PHYSICS

BOOKS - EDUCART PUBLICATION

SAMPLE PAPER SELF- ASSESSMENT - (10)

Section A

1. A galvanometer can be converted into an ammeter by connecting

A. Connecting a large resistance in series

B. Connecting a small resistance in series

C. Connecting a large resistance in parallel

D. Connecting a small resistance in parallel

Answer:

Watch Video Solution

2. At a place, the horizontal component of earth's magnetic field is B and angle of dip is 60°. What is the value of horizontal

component of earth's magnetic field at equator?

A. 0°

B. 45°

C. 60°

D. 90°

Answer:

Watch Video Solution

3. A toroid of n turns, mean radius R and cross-sectional radius a carries current I. It is placed on a horizontal table taken as x-y plane. Its magnetic moment $\overrightarrow{M}$

A. Points along the axis of toroid

B. points radially outward

C. is zero

D. is non-zero' and points in Z direction by symmetry.

Answer:

Watch Video Solution

4. What is the potential energy of the equal positive point charges of $1\mu C$ each held $1m$ apart in air ?

A. 0

B. 1 e v

C. 1J

D. $9 \times 10^{-3} J$

Answer:

Watch Video Solution

5. Electric flux through a closed surface in free space enclosing a charge q is

A. $\frac{q}{4\varepsilon_0}$

B. $\frac{q}{6\varepsilon_0}$

C. $\frac{q}{3\varepsilon_0}$

D. $\frac{q}{8\varepsilon_0}$

Answer:

Watch Video Solution

6. Two wires of the same material having radii in the ratio $1:2$, carry currents in the ratio $4:1$. The ratio of drift velocities of electrons in them is:

A. 2:1

B. 1:1

C. 1:4

D. 16:1

Answer:

Watch Video Solution

Section B

1. Two charged particles traverse identical helical paths in a completely opposite sense in a uniform magnetic field $\vec{B} = B_0\hat{K}$

A. The charge to mass ratio satisfy

B. They have equal Z-components of momenta

C. They necessarily represent a particleanti particle pair

D. They must have equal charges

Answer:

Watch Video Solution

2. If at a certain place B_H and B_V are horizontal and vertical components of earth's magnetic field respectively and δ is the angle of dip at the same place then

A. 45°

B. 60°

C. 90°

D. 30°

Answer:

Watch Video Solution

Watch Video Solution

3. A capacitor has plate area A and distance between the plates d. If a metal sheet is inserted of thickness $\frac{d}{3}$ the ratio of old and new capacitance is:

A. 2:3

B. 1:1

C. 3:1

D. 4:1

Answer:

Watch Video Solution

4. A bar magnet of length 3cm has points A and B along its axis at distance of $24cm$ and $48cm$ on the opposite sides. Ratio of magnetic field at these points will be

A. 3

B. 8

C. $\frac{1}{2}\sqrt{2}$

D. 4

Answer:

Watch Video Solution

5. A copper rod of length l is rotated about one end perpendicular to the uniform magnetic field B with constant angular velocity ω . The induced e.m.f. between its two ends is

A. $B\omega l^2$

B. $\frac{1}{2}B\omega l^2$

C. $\frac{1}{4}B\omega l^2$

D. $2B\omega l^2$

Answer:

Watch Video Solution

6. Give expression for average value of a.c. voltage $V = V_0 \sin \omega t$ over interval $t = 0$ to $t = \frac{\pi}{\omega}$

A. $\frac{V_0}{\pi}$

B. $\frac{-V_0}{\pi}$

C. $\frac{V_0}{2\pi}$

D. $\frac{2V_0}{\pi}$

Answer:

Watch Video Solution

7. Internal resistance of a cell of 4 V, which gives 0.2 A current through resistance of 10 Ω:

A. 100Ω

B. 1Ω

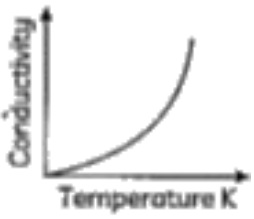
C. 10Ω

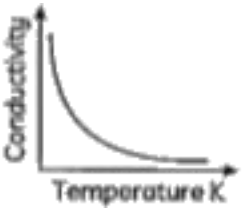
D. 0.1Ω

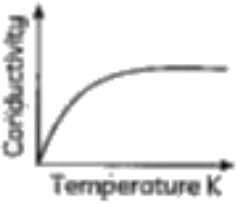
Answer:

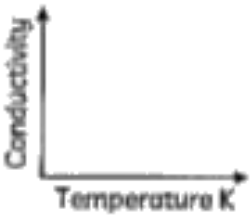
Watch Video Solution

8. Explain with the help of a graph the variation of conductivity with temperature of a metallic conductor.

A. 

B. 

C. 

D. 

Answer:

Watch Video Solution

9. t2

A. $2H$

B. $\frac{H}{2}$

C. $H\sqrt{\frac{3}{2}}$

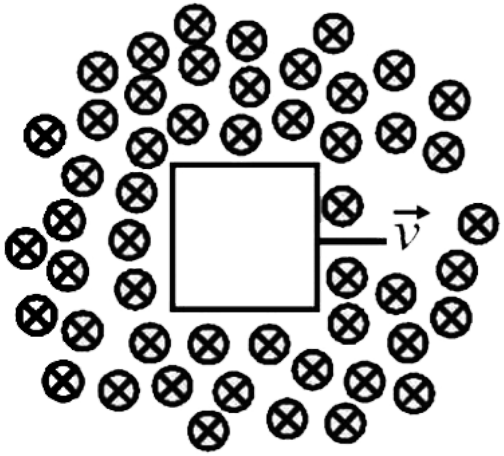
D. $\frac{2H}{\sqrt{3}}$

Answer:

Watch Video Solution

10. A conducting square loop of side L and resistance R moves in its plance with a uniform velocity v perpendicular to one of its sides. A magnetic induction B, constant in time and space, pointing perpendicular and into the plane of the loop exists everywhere.

The current induced in the loop is



A. $\frac{Blv}{R}$ clockwise

B. $\frac{2Blv}{R}$ anticlockwise

C. $\frac{Blv}{R}$ anticlockwise

D. 0

Answer:

Watch Video Solution

11. In an LCR. series circuit the resonating frequency can be decreased by -

A. Iron core of inductor should be removed

B. Another capacitor should be added in parallel to first

C. Dielectric in the capacitor should be removed

D. The generator frequency should be reduced.

Answer:

Watch Video Solution

12. In a Wheatstone's bridge, three resistances P,Q and R connected in the three arms and the fourth arm is formed by two resistances S_1 and S_2 connected in parallel. The condition for the bridge to be balanced will be

A. $\frac{P}{Q} = \frac{R}{S_1 + S_2}$

B. $\frac{P}{Q} = \frac{2R}{S_1 + S_2}$

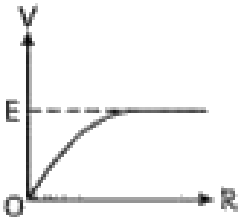
C. $\frac{P}{Q} = \frac{R}{S_1 + S_2}$

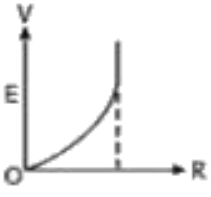
D. $\frac{P}{Q} = R\frac{(S_1 + S_2)}{S_1 S_2}$

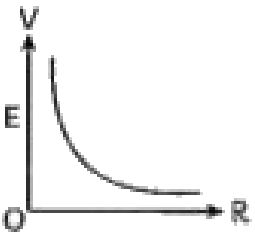
Answer:

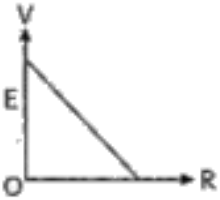
Watch Video Solution

13. A cell of emf E and internal resistance r is connected across an external resistance R. Plot a graph showing the variation o $P.D.$ Across R, verses 'R`.

A. 

B. 

C. 

D. 

Answer:

Watch Video Solution

14. In an ammeter, 4% of the main current is passing through the galvanometer. If shunt

resistance is 5 Ω, then resistance of galvanometer will be

A. 60Ω

B. 540Ω

C. 120Ω

D. 480Ω

Answer:

Watch Video Solution

15. The magnetic moment associated with the solenoid if it is closely wounded of 2000 turns and area of cross section is $1.6 \times 10^{-4} m^2$. It is carrying a current of 4 A allowing it to turn in horizontal plane is given by:

A. $1.5 Am^2$

B. $2 Am^2$

C. $1.28 Am^2$

D. $1.6 Am^2$

Answer:

Watch Video Solution

16. Assertion : A step-up transformer changes a low voltage into a high voltage.

Reason : This violate the law of conservation of energy.

A. Both (A) and (R) are true and (R) is the correct explanation of (A).

B. Both (A) and (R) are true but (R) is not the correct explanation of (A).

C. (A) is true but (R) is false.

D. (A) is false and (R) is also false.

Answer:

Watch Video Solution

17. Assertion: An inductance and a resistance are connected in series with an AC circuit. In this circuit the current and the potential difference across the resistance lag behind potential difference across the inductance by

an angle $\pi / 2$.

Reason: In LR circuit voltage leads the current by phase angle which depends on the value of inductance and resistance both.

A. Both (A) and (R) are true and (R) is the correct explanation of (A).

B. Both (A) and (R) are true but (R) is not the correct explanation of (A).

C. (A) is true but (R) is false.

D. (A) is false and (R) is also false.

Answer:

Watch Video Solution