

Sr. No.	Equipment Procured by the department of Physics under the DBT-Star College Scheme (BT/HRD/11/019/2020)	No of Copies
1	Setup for measurement of capacitance, determination of permittivity of a medium and its relative permittivity by de-Sauty's bridge	3
2	Setup to determine low resistance with Carey-Foster's Bridge. Complete	3
3	Setup to determine inductance of a coil using Anderson Bridge	3
4	Setup for adiabatic expansion of gas and hence to calculate value of γ	2
5	To determine the wavelength of a given light using biprism	2
6	Setup for the principal points of a lens system	2
7	Setup for the gas discharge spectrum of hydrogen	2
8	Setup for the angle of wedge using interference method	2
9	Total radiation law, temperature dependence of radiation	3
10	Setup to determine the specific rotation of sugar using Laurent's half shade polarimeter	2
11	Setup to study the absorption spectra of iodine vapours	2
12	Setup for the divergence and wavelength of a given laser source (with He-Ne laser and Diode laser)	2
13	B-H Curve setup	3
14	FET (Experiments) and determine its parameters	3
15	GM counter setup including sources of beta particles (Tl-204, Sr-90)	2
16	Setup to study the characteristics of a thermistor	3
17	Setup to measure refractive index of liquid using optical Spectrometers	4
18	Sextant with stand	3
19	Setup to determine energy transfer, coefficient of restitution and verify laws of conservation of linear momentum and kinetic energy in elastic collisions using one dimensional collisions of hanging spheres	4
20	Setup to measure the magnetic susceptibility of FeCl ₂ solution by Quincke's method	3
21	Digital Storage Oscilloscope (DSO) (With Printing Facility)	2
22	Voltage Stabilization using Zener Diodes	3
23	Complete setup to study the response of RC circuit to various input voltage (square, sine and triangular) With FG	3
24	Setup for diode as a clipping and clamping circuits. Without CRO & FG	3
25	Setup to measure the ripple factors for (a) halfwave (b) full wave and (c) bridge rectifier circuits (Setup to study the reduction in the ripple in the rectified output with RC, LC and π Filter)	3
26	Setup to draw the characteristics of a Zener diode.	3
27	Setup to study the photoelectric effect and determine the value of Planck's constant.	2
28	Setup to study the characterizations of Photovoltaic cell (Setup to Study of variation of light intensity with distance using photovoltaic cell (Inverse Square Law)	3
29	Setup to determine the heating efficiency of an electric kettle with varying voltage.	4
30	Setup to study the induced e.m.f. as a function of the velocity of the magnet	3
31	Study of phase relationships using impedance triangle for LCR circuit and measure impedance and phase difference between current and voltage and Setup to study resonance in a series and parallel LCR circuits for different R-values and calculate Q – values	4

32	Setup to measure capacitance by flashing and quenching of a neon lamp	4
33	Setup to study the dependence of moment of inertia on distribution of mass (by noting time periods of oscillations using objects of various geometrical shapes but of same mass)	3
34	Anharmonic Oscillator	1
35	Angular Momentum Conservation	1
36	Coupled Oscillations	1
37	Demonstration of Bohr Orbits	1
38	Doppler Effect	1
39	Equilibrium with Magnets	1
40	Importance of Curved Surface	1
41	Kundt's Tube	1
42	Lissajous Figures	1
43	Lorentz Oscillator	1
44	Manual Lift with 1/8 Effort	1
45	Maxwell's Top	1
46	Measure Your Weight	1
47	Motion on Inclined Plan	1
48	Magnetically Coupled Oscillator	1
49	Mechanical Transmission Line	1
50	Plasma State	1
51	Plasma Application	1
52	Rotation Dynamics	1
53	Reduction of Friction	1
54	Racing Track	1
55	Solar Concentrator	1
56	Series of Pendulum	1
57	Vibration Analysis of a System	1
58	Vortex Formation	1
59	Twelve Flexes, Packing, Transportation and installation cost of 25 experiments listed in serial number 34	1
60	Tools: Soldering Irons, Iron Stands, Paste, Nose-Plass, Screw-Drivers, Solders, Miltimeters, Wire-cutters, Solar cells, etc.	1
61	Energy Saver	1
62	Rain Detector	1
63	Sensitive Remote Control Tester	1
64	Flashing Break Light	1
65	10 Watt Inverter	1
66	Remote for Electric Appliances/Proximity Sensor	1

Sr. No.	Equipment Procured by the department of Chemistry under the DBT-Star College Scheme (BT/HRD/11/019/2020)	No of Copies
1	Potentiometer Equiptronics	3
2	Photo Colorimeter Equiptronics	3
3	Digital Weighing Balance Labline	3
4	Refractometer Abbe Type Labline	4
5	Vacuum pump (oil free) Labline	1
6	Digital Polarimeter Equiptronics	1
7	Hot plate with stirrer Remi	3
8	Heating Mantle 100 ml	4
9	Heating Mantle 250 ml	4
10	Heating Mantle 500 ml Labline	2
11	Electrophoresis Apparatus with Power Supply (Vertical)	1
12	pH meter Cole Parmer	3
13	Conductivity cum TDS meter Cole Parmer	4
14	Water Analyser Labline	1
15	Kjeldahl apparatus Perfit	1
16	Double Distillation (Vertical unit) Borosilicate	1
17	Copper Calorimeter	20
18	Magnetic stirrers with stirring bars Perfit	4
19	Vacuum pump (with oil) with gauge Perfit	1
20	Soxhlet Extraction Apparatus	1
21	Circulating Liquid bath Perfit	1
22	Digital Melting point Apparatus (Perfit)	2
23	Centrifuge (Remi)	2
24	pH meter Cole Parmer	1

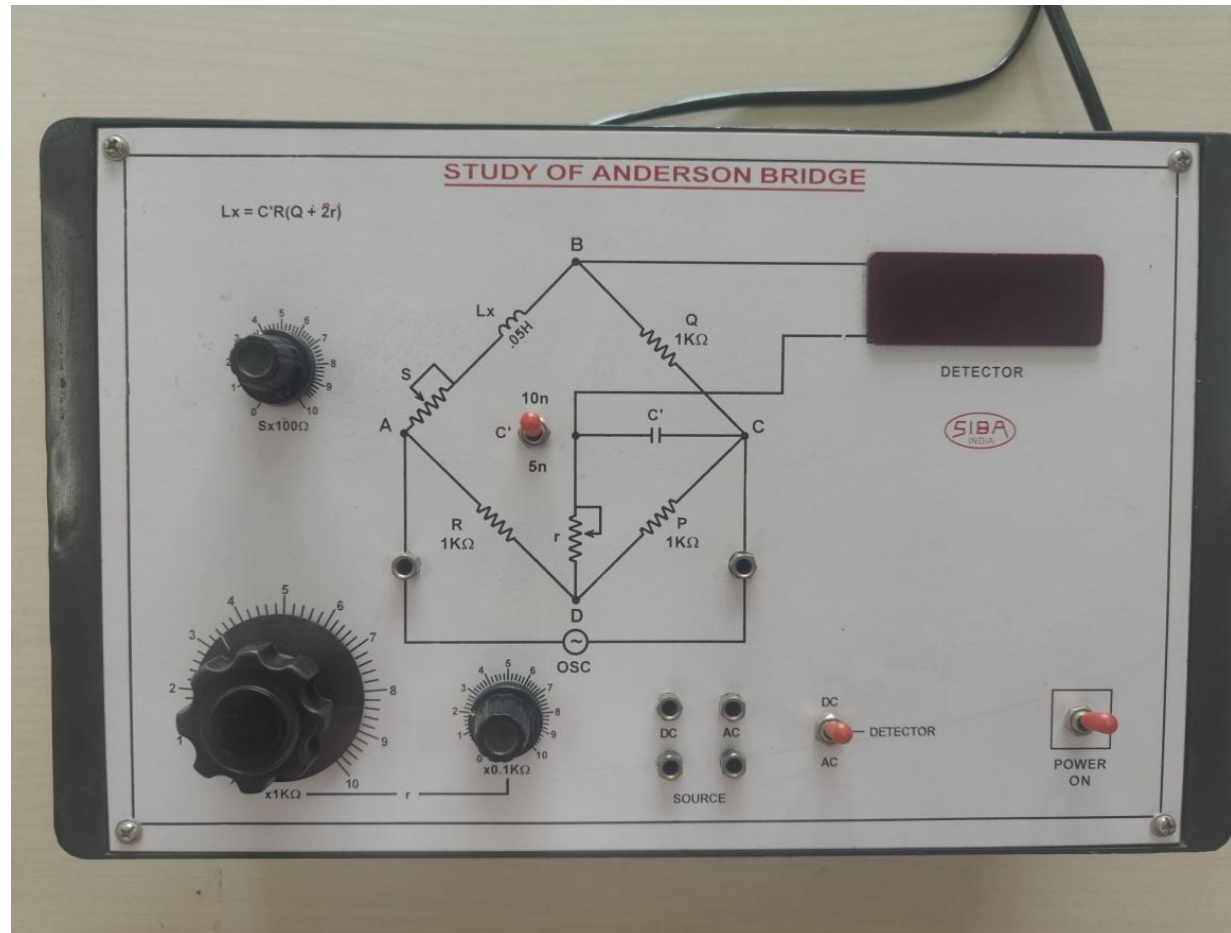
1. SETUP FOR MEASUREMENT OF CAPACITANCE, DETERMINATION OF PERMITTIVITY OF A MEDIUM AND ITS RELATIVE PERMITTIVITY BY DE-SAUTY'S BRIDGE



2. SETUP TO DETERMINE LOW RESISTANCE WITH CAREY-FOSTER'S BRIDGE. COMPLETE



3. SETUP TO DETERMINE INDUCTANCE OF A COIL USING ANDERSON BRIDGE



4. SETUP FOR ADIABATIC EXPANSION OF GAS AND HENCE TO CALCULATE VALUE OF γ

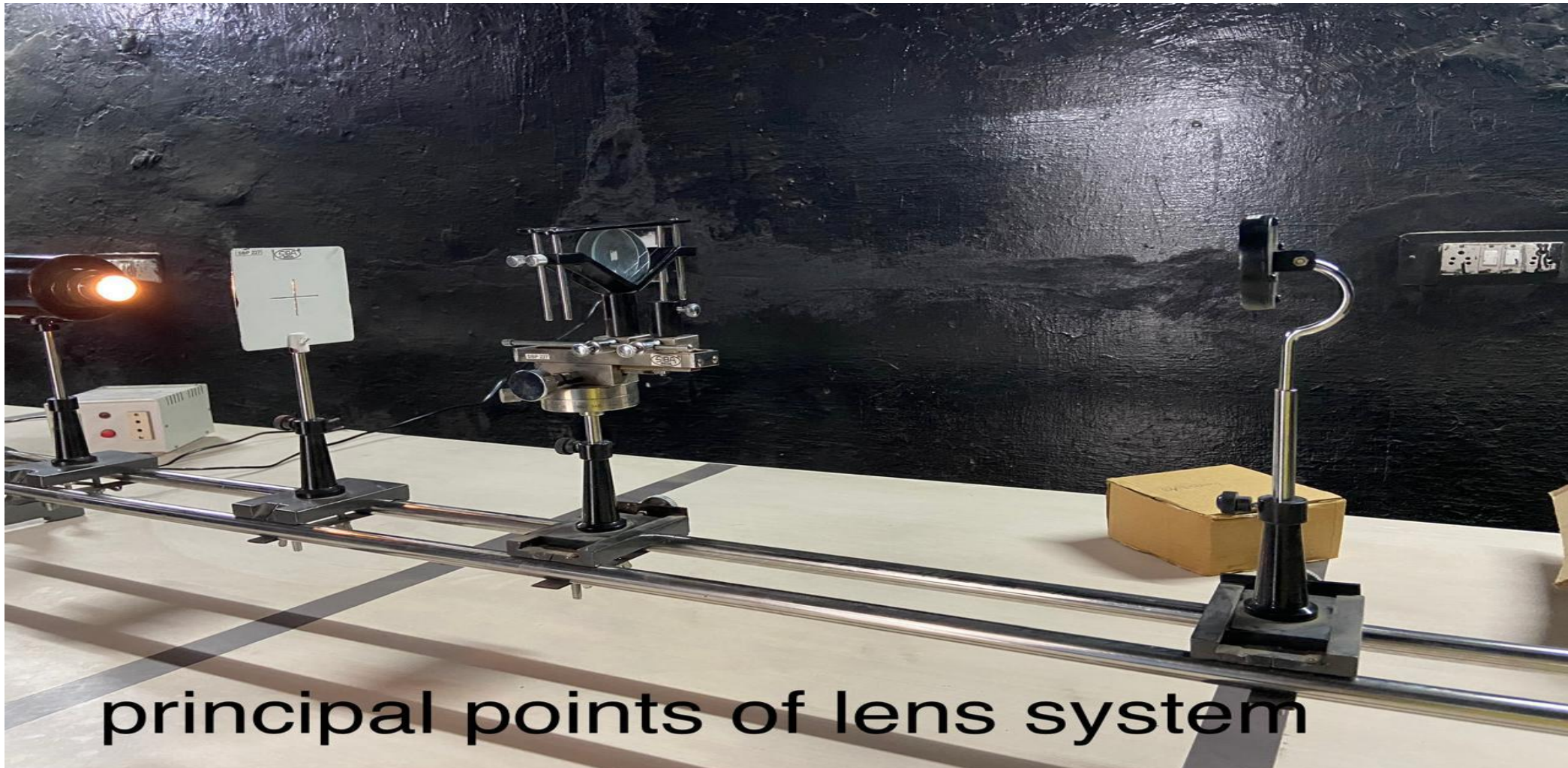


Adiabatic Expansion

5. TO DETERMINE THE WAVELENGTH OF A GIVEN LIGHT USING BIPRISM



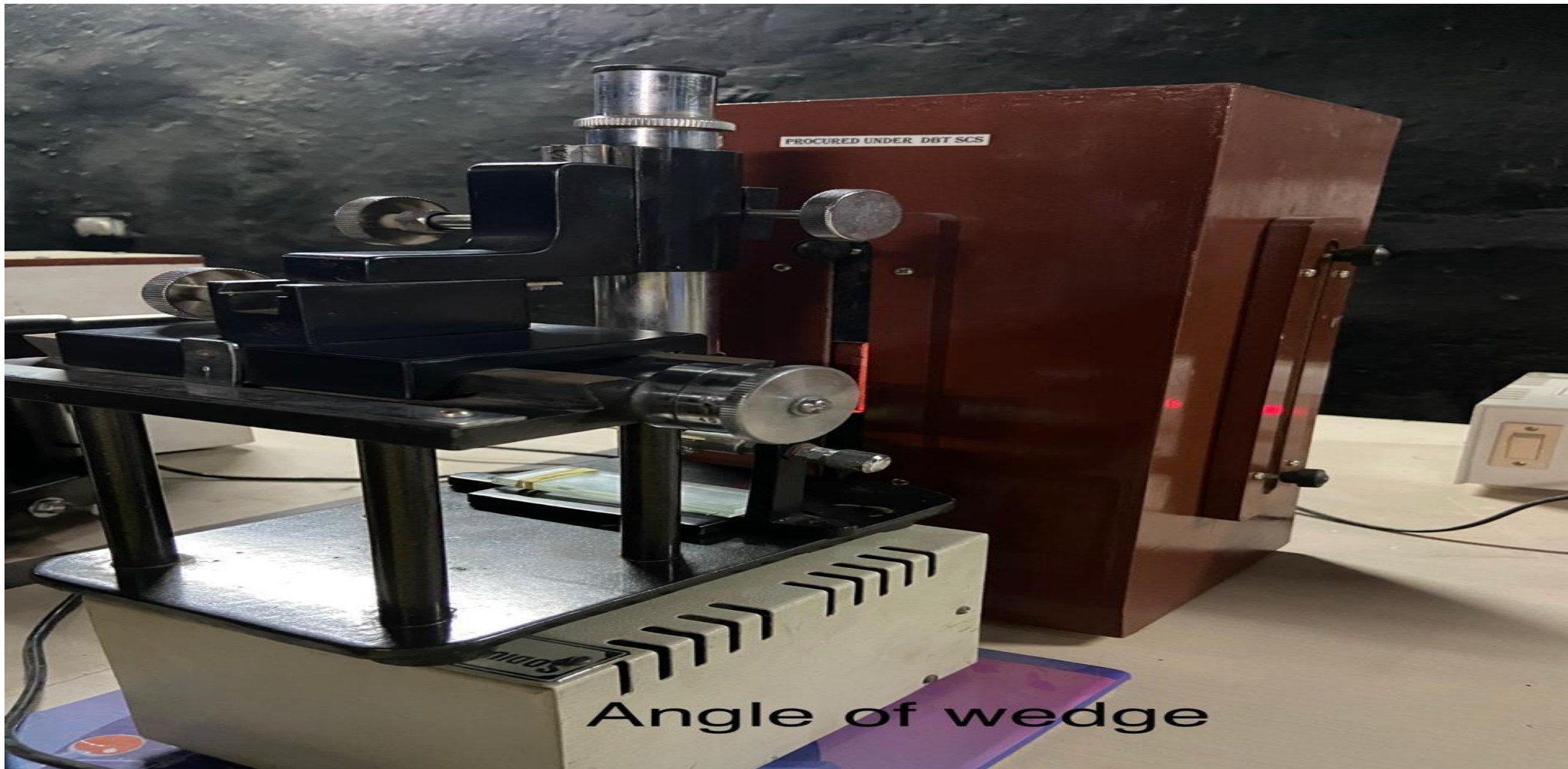
6. SETUP FOR THE PRINCIPAL POINTS OF A LENS SYSTEM



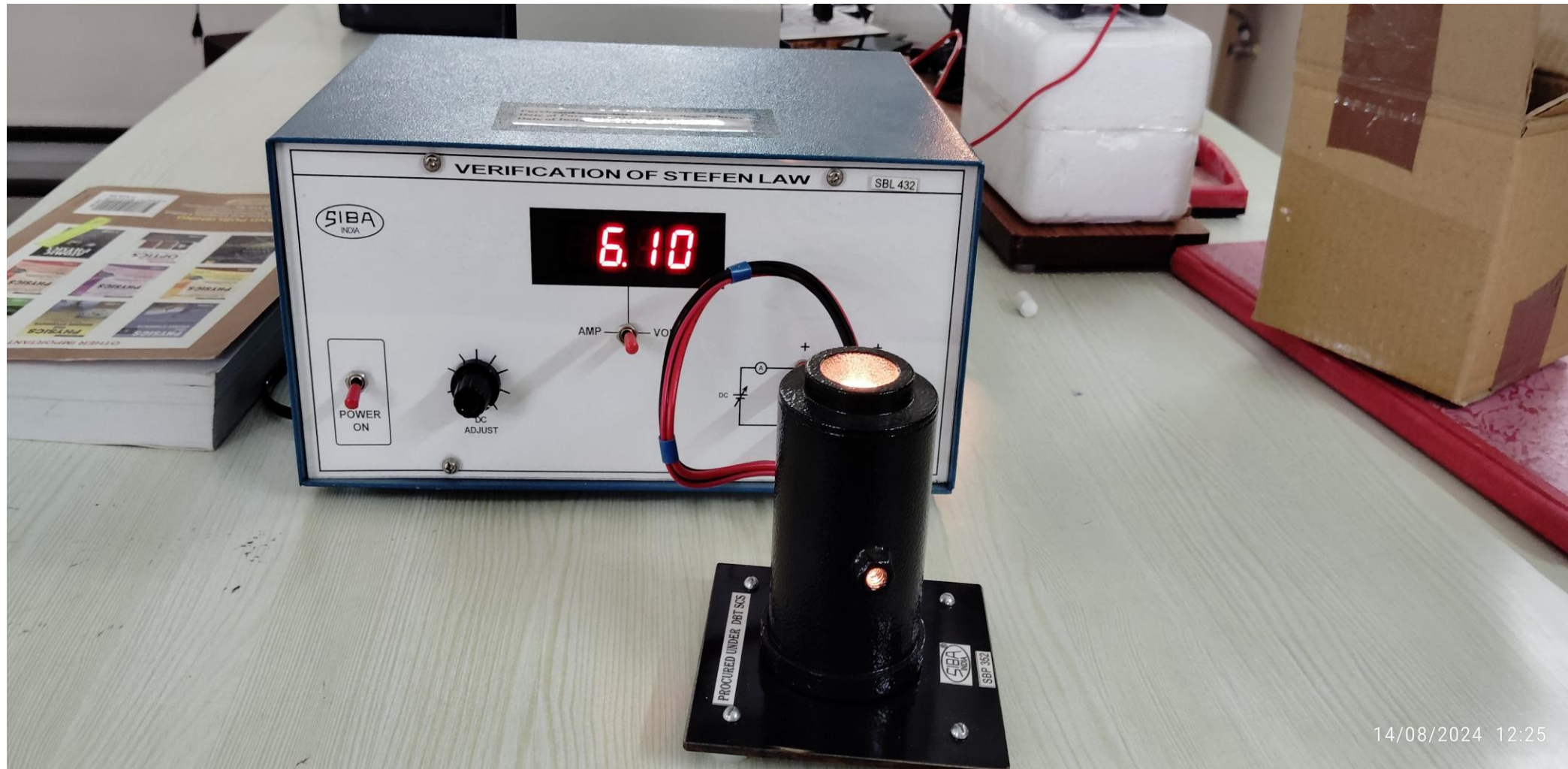
7. SETUP FOR THE GAS DISCHARGE SPECTRUM OF HYDROGEN



8. SETUP FOR THE ANGLE OF WEDGE USING INTERFERENCE METHOD



9. TOTAL RADIATION LAW, TEMPERATURE DEPENDENCE OF RADIATION



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10. SETUP TO DETERMINE THE SPECIFIC ROTATION OF SUGAR USING LAURENT'S HALF SHADE POLARIMETER



11. SETUP TO STUDY THE ABSORPTION SPECTRA OF IODINE VAPOURS



Iodine Spectrum

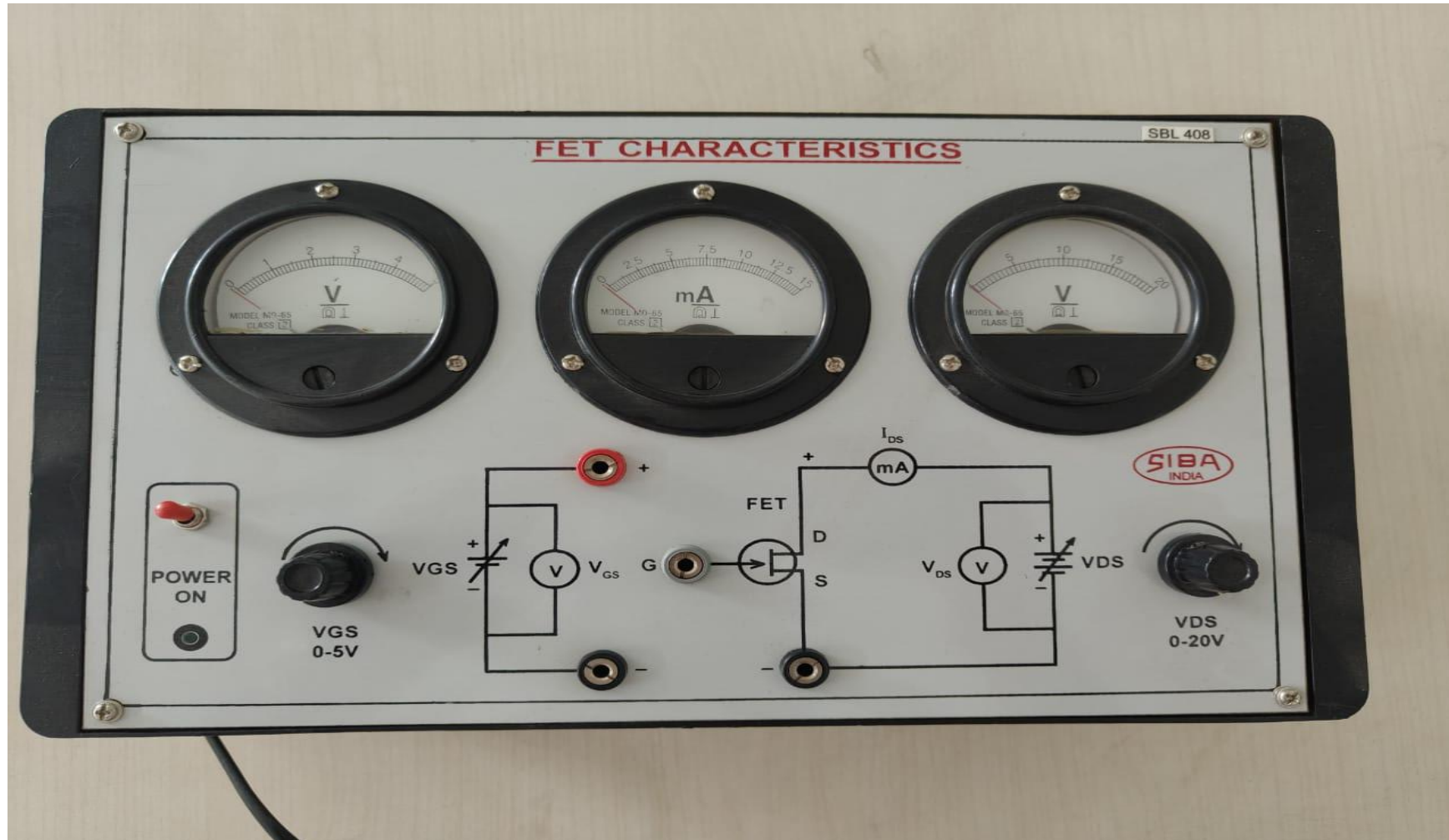
13. B-H CURVE SETUP



12. SETUP FOR THE DIVERGENCE AND WAVELENGTH OF A GIVEN LASER SOURCE (WITH HE-NE LASER AND DIODE LASER)



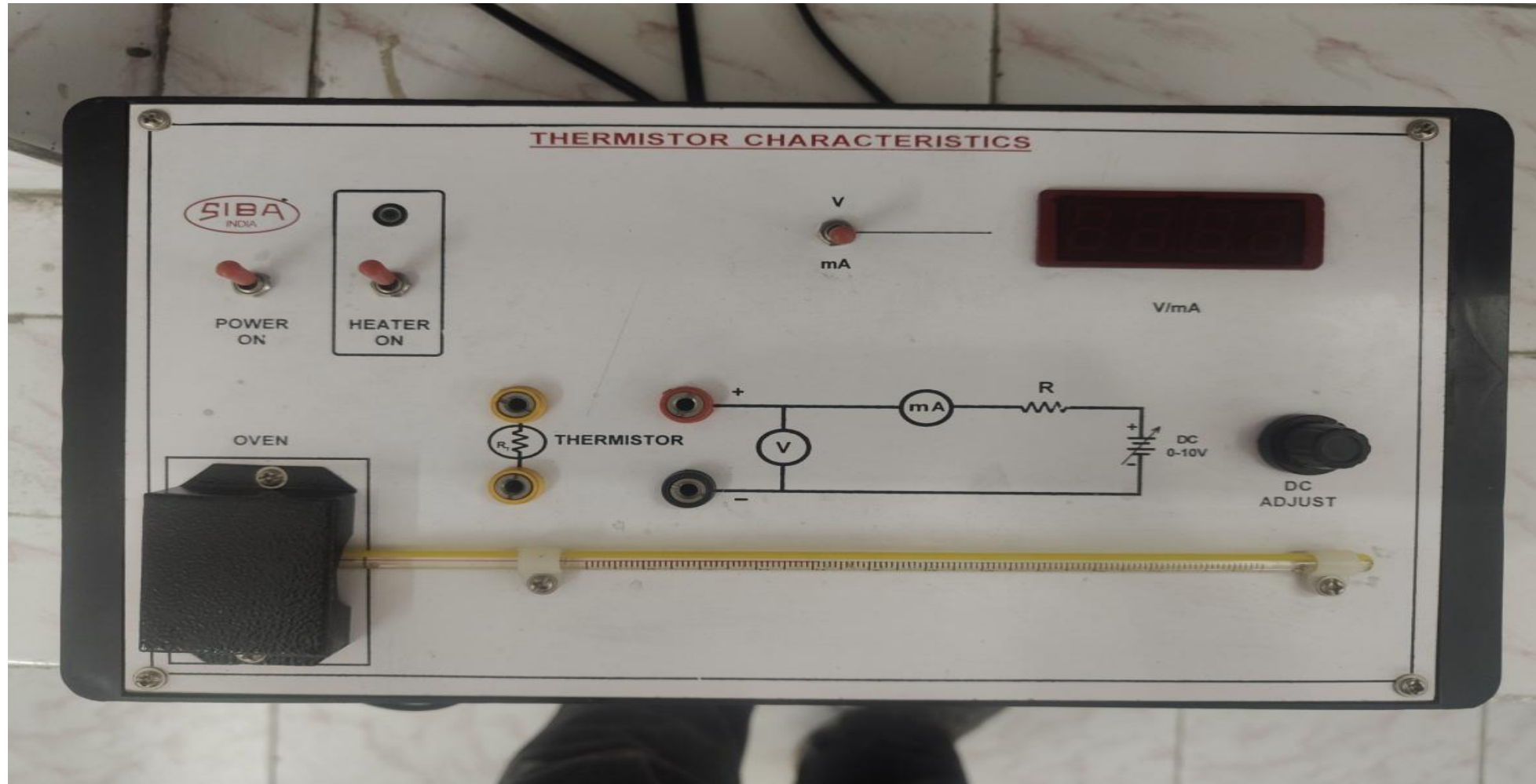
14. FET (EXPERIMENTS) AND DETERMINE ITS PARAMETERS



15. GM COUNTER SETUP INCLUDING SOURCES OF BETA PARTICLES (TL-204, SR-90)



16. SETUP TO STUDY THE CHARACTERISTICS OF A THERMISTOR



17. SETUP TO MEASURE REFRACTIVE INDEX OF LIQUID USING OPTICAL SPECTROMETERS



18. SEXTANT WITH STAND



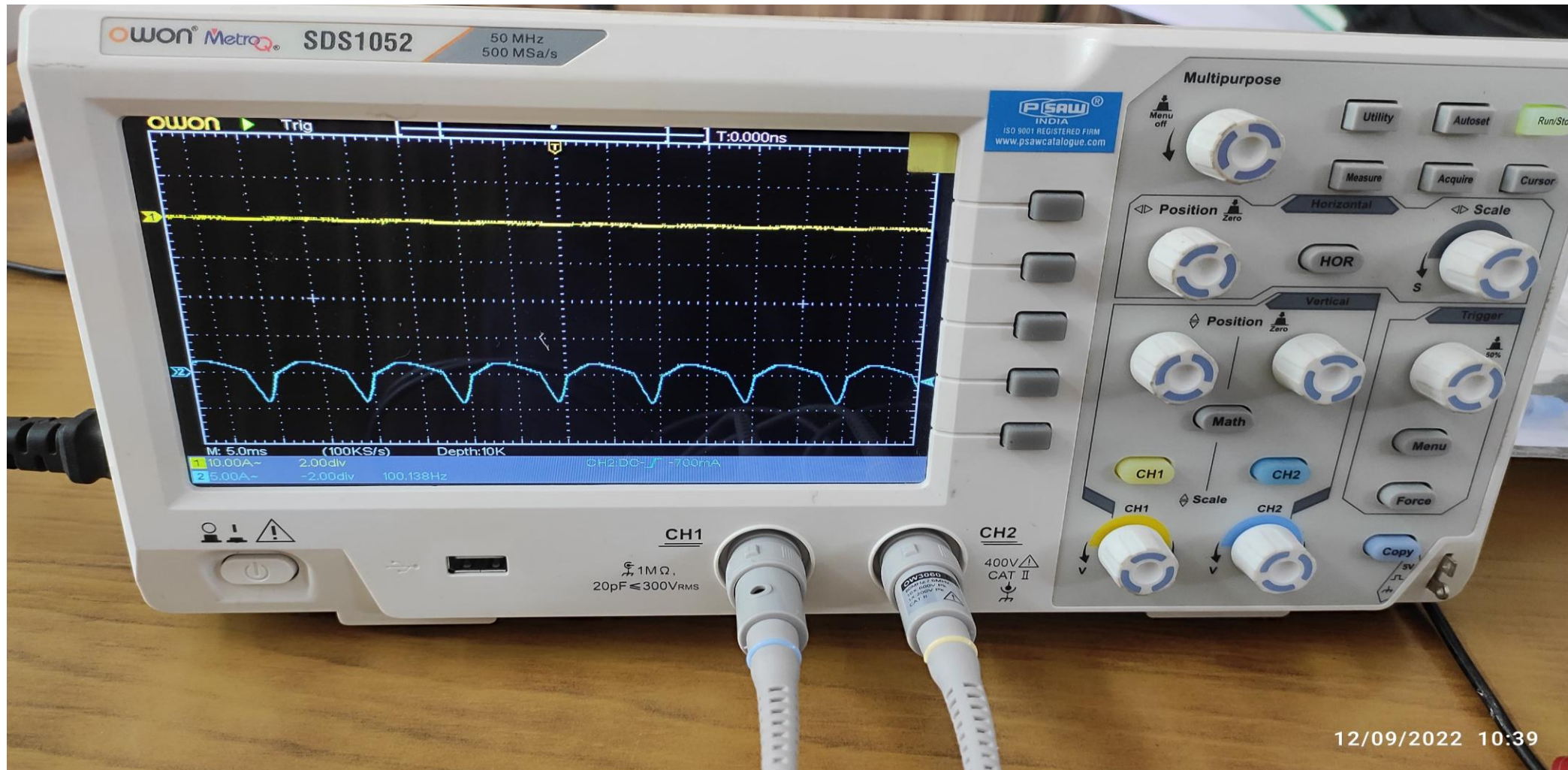
19. SETUP TO DETERMINE ENERGY TRANSFER, COEFFICIENT OF RESTITUTION AND VERIFY LAWS OF CONSERVATION OF LINEAR MOMENTUM AND KINETIC ENERGY IN ELASTIC COLLISIONS



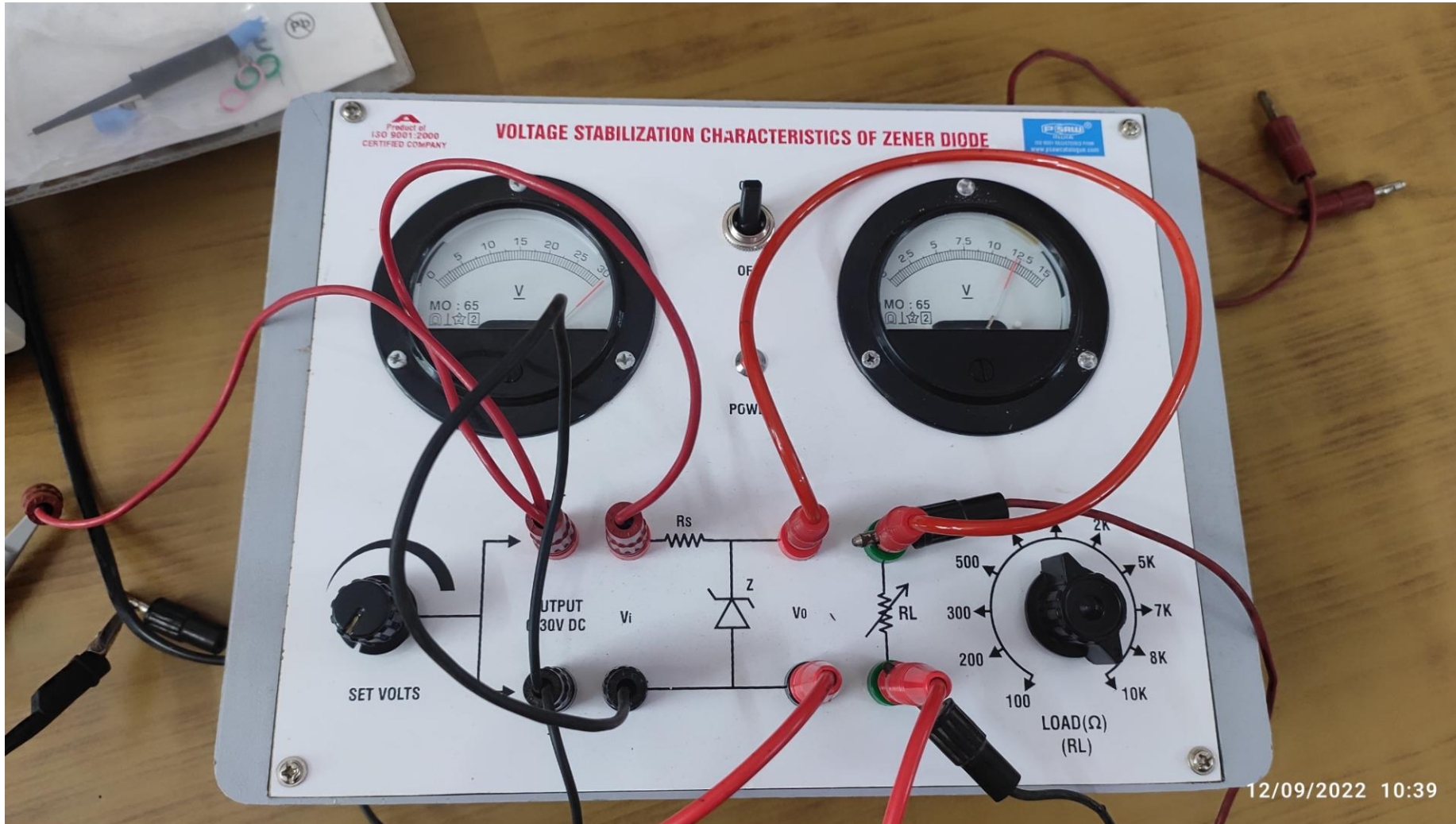
20. SETUP TO MEASURE THE MAGNETIC SUSCEPTIBILITY OF FeCl_2 SOLUTION BY QUINCKE'S METHOD



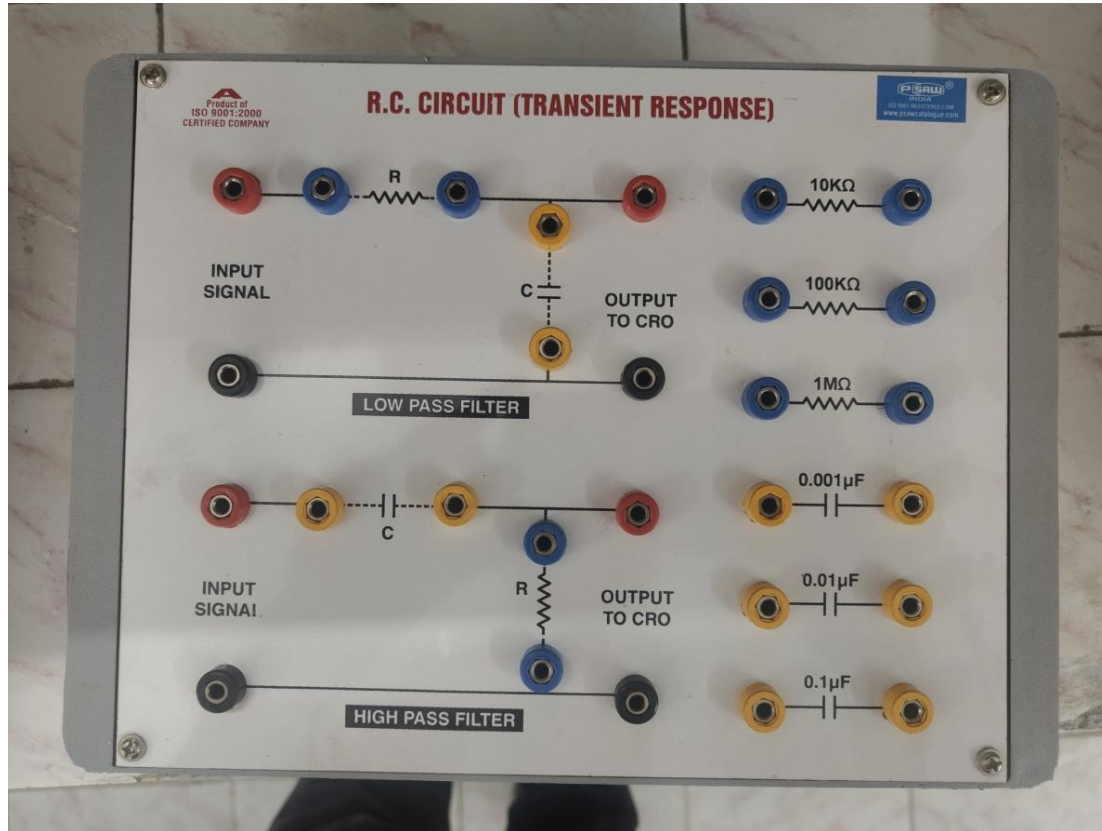
21. DIGITAL STORAGE OSCILLOSCOPE (DSO) (WITH PRINTING FACILITY)



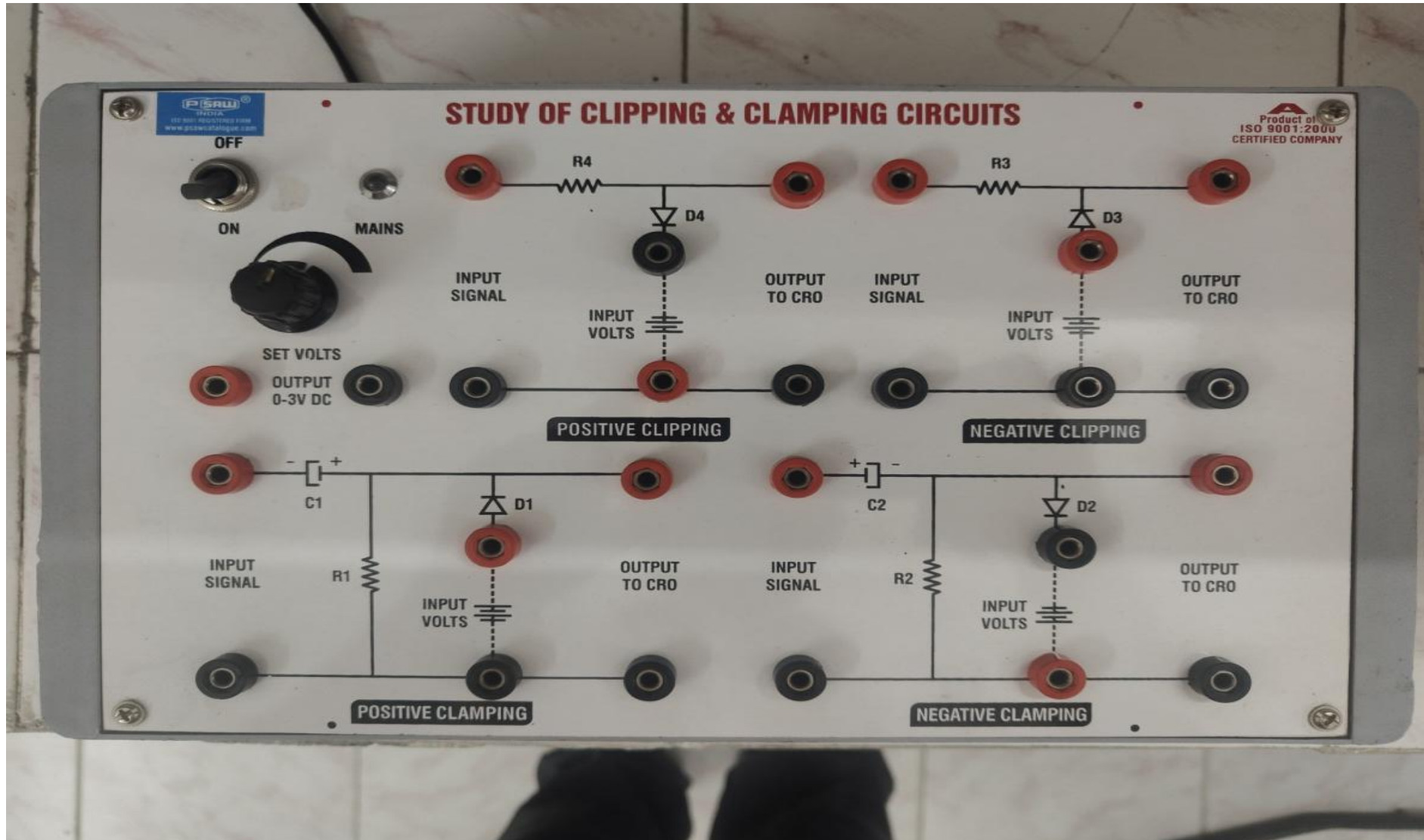
22. VOLTAGE STABILIZATION USING ZENER DIODES



23. COMPLETE SETUP TO STUDY THE RESPONSE OF RC CIRCUIT TO VARIOUS INPUT VOLTAGE (SQUARE, SINE AND TRIANGULAR) WITH FG



24. SETUP FOR DIODE AS A CLIPPING AND CLAMPING CIRCUITS. WITHOUT CRO & FG

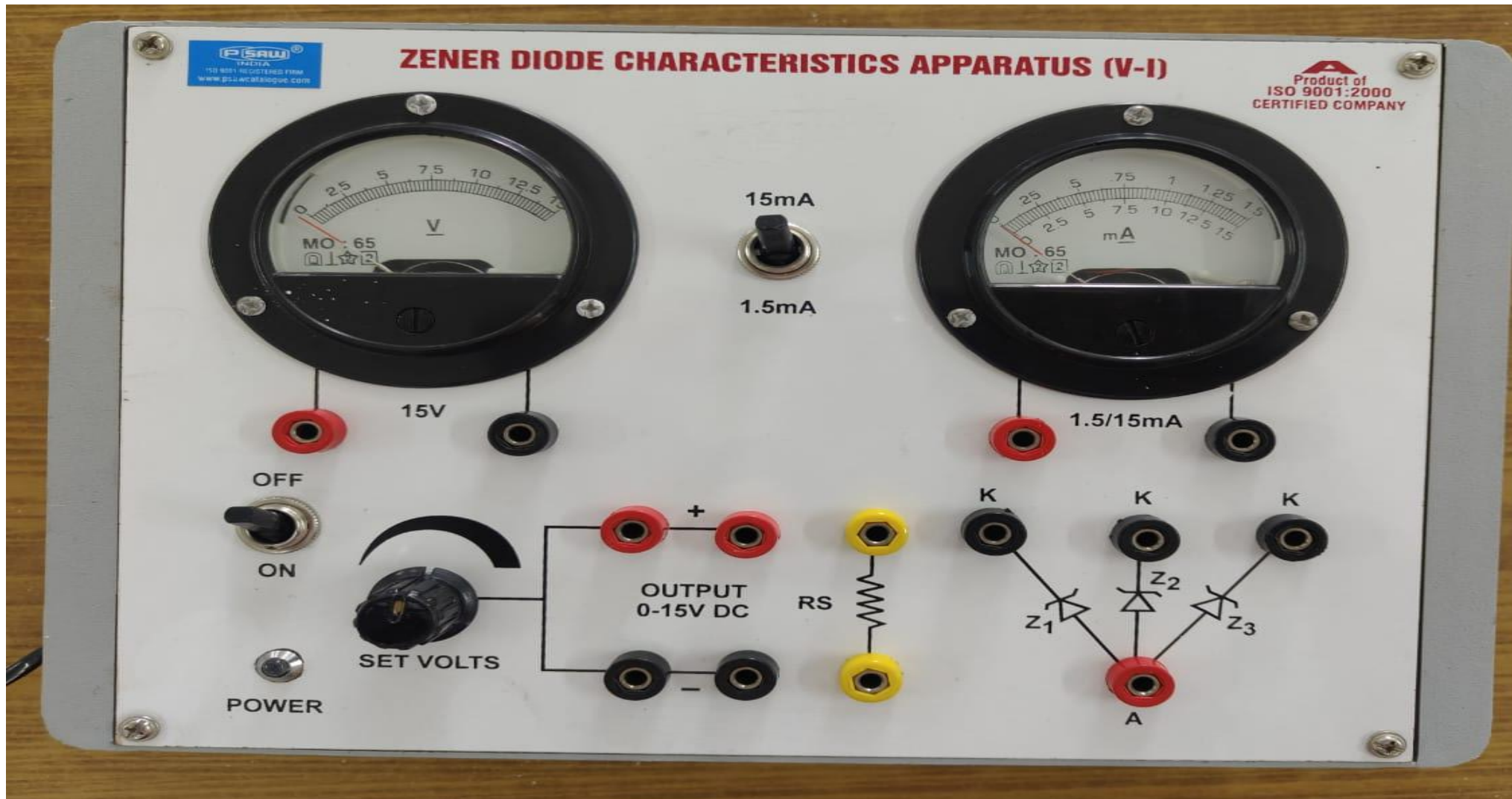


25. SETUP TO MEASURE THE RIPPLE FACTORS FOR (A) HALFWAVE (B) FULL WAVE AND (C) BRIDGE RECTIFIER CIRCUITS (SETUP TO STUDY THE REDUCTION IN THE RIPPLE IN THE RECTIFIED OUTPUT WITH RC, LC AND π FILTER



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26. SETUP TO DRAW THE CHARACTERISTICS OF A ZENER DIODE.



27. SETUP TO STUDY THE PHOTOELECTRIC EFFECT AND DETERMINE THE VALUE OF PLANCK'S CONSTANT.



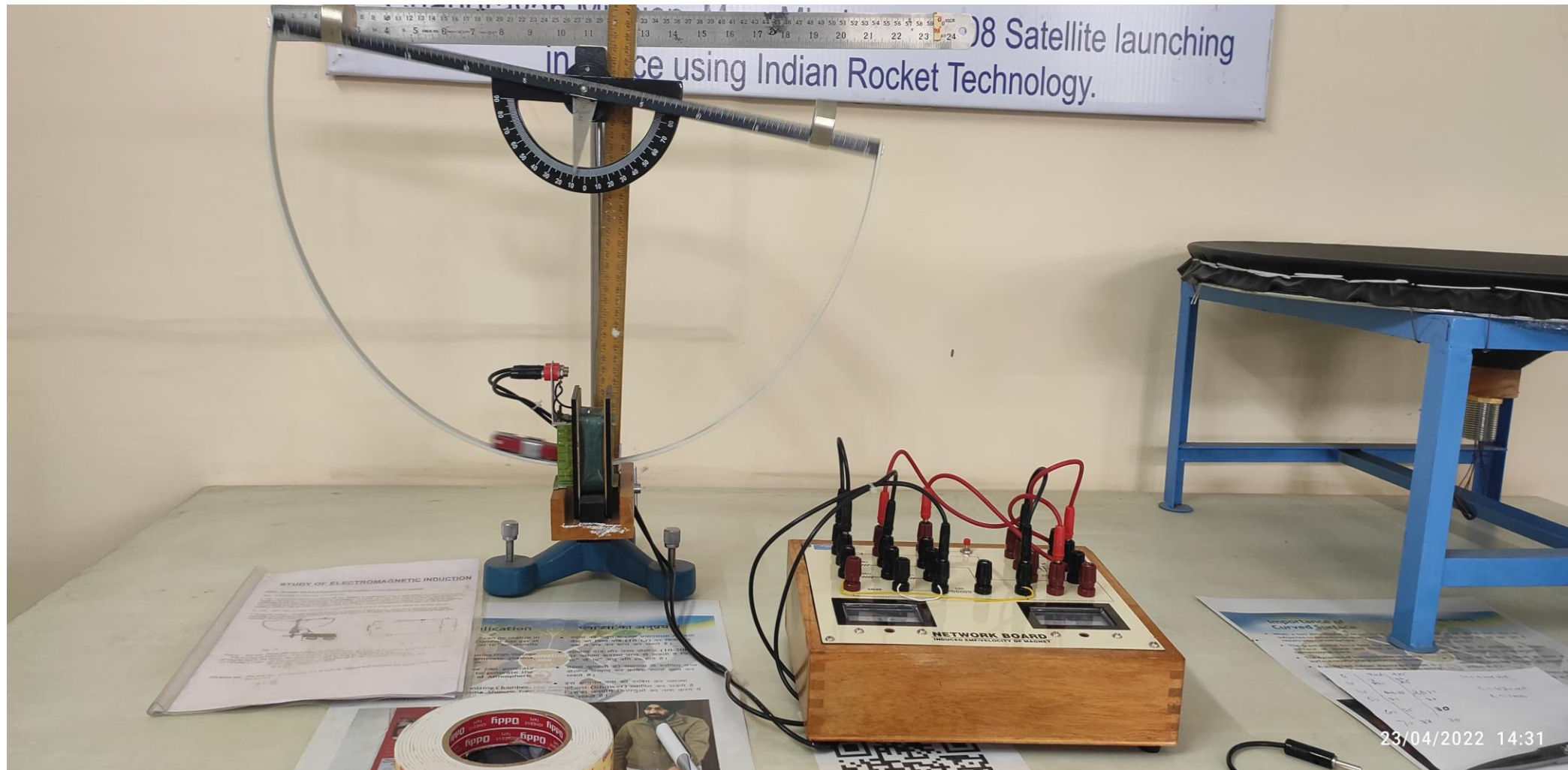
28. SETUP TO STUDY THE CHARACTERIZATIONS OF PHOTOVOLTAIC CELL (SETUP TO STUDY OF VARIATION OF LIGHT INTENSITY WITH DISTANCE USING PHOTOVOLTAIC CELL (INVERSE SQUARE LAW))



29. SETUP TO DETERMINE THE HEATING EFFICIENCY OF AN ELECTRIC KETTLE WITH VARYING VOLTAGE.



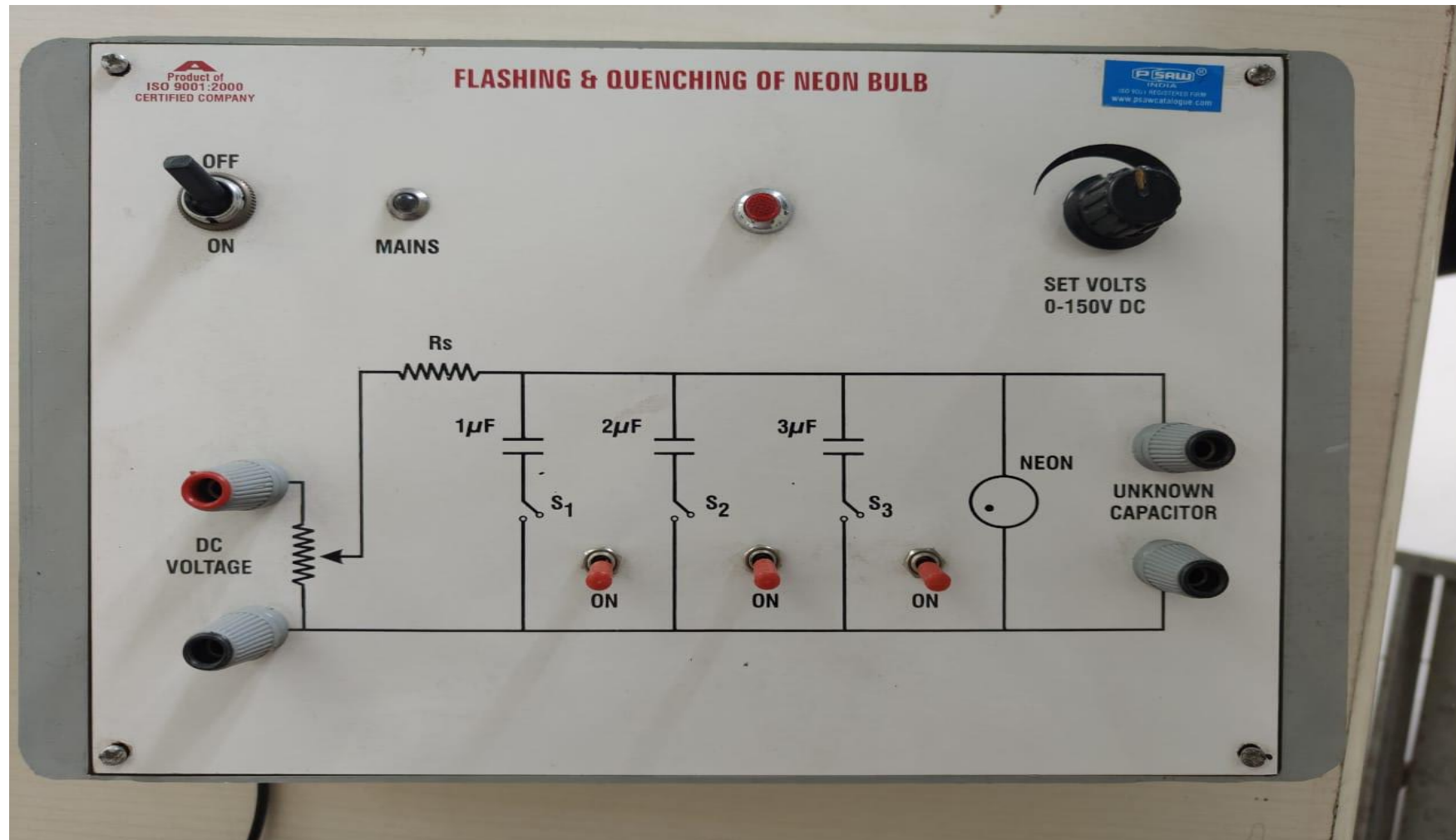
30. SETUP TO STUDY THE INDUCED E.M.F. AS A FUNCTION OF THE VELOCITY OF THE MAGNET



31. STUDY OF PHASE RELATIONSHIPS USING IMPEDANCE TRIANGLE FOR LCR CIRCUIT AND MEASURE IMPEDANCE AND PHASE DIFFERENCE BETWEEN CURRENT AND VOLTAGE AND SETUP TO STUDY RESONANCE IN A SERIES AND PARALLEL LCR CIRCUITS FOR DIFFERENT R-VALUES AND CALCULATE Q – VALUES



32. SETUP TO MEASURE CAPACITANCE BY FLASHING AND QUENCHING OF A NEON LAMP



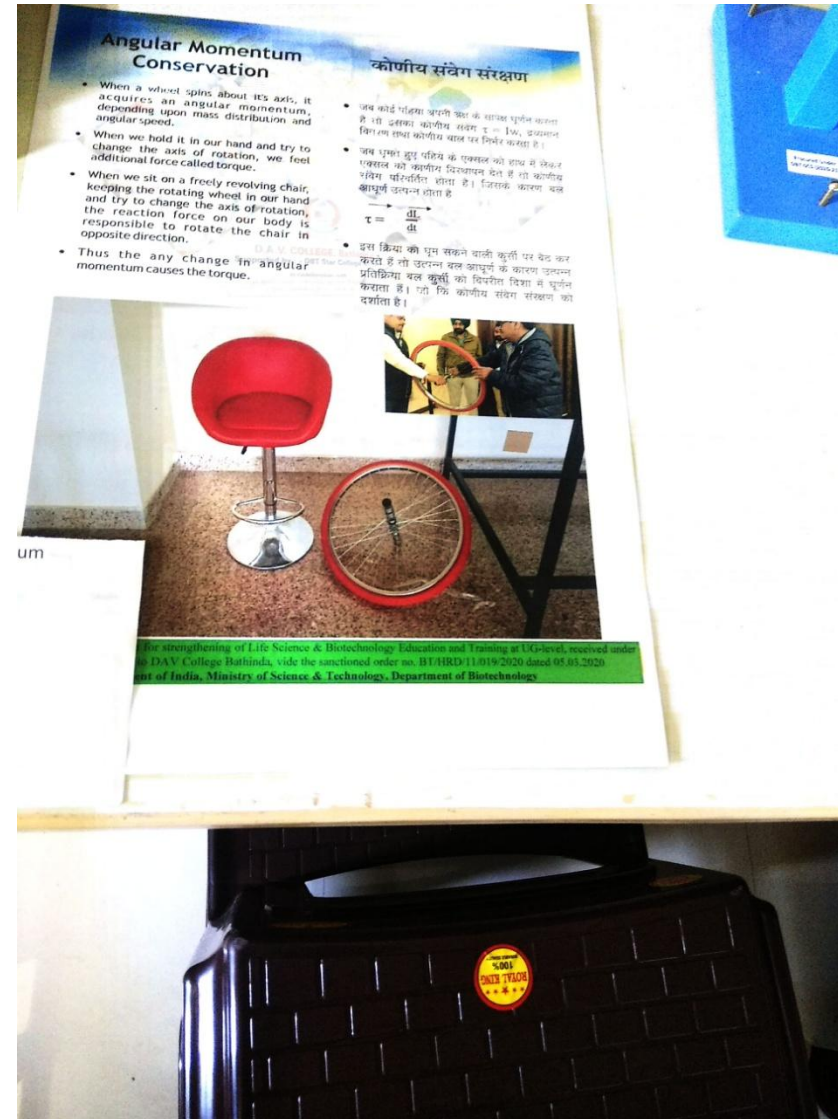
33. SETUP TO STUDY THE DEPENDENCE OF MOMENT OF INERTIA ON DISTRIBUTION OF MASS (BY NOTING TIME PERIODS OF OSCILLATIONS USING OBJECTS OF VARIOUS GEOMETRICAL SHAPES BUT OF SAME MASS)



34. ANHARMONIC OSCILLATOR



35. ANGULAR MOMENTUM CONSERVATION



36. COUPLED OSCILLATIONS



37. DEMONSTRATION OF BOHR ORBITS



38. DOPPLER EFFECT



39. EQUILIBRIUM WITH MAGNETS



Equilibrium with Magnets

- When the ring magnets having their similar poles facing to repel each other, are held on a non magnetic rod as shown in Figure 1.
- This arrangement looks like magnetic spring, whose pitch is variable.
- The bottom one supports the weight of all above it, while the magnetic repulsion amongst each one is same.

चुम्बकों से साम्यवस्था

- रिंग चुम्बक: अप्रचुम्बकीय पदार्थ की छड़ में इस प्रकार व्यवस्थित हैं कि उनके समान ध्रुव एक दूसरे को सम्मुख हैं।
- यह व्यवस्था चुम्बकीय-रिंगों को अनुरूप अनुमति होती है जिसकी पिच परिवर्तनीय है।
- सबसे नीचे वाली चुम्बक उसके ऊपर समस्त चुम्बकों को आधार प्रदान करती है जबकि सभी के मध्य प्रतिकर्षण बल समान हैं।



Figure 1, 2 and 3

Equilibrium with Mag
Configurat



under financial support for strengthening of Life Science & Biotechnology Education and Training at UG-level, received under for Star College Scheme to DAV College Bathinda, vide the sanctioned order no. BT/HRD/11/019/2020 dated 05.03.2020

40. IMPORTANCE OF CURVED SURFACE



41. KUNDT'S TUBE



42. LISSAJOUS FIGURES



43. LORENTZ OSCILLATOR



44. MANUAL LIFT WITH 1/8 EFFORT



45. MAXWELL'S TOP



Maxwell's Top: Rotational Motion
Demonstration



Maxwell's Top

- Maxwell observed the rotational motion of a top and how the spin and precession motions are related.
- In the wooden top the centre of mass can be raised up or down by putting the additional disc on the shaft of the top, the spin and precession motion is varied.
- In the steel top, when the curvature of the disc changed up-ward or down-ward, the centre of mass moves up or down.

मैक्सवेल का लट्ठू

- मैक्सवेल ने प्रेक्षित किया कि किस प्रकार घूर्णन करते लट्ठू की अक्षीय गति (spin) तथा पुरस्सरण गति एक दूसरे से सम्बद्ध हैं।
- लट्ठू की शाफ्ट में अतिरिक्त चकती लगाकर द्रव्यमान केन्द्र को ऊपर या नीचे की ओर विस्थापित कर सकते हैं। और अक्षीय गति तथा पुरस्सरण गति में परिवर्तन कर सकते हैं।
- स्टील वाले लट्ठू में जब चकती की वक्रता ऊपर या नीचे की ओर बदलती है तो द्रव्यमान केन्द्र भी ऊपर या नीचे हो जाता है।

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In Collaboration with : - IIT Bombay

A photograph showing a man in a blue jacket demonstrating the Maxwell's top to a group of students in a classroom. The students are standing around a table where the top is placed. A date stamp in the bottom right corner of the photo reads "2020-12-23 10:42".

Procured under financial support for strengthening of Life Science & Biotechnology Education and Training at UG-level, received under the Star College Scheme to DAV College Bathinda, vide the sanctioned order no. BT/HRD-11/019/2020 dated 05.03.2020
Government of India, Ministry of Science & Technology, Department of Biotechnology

46. MEASURE YOUR WEIGHT



47. MOTION ON INCLINED PLAN



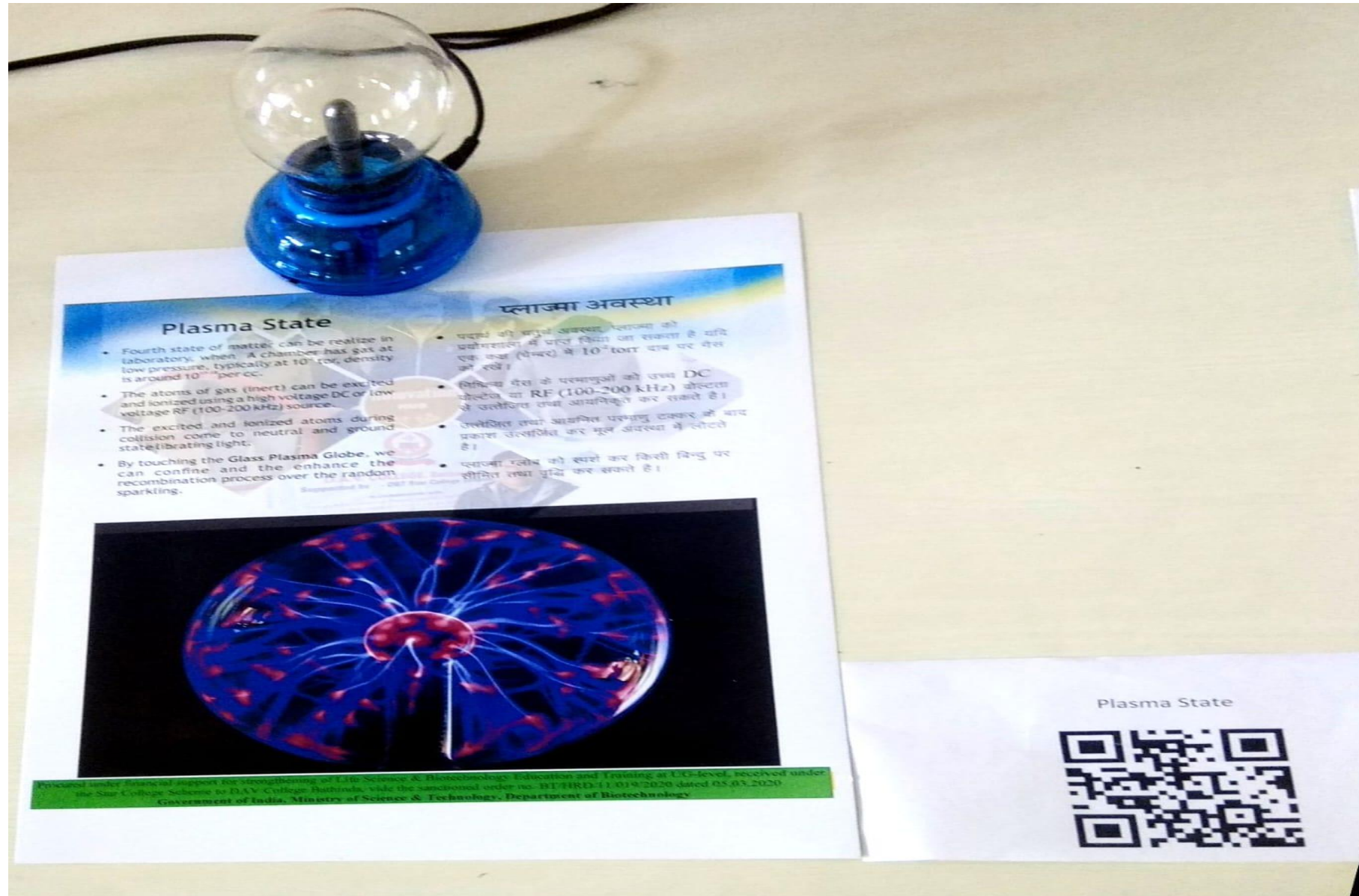
48. MAGNETICALLY COUPLED OSCILLATOR



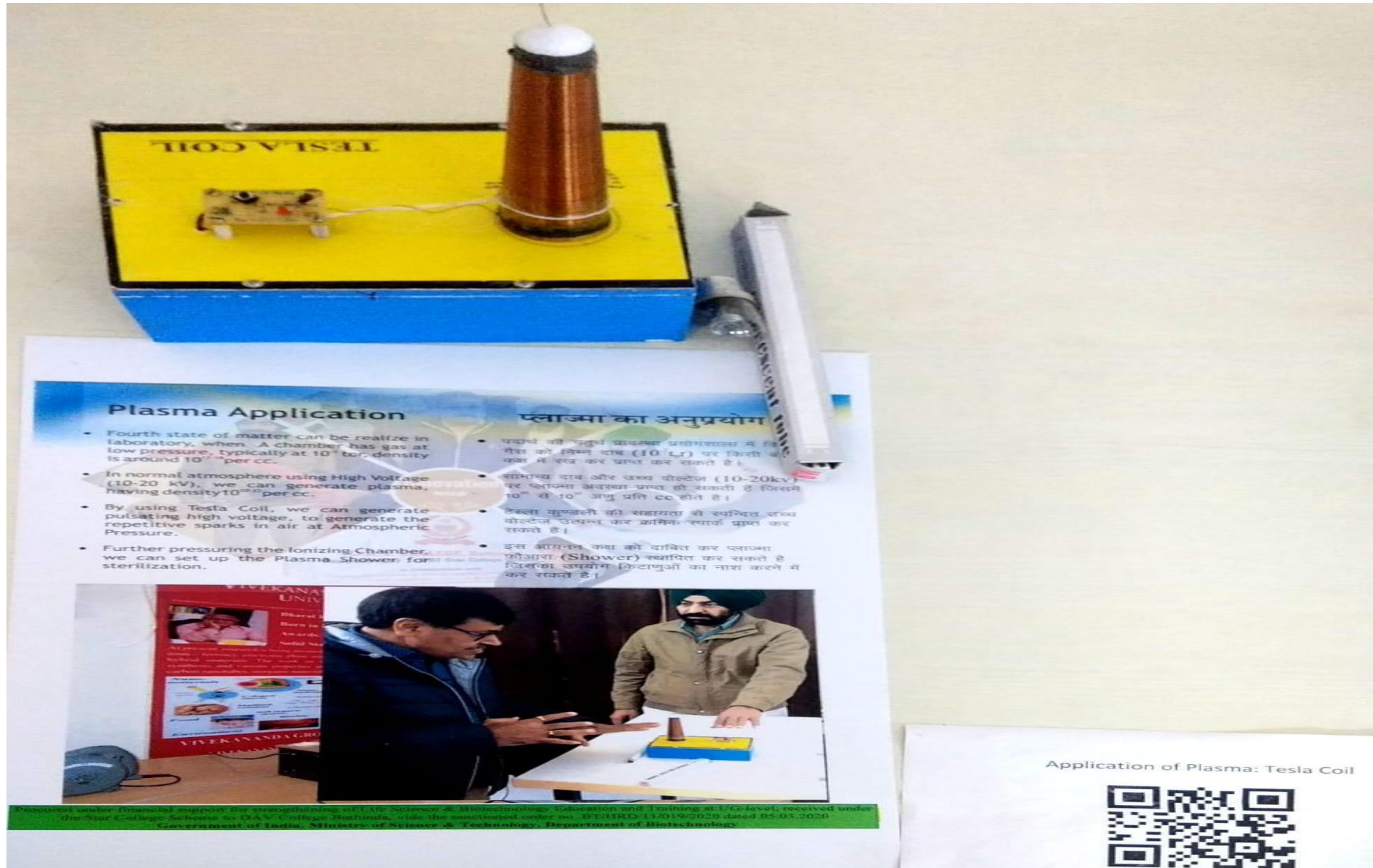
49. MECHANICAL TRANSMISSION LINE.



50. PLASMA STATE



51. PLASMA APPLICATION




Plasma Application

- Fourth state of matter can be realized in laboratory, when a chamber has gas at low pressure, typically at 10^{-5} torr, density is around 10^{23} per cc.
- In normal atmosphere using High Voltage (10-20 kV), we can generate plasma, having density 10^{23} per cc.
- By using Tesla Coil, we can generate pulsating high voltage, to generate the repetitive sparks in air at Atmospheric Pressure.
- Further pressuring the Ionizing Chamber, we can set up the Plasma Shower for sterilization.

प्लाज्मा का अनुप्रयोग

- पदार्थ की चतुर्थ अवस्था प्रयोगशाला में वायु में गैस को निम्न दाब (10^{-5} Torr) पर किसी कक्ष में रख कर प्राप्त कर सकते हैं।
- सामान्य दाब और उच्च वोल्टेज (10-20kV) पर प्लाज्मा अवस्था प्राप्त हो सकती है जिसमें 10^{23} से 10^{24} अणु प्रति cc होते हैं।
- टेस्ला कुण्डली की सहायता से स्पन्दित उच्च वोल्टेज उत्पन्न कर क्रमिक स्पाक प्राप्त कर सकते हैं।
- इस आयनित कक्ष को दाबित कर प्लाज्मा स्प्रोआर (Shower) स्थापित कर सकते हैं जिसका उपयोग किटाणुओं का नाश करने में कर सकते हैं।

Application of Plasma: Tesla Coil



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52. ROTATION DYNAMICS



53. REDUCTION OF FRICTION



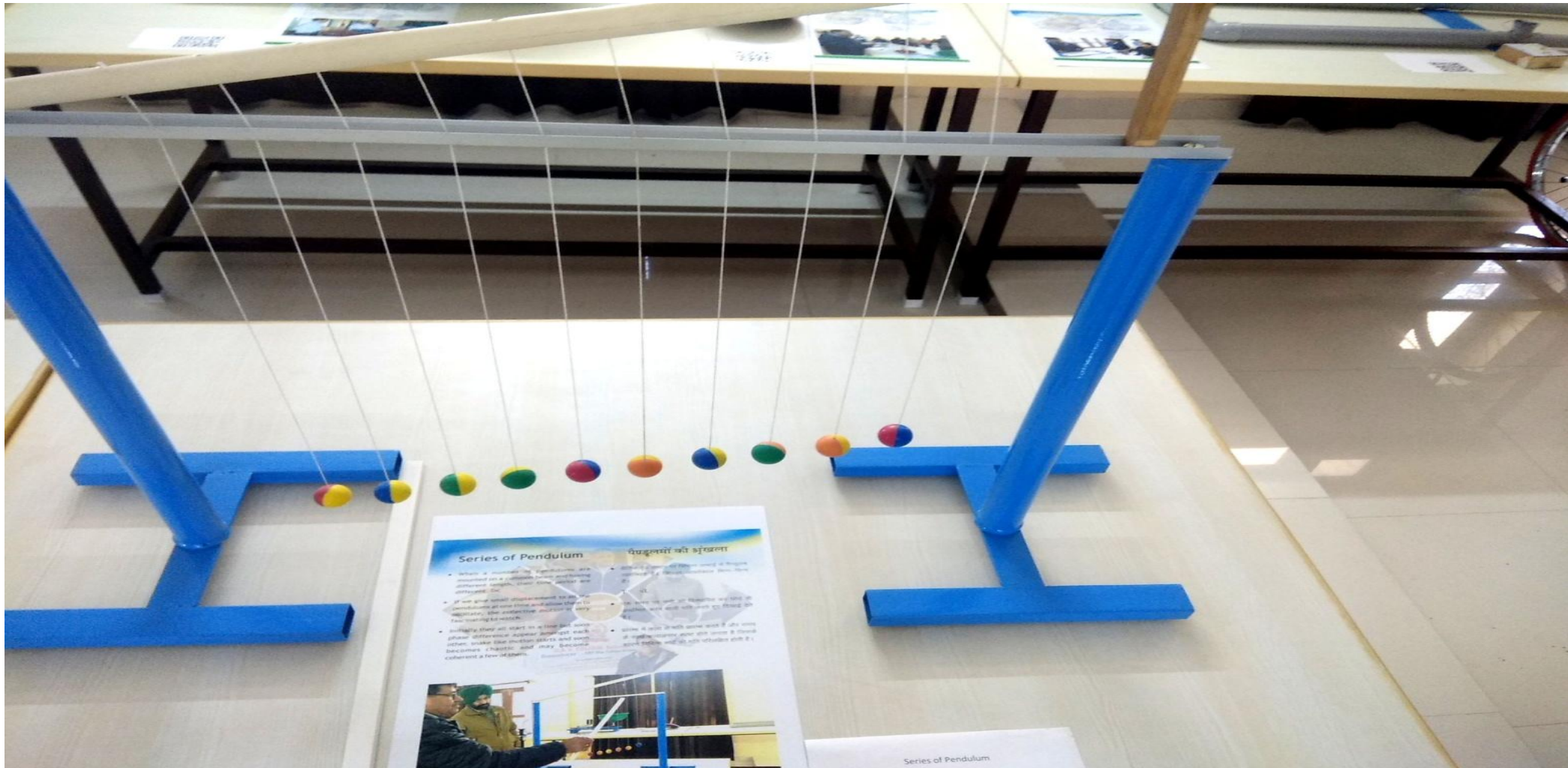
54. RACING TRACK



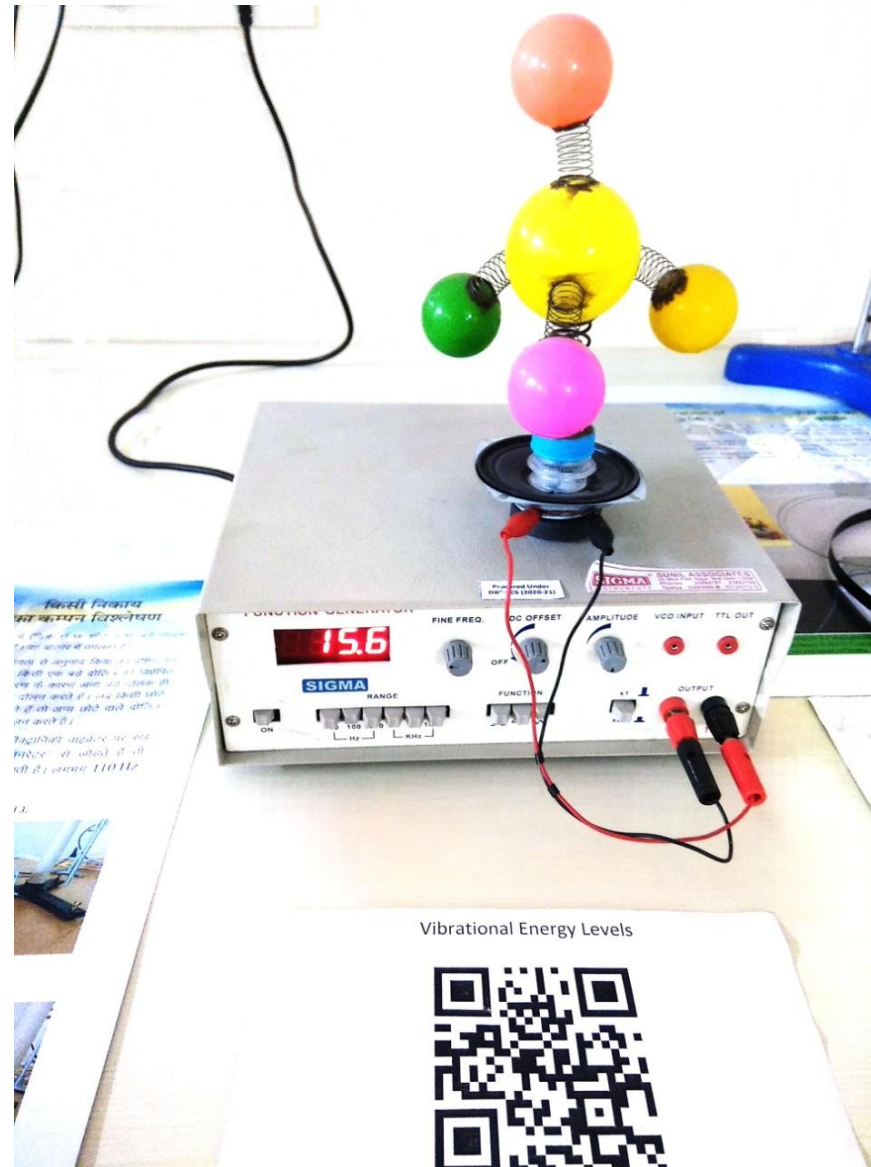
55. SOLAR CONCENTRATOR



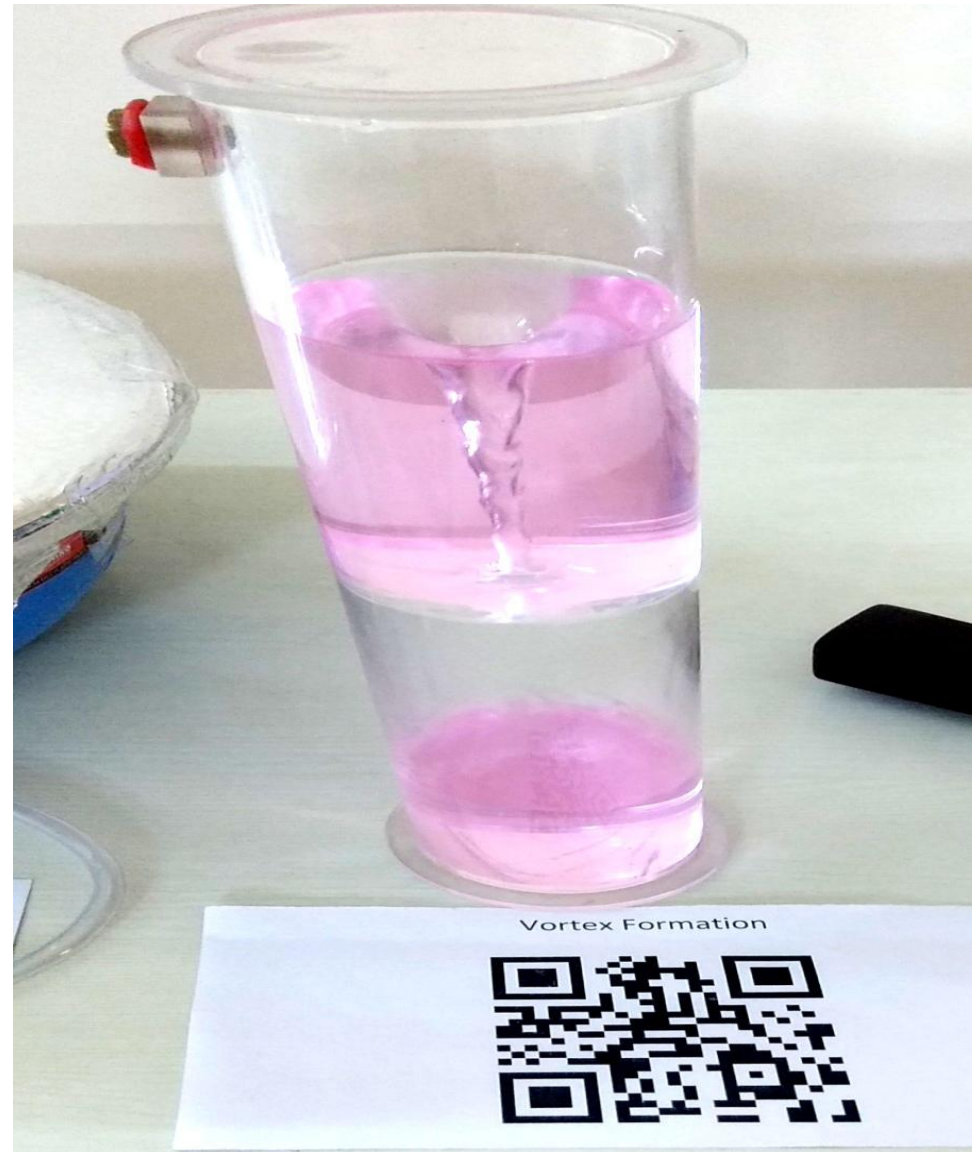
56. SERIES OF PENDULUM



57. VIBRATION ANALYSIS OF A SYSTEM



58. VORTEX FORMATION



59. TWELVE FLEXES, PACKING, TRANSPORTATION AND INSTALLATION COST OF 25 EXPERIMENTS LISTED IN SERIAL NUMBER 34

Innovation Hub



D.A.V. COLLEGE, Bathinda
Supported by : - DBT Star College Scheme

In Collaboration with
Indian Association of Physics Teachers (IAPT) RC-6 And
CDPE University of Rajasthan, Jaipur

Innovation Hub

D.A.V. COLLEGE, Bathinda

Subrahmanyan Chandrasekhar - (Lived 1910-1995)



Subrahmanyan Chandrasekhar,
FRS, was an Indian American
astrophysicist who was awarded
the 1983 Nobel Prize for Physics
with William A.

Subrahmanyan Chandrasekhar
Biography In Hindi

www.davcollegebathinda.com

He was one of the great astrophysicists of our time. He showed that white dwarf stars cannot grow beyond a certain mass : the same mass that triggers the explosion of supernovae, the most brilliant display in the sky. He introduced : Neutron stars and Black Holes.



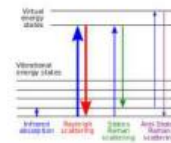
Innovation Hub D.A.V. COLLEGE, Bathinda

C V Raman - (Lived 1888-1970)



He was awarded a Nobel Prize in 1930 for the discovery of Raman Effect.

Raman showed that the energy of photons scattered in-elastically serves as a 'fingerprint' for the substance the light is scattered from, has become one of the important spectroscopic methods for chemical characterization as Raman spectroscopy.



Innovation Hub D.A.V. COLLEGE, Bathinda

Vikram Sarabhai - (Lived 1919-1971)



He was awarded with Shanti Swarup Bhatnagar Medal in 1962 and Padma Bhushan in 1966. Space program has been one of the most significant ventures of Sarabhai. It exposed him to the new vistas of space science with the launching in 1957 of Sputnik-I.

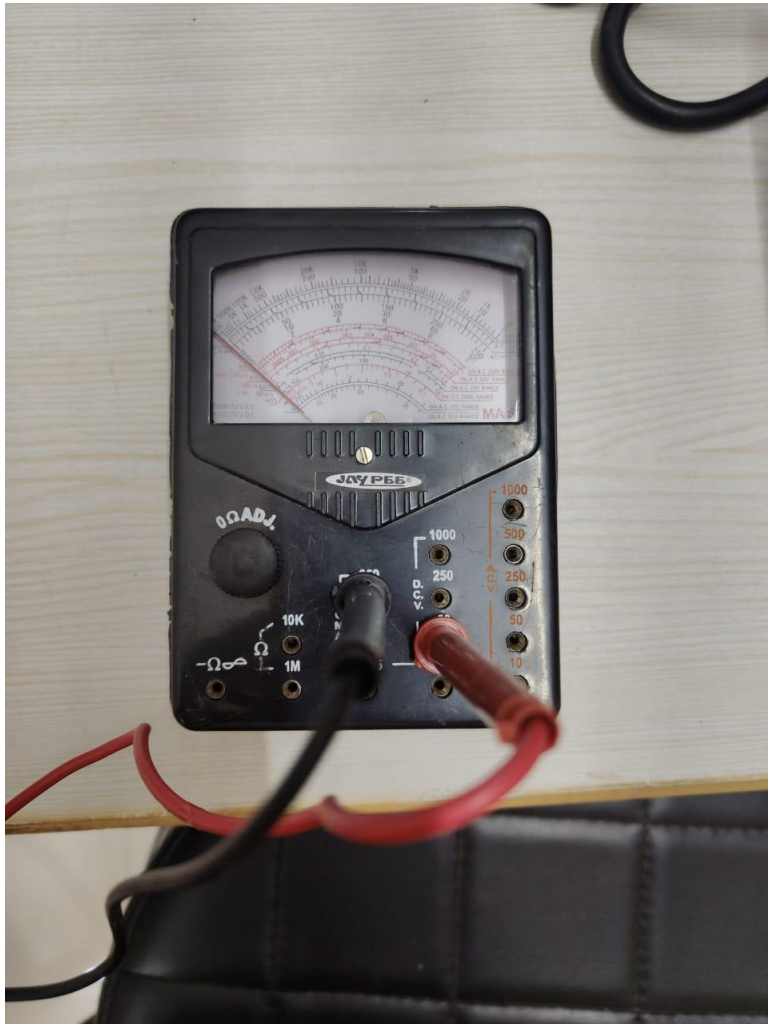


INSAT B

We are proud of success of
Chandrayan Mission, Mars Mission and 108 Satellite launching
in space using Indian Rocket Technology.

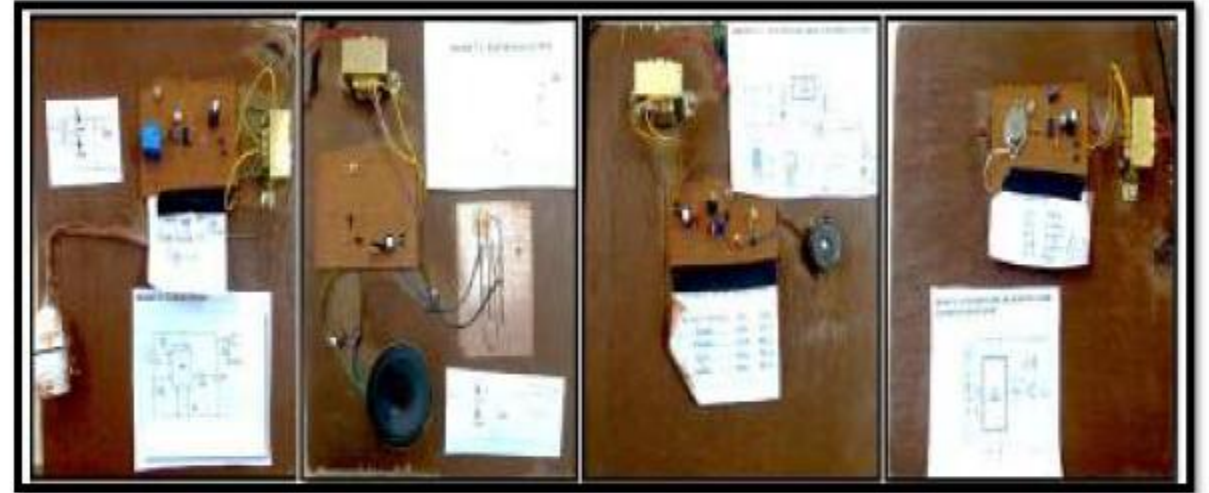





60. TOOLS: SOLDERING IRONS, IRON STANDS, PASTE, NOSE-PLASS, SCREW-DRIVERS, SOLDERS, MULTIMETERS, WIRE-CUTTERS, SOLAR CELLS, ETC.






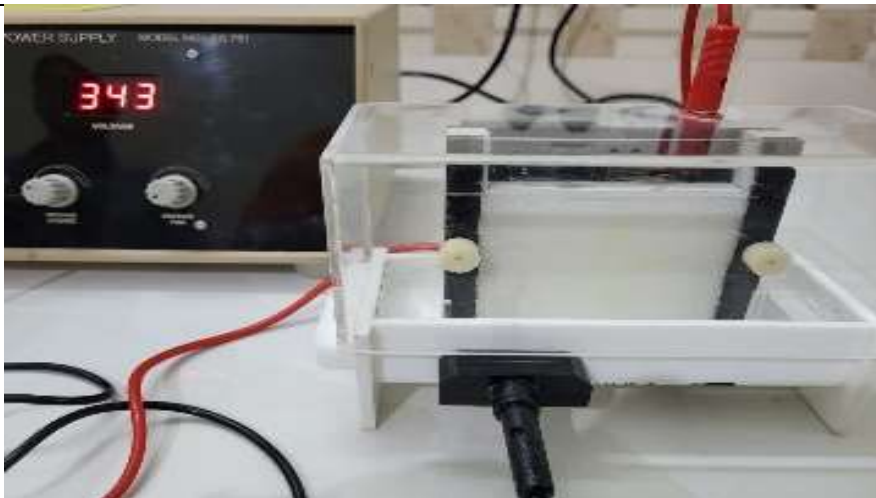
ELECTRONICS PROJECT MAKING





Sr. No.	Electronics Projects
61	Energy Saver
62	Rain Detector
63	Sensitive Remote Control Tester
64	Flashing Break Light
65	10 Watt Inverter
66	Remote for Electric Appliances/Proximity Sensor






S. No	Name of the equipment	No. of Sets	Picture of the Equipment
1.	Potentiometer	3	
2.	Photo Colorimeter	3	
3.	Digital Weighing Balance	3	



4.	Refractometer Abbe Type	4	
5.	Vacuum pump (oil free)	1	
6.	Digital Polarimeter	1	

7.	Hot plate with stirrer	3	
8.	Heating Mantle 100 ml	4	
9.	Heating Mantle 250 ml	4	
10.	Heating Mantle 500 ml	2	
11.	Electrophoresis Apparatus with Power Supply (Vertical)	1	

12.	pH meter	3	
13.	Conductivity meter cum TDS meter	4	
14.	Water Analyser	1	
15.	Kjeldahl apparatus	1	

16.	Double Distillation (Vertical unit) with cut off device	1	
17.	Copper Calorimeter	20	
18.	Magnetic stirrers with stirring bars	4	

19.	Vacuum pump (with oil) with gauge	1	
20.	Soxhlet Extraction Apparatus	1	
21.	Circulating Liquid bath	1	

22.	Digital Melting point Apparatus	2	
23.	Centrifuge	2	
24.	pH meter	1	