ mm}^2$

B. Data Logger

Specifications :

- Computer connection : Micro USB
- Maximum sampling rate : 100,000 samples per second
- Input channel : 4
- Power : Micro USB



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-
- Memory : Upto 250k sample
 - Resolution sampling : 12 bits
 - External sensors : +65

C. Temperature Sensors :

Specifications

- Range : -40 to 140 °C
- Accuracy : 2 %
- Resolution : 0.003 °C
- Resolution time : 20 sec in liquid and 40 to 60 sec in air

D. Power Supply 0-30V, 20A

Specifications :

- Input Voltage : 220V, 50Hz
- Output Voltage : 0 to 30 V
- Output Current : 20A

E. Digital Weigh Balance

Specifications :

- Body : Plastic
- Capacity : 700g
- Least count : 0.1g

F. Lower Calorimeter Vessel

Specifications :

- Height : 170 mm
- Outer Dia : 160mm
- Inner Dia : 105 mm
- Inner Height : 111 mm
- Water Capacity : 1 Litre

G. Upper Calorimeter Vessel

Specifications :

- Height : 154 m
- Outer Dia : 140mm
- Inner Dia : 89 mm
- Inner Height : 108 mm
- Water Capacity : 750ml



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- Heater Power : 220W

H. Digital Micro Voltmeter

Specifications :

- Operating Voltage : 0- 220V,50Hz
 - Operating range : 0 -2V, 0 -20mv, 0- 200mv, 0- 2000mv
 - Accuracy : 0.01 mv
 - Least Count : 0.001mv
-
- The above equipment will be used in a teaching laboratory, thus, self-explanatory teaching manuals containing details of experiments should be provided.

Item 8: Digital Storage Oscilloscope

Quantity: 2

Technical specifications:

Bandwidth & Channel 200MHz - 2 channel

Sampling Rate - real time 1GS/s (max)

Waveform Update rate 50,000 waveforms per second

Record Length 14 Mega points Max

Display 7" TFT WVGA Color

Horizontal range 1nS/Divn. To 100S/divn.

Vertical range 500 μ V/divn. To 10V/divn.

(each channel should have independent volt/divn. control)

Features Add/Subtract/Multiply/Divide waveforms,

Autoset, FFT, FFTrms, Waveform Zoom & Play facility.

Accessories : 2 x 1:1/1:10 swichable probes, power cord, USB cable, Software.



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Item 9: Digital Function Generator

Quantity: 4

Technical specifications:

Frequency - 1 μ Hz to 30MHz

Output channels - 2 (Identical dual channel output)

Distortion - -60dBc

Amplitude - 1mV p-p to 10Vp-p (in 50 ohm),

2mV p-p to 20V p-p (in open circuit)

Resolution - 1uHz throughout the frequency range

Wave form - Sine, Square, Ramp, Pulse, Noise, Arbitrary, Harmonics, DC

AM/FM/PM/ASK/FSK/PWM/SUM/Sweep/Burst/Counter

Rise/Fall Time of - 4.2nS

Square Wave

Duty Cycle control - 0.001% to 99.999% (below 100KHz in Square wave)

Dual channel function - Phase (0 o to +360 o), Waveform Combining

Display - 4.3" TFT LCD having simultaneous display of Frequency,

Amplitude, Offset, Phase & Waveform representation

Arbitrary Function -

Sample rate - 125MS/s

Repetition rate - 30MHz

Vertical Resolution - 14 bit

Waveform length - 16K.pts.

Interface - USB Host/Device Interface for Remote control & Waveform

Editing

Accessory - USB cable, PC Waveform Editing Software.



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Item 10: Digital Power Supply

Quantity: 4

Technical specifications:

A. Features:

No. of Channel	:	4
Display	:	Four 4 digit LCD display for Voltage & Current
Input Power	:	230V. , 50Hz AC

B Specification:

Display resolution	:	10mV & 1mA
Range	:	2 x 0-32V/3A, 0-5V/1A, 0-15V/1A
Line & Load Regulation CV mode	:	0.01%
Line & Load Regulation CC mode	:	0.2%
Ripple & Noise	:	$\leq 1\text{mVrms}$, 5Hz to 1MHz
Protection	:	Overload, reverse polarity, short circuit
Special features	:	Output ON/OFF switch for protection of DUT Output voltage & Current setting in output OFF condition, Series & parallel operation,



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Terms & Conditions:

- a. Price should include Deliver and installation charges and taxes.
- b. Warranty for the Instrument at least of 12 months. .
- c. Delivery has to be done at the earliest after placing the order.
- d. Installation has to be done within one week of delivery.
- e. The bidder must furnish
 - i) Trade License Certificate
 - ii) GST Certificate
 - iii) IT return Certificate
 - iv) Copies of Installation and Warranty Certificates
 - v) Photo Copy of PAN
 - vi) Copies of All Kind of Govt. Taxes