

SYLLABUS

The record, to be submitted by the students at the time of their annual examination, has to include:

- Record of at least 15 Experiments [with a minimum of 7 from section A and 8 from section B], to be performed by the students.
- Record of at least 5 Activities [with a minimum of 2 each from section A and section B], to be demonstrated by the teachers.
- Report of project to be carried out by the students.

Evaluation Scheme for Practical Examination:

● Two experiments one from each section	(8+8) Marks
● Practical record (experiments and activities)	6 Marks
● Investigatory project	3 Marks
● Viva on experiments, activities and project	5 Marks
Total	30 Marks

SECTION-A

Experiments

Total Periods: 60

(Any 7 experiments out of the following to be performed by the students)

1. To determine resistance per cm of a given wire by plotting a graph of potential difference versus current.
2. To find resistance of a given wire using metre bridge and hence determine the resistivity (specific resistance) of its material.
3. To verify the laws of combination (series/parallel) of resistances using a metre bridge.
4. To compare the emf of two given primary cells using a potentiometer.
5. To determine the internal resistance of given primary cell using potentiometer.
6. To determine the resistance of a galvanometer by half-deflection method and to find its figure of merit
7. To convert the given galvanometer (of known resistance and figure of merit) into an ammeter and voltmeter of desired range and to verify the same.
8. To find the frequency of the *ac* mains with a sonometer.

Activities

(For the purpose of demonstration only)

1. To measure the resistance and impedance of an inductor with or without iron core.
2. To measure resistance, voltage (*ac/dc*), current (*ac*) and check continuity of a given circuit using multimeter.
3. To assemble a household circuit comprising of three bulbs, three (on/off) switches, a fuse and a power source.
4. To assemble the components of a given electrical circuit.
5. To study the variation in potential drop with length of a wire for a steady current.
6. To draw the diagram of a given open circuit comprising of at least a battery, resistor/rheostat, key, ammeter and voltmeter. Mark the components that are not connected in proper order and correct the circuit and also the circuit diagram.

SECTION-B

Experiments

(Any 8 experiments out of the following to be performed by the students)

1. To find the value of v for different values of u in case of a concave mirror and to find the focal length.
2. To find the focal length of a convex mirror, using a convex lens.

3. To find the focal length of a convex lens by plotting graphs between u and v or between $1/u$ and $1/v$.
4. To find the focal length of a concave lens, using a convex lens.
5. To determine angle of minimum deviation for a given prism by plotting a graph between the angle of incidence and angle of deviation.
6. To determine refractive index of a glass slab using a travelling microscope.
7. To find refractive index of a liquid by using (i) concave mirror, (ii) convex lens and plane mirror.
8. To draw the I - V characteristic curve of a p - n junction in forward bias and reverse bias.
9. To draw the characteristic curve of a Zener diode and to determine its reverse breakdown voltage.
10. To study the characteristics of a common-emitter n - p - n or p - n - p transistor and to find out the values of current and voltage gains.

Activities

For the purpose of demonstration only)

1. To identify a diode, an LED, a transistor, an IC, a resistor and a capacitor from mixed collection of such items.
2. Use of multimeter to (i) identify base of transistor, (ii) distinguish between n - p - n and p - n - p type transistors, (iii) see the unidirectional flow of current in case of a diode and an LED, (iv) check whether a given electronic component (e.g., diode, transistor or IC) is in working order.
3. To study effect of intensity of light (by varying distance of the source) on an LDR.
4. To observe refraction and lateral deviation of a beam of light incident obliquely on a glass slab.
5. To observe polarization of light using two polaroids.
6. To observe diffraction of light due to a thin slit.
7. To study the nature and size of the image formed by a (i) convex lens, (ii) concave mirror, on a screen by using a candle and a screen (for different distances of the candle from the lens/mirror).
8. To obtain a lens combination with the specified focal length by using two lenses from the given set of lenses.

Suggested Investigatory Projects

1. To study various factors on which the internal resistance/emf of a cell depends.
2. To study the variations in current flowing in a circuit containing an LDR, because of a variation.
 - (i) in the power of the incandescent lamp, used to 'illuminate' the LDR (keeping all the lamps at a fixed distance).
 - (ii) in the distance of a incandescent lamp (of fixed power) used to 'illuminate' the LDR.
3. To find the refractive indices of (i) water (ii) oil (transparent) using a plane mirror, an equi-convex lens, (made from a glass of known refractive index) and an adjustable object needle.
4. To design an appropriate logic gate combination for a given truth table.
5. To investigate the relation between the ratio of
 - (i) output and input voltage and,
 - (ii) number of turns in the secondary coil and primary coil of a self designed transformer.
6. To investigate the dependence of the angle of deviation on the angle of incidence, using a hollow prism filled one by one with different transparent fluids.
7. To estimate the charge induced on each one of the two identical styrofoam (or pith) balls suspended in a vertical plane by making use of Coulomb's law.
8. To set up a common base transistor circuit and to study its input and output characteristics and to calculate its current gain.
9. To study the factors on which the self inductance of a coil depends by observing the effect of this coil, when put in series with a resistor/(bulb) in a circuit fed up by an ac source of adjustable frequency.
10. To construct a switch using a transistor and to draw the graph between the input and output voltages and mark the cut-off, saturation and active regions.
11. To study the earth's magnetic field using a tangent galvanometer.

Recommended Textbooks

1. Physics Part-I, Textbook for class XII, Published by NCERT.
2. Physics Part-II, Textbook for class XII, Published by NCERT.