

Assignment

Class: XII

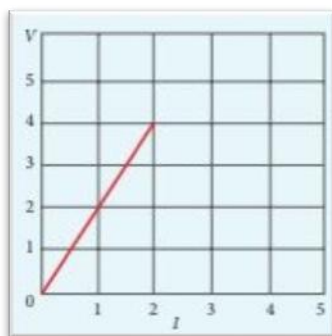
Subject: PHYSICS

Unit - 2 CURRENT ELECTRICITY

Part - A

I. One Mark Questions

1. The following graph shows current versus voltage values of some unknown conductor. What is the resistance of this conductor?



- (a) 2 ohm (b) 4 ohm (c) 8 ohm (d) 1 ohm
2. A toaster operating at 240 V has a resistance of 120Ω . Its power is
- a) 400 W b) 2 W c) 480 W d) 240 W
3. A piece of copper and another of germanium are cooled from room temperature to 80 K. The resistance of
- a) each of them increases
b) each of them decreases
c) copper increases and germanium decreases
d) copper decreases and germanium increases
4. In Joule's heating law, when R and t are constant, if the H is taken along the y-axis and I^2 along the x-axis, the graph is
- a) straight line b) parabola c) circle d) ellipse
5. The resistance of a conductor in the form of a wire depends on its
- a) length b) material c) diameter d) temperature
6. Electric Current is rate of change in
- a) Electric Potential b) Electric Charge c) Electric field d) Induction
7. SI unit of Mobility

a) $\frac{s^2}{V m}$

b) $\frac{V m}{s^2}$

c) $\frac{m^2}{V s}$

d) $\frac{V s}{m^2}$

8. Colour of the resistor which shows 10% tolerance

a) Gold

b) Silver

c) Brown

d) Colourless

9. The terminal voltage of Battery is

a) always less than emf

b) always equal to emf

c) less or equal to emf is depending on the direction of current flow

d) less or equal to emf is depending on internal resistance of the cell

10. The masses of different substances liberated in electrolysis by the same quantity of electricity are proportional to their relative

a) atomic masses

b) valencies

c) ratios of atomic masses and valency

d) product of atomic masses and valency

Part – B

II. Very Short Answer.

1. Write a short note on superconductors?
2. Define current density.
3. Define electrical resistivity.
4. State Joule's law of heating.
5. What is Seebeck effect?

Part – C

III. Short Answer.

1. State and explain Kirchhoff's rules.
2. Obtain the condition for bridge balance in Wheatstone's bridge.

Part – D

IV. Write in detail.

1. Obtain the macroscopic form of Ohm's law from its microscopic form and discuss its limitation.

Unit - 3 MAGNETISM AND MAGNETIC EFFECT OF CURRENT

Part - A

I. One Mark Questions

1. The vertical component of Earth's magnetic field at a place is equal to the horizontal component. What is the value of angle of dip at this place?

- (a) 30° (b) 45° (c) 60° (d) 90°

2. The potential energy of magnetic dipole whose dipole moment is $\vec{P}_m = (-0.5\hat{i} + 0.4\hat{j}) \text{ Am}^2$

kept in uniform magnetic field $\vec{B} = 0.2\hat{i} \text{ T}$

- (a) -0.1 J (b) -0.8 J (c) 0.1 J (d) 0.8 J

3. A non-conducting charged ring carrying a charge of q , mass m and radius r is rotated about its axis with constant angular speed ω . Find the ratio of its magnetic moment with angular momentum is

- (a) q/m (b) $2q/m$ (c) $q/2m$ (d) $q/4m$

4. Three wires of equal lengths are bent in the form of loops. One of the loops is circle, another is a semi-circle and the third one is a square. They are placed in a uniform magnetic field and same electric current is passed through them. Which of the following loop configuration will experience greater torque ?

- (a) Circle (b) Semi-circle (c) Square (d) All of them

5. A thin insulated wire forms a plane spiral of $N = 100$ tight turns carrying a current $I = 8 \text{ mA}$ (milli ampere). The radii of inside and outside turns are $a = 50 \text{ mm}$ and $b = 100 \text{ mm}$ respectively. The magnetic induction at the centre of the spiral is

- (a) $5 \mu\text{T}$ (b) $7 \mu\text{T}$ (c) $8 \mu\text{T}$ (d) $10 \mu\text{T}$

6. Magnetic declination of Chennai City is

- (a) $-1^\circ 16'$ (b) $-1^\circ 16''$ (c) $1^\circ 16'$ (d) $1^\circ 16''$

7. SI unit of Magnetic Induction is

- (a) NA m^2 (b) NA m^{-2} (c) NA m^{-1} (d) $\text{NA}^{-1} \text{ m}^{-1}$

8. The ratio of Magnetic length and Geometrical length

- (a) $6/5$ (b) $5/6$ (c) $8/5$ (d) $5/8$

9. Under what conditions Potential energy of the bar magnet is maximum when it is placed in an external magnetic field

- (a) Bar magnet is aligned parallel to the external magnetic field
- (b) Bar magnet is aligned anti-parallel to the external magnetic field
- (c) Bar magnet is aligned perpendicular to the external magnetic field
- (d) none of these

10. According to Curie Law, the graph drawn between magnetic susceptibility and temperature is

- (a) a rectangular parabola
- (b) a rectangular hyperbola
- (c) a circular parabola
- (d) a circular hyperbola

Part – B

II. Very Short Answer.

1. What is meant by magnetic induction?
2. Define magnetic flux.
3. Define magnetic dipole moment.
4. State Coulomb's inverse law.
5. What is magnetic susceptibility ?

Part – C

III. Short Answer.

1. What is tangent law? Discuss in detail
2. Discuss Earth's magnetic field in detail.

Part – D

IV. Write in detail.

Discuss the working of cyclotron in detail.