Class XII Physics

Pre First Term Class Practice Sheet

1. What is the electric flux through a cube of side 1 cm which encloses an electric dipole?

   a) Zero b) $\frac{q}{\varepsilon_0}$ c) $\frac{2q}{\varepsilon_0}$ d) Insufficient data

2. Which of the following is true for capacitive reactance and its S.I. units.

   a) Resistance offered of a LCR series circuit when connected to an electrical circuit, Ohm

   b) Voltage across a capacitor, Volt

   c) Resistance offered by Capacitor when connected to an electrical circuit, Ohm

   d) None of these

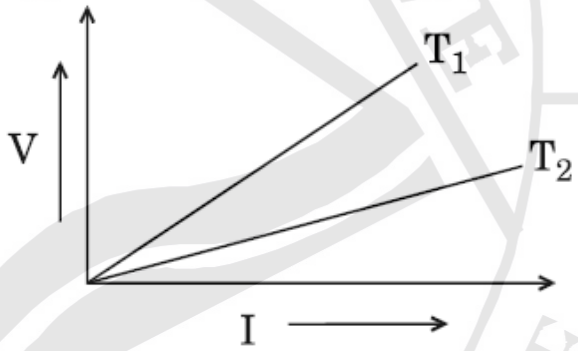
3. Define dielectric constant of a medium. What is its S.I. unit?

   a) Ratio of electric potential in free space to that in the dielectric medium. Ohm

   b) Ratio of capacitance of a capacitor with dielectric medium to that without dielectric medium. Henry

   c) b) Ratio of capacitance of a capacitor with dielectric medium to that without dielectric medium. No Unit

   d) a) Ratio of electric potential in free space to that in the dielectric medium. No unit



4. V – I graph for a metallic wire at two different temperatures T_1 and T_2 is as shown in the figure. Which of the two temperatures is higher?

   a) $T_1 > T_2$ b) $T_2 < T_1$ c) $T_2 = T_1$ d) None of these

5. 'Quality factor' of resonance in series LCR circuit is the measure of,

   a) The value of frequency at resonance.

   b) The value of inductance for resonance

   c) The sharpness of resonance.

   d) The value of current at resonance

6. A planar loop of rectangular shape is moved within the region of a uniform magnetic field acting perpendicular to its plane. What is the direction and magnitude of the current induced in it?

a) Clockwise

b) Perpendicular to the plane in the inward direction

c) Perpendicular to the plane in the outward direction

d) None of these

7. Choose the correct option regarding 'wattless current'.

a) A current is said to be wattless if the average power consumed over one complete cycle is zero.

b) In a a.c. circuit containing pure inductor or pure capacitor the phase difference between voltage and current is 180^0. Hence and no power is dissipated even though a current is flowing in the circuit. This current is referred as wattless current.

c) The component of the current along to the applied voltage does not contribute power in an LCR circuit. Hence it is referred as wattless current.

d) None of these

8. In a series LCR circuit, $V_L = V_C \neq V_R$ What is the value of power factor?

a) 1 b) $\frac{\pi}{2}$ c) π d) Zero

9. Polarisation $\vec{P}$ of a dielectric material in the presence of an external electric field $\vec{E}$ is

a) $\vec{P} = \varepsilon_0 \chi_e \vec{E}$ b) $\vec{P} = \varepsilon_r \chi_e \vec{E}$ c) $\vec{P} = \varepsilon_0 \chi_e V$ d) $\vec{P} = \varepsilon_r \chi_e V$

10. The term 'mobility' of charge carriers, its expression and S.I. unit

a) Drift velocity per unit electric field $\mu = \frac{v_d}{E} SI$ Unit: $\mathrm{m^2/Vs}$ or $\mathrm{Cm/Ns}$

b) Electric field per unit drift velocity $\mu = \frac{E}{v_d} SI$ Unit: $\mathrm{m^2/Vs}$ or $\mathrm{Cm/Ns}$

c) Drift velocity per unit electric field $\mu = \frac{E}{v_d} SI$ Unit: $\mathrm{m^2/Vs}$ or $\mathrm{Cm/Ns}$

d) None of these

11. In an a.c. circuit, the instantaneous voltage and current are V = 200 sin 300 t volt and I = 8 cos 300 t ampere respectively. The nature of the circuit is

a) Capacitive as current leads voltage by $\pi/2$

b) Inductive as current leads voltage by $\pi/2$

c) LC as current and voltage are not in phase

d) $_{LCR}$ as current and voltage are not in phase

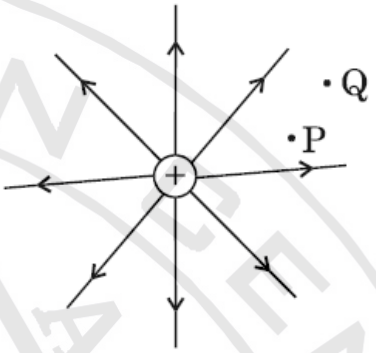
12. Two wires, one of copper and the other of manganin, have same resistance and equal thickness. Which wire is longer

    a) Copper b) Maganin

    c) Both have equal length

    d) Insufficient data to come to any conclusion

13. The figure shows the field lines of a positive point charge. What will be the sign of the potential energy difference of a small negative charge between the points Q and P ?



    Positive b) Negative c) Zero potential energy d) None of these

14. Distinguish between emf and terminal voltage of a cell

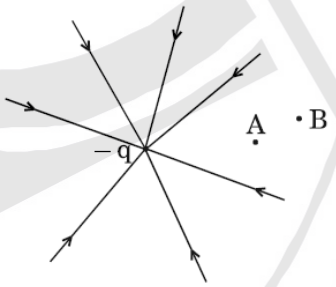
    a) The emf of a cell is equal to the terminal voltage when the circuit is closed.

    b) The emf of a cell is greater than the terminal voltage when current is drawn through the cell.

    c) The emf of a cell is more than the terminal voltage when the cell is being charged

    d) None of these

15. The field lines of a negative point charge are as shown in the figure. Does the kinetic energy of a small negative charge increase or decrease in going from B to A?



    a) The kinetic energy of a negative charge increases in going from point B to point A in the given field configuration

    b) The kinetic energy of a negative charge decreases in going from point B to point A in the given field configuration

    c) The kinetic energy of a negative charge does not change in going from point B to point A in the given field configuration

    d) The kinetic energy of a negative charge remains variable in going from point B to point A in the given field configuration

16. The unit and expression of quality factor is

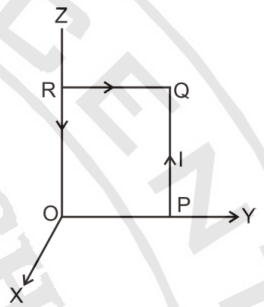
a) Ohm, $Q = \frac{1}{\omega_0 CR} = \frac{\omega_0 L}{R}$

b) No Unit $Q = \frac{1}{\omega_0 CR} = \frac{\omega_0 L}{R}$

c) Ohm $Q = \frac{\omega_0}{CR} = \frac{L}{R\omega_0}$

d) No Unit $Q = \frac{\omega_0}{CR} = \frac{L}{R\omega_0}$

17. A square coil, OPQR, of side a, carrying a current I, is placed in the Y-Z plane as shown here. Find the magnetic moment associated with this coil



a) $\mu_m = Ia^2\hat{i}$ b) $\mu_m = I\pi a^2\hat{i}$ c) $\mu_m = Ia^2\hat{j}$ d) $\mu_m = I\pi a$

18. When electrons drift in a metal from lower to higher potential, c mean that all the free electrons of the metal are moving in the same direction ?

a) Yes electrons are all moving from higher potential to lower potential
b) Yes electrons are all moving from positive field to negative field
c) No electron are in random motion, colliding continuously
d) None of these

19. The horizontal component of the earth's magnetic field at a place is B and angle of dip is 60°.What is the value of vertical component of earth's magnetic field at equator?

a) B b) B/2 c) Zero d) 2b

20. Electrostatic field should be zero inside a conductor because

a) In the static situation, the current inside, or on the surface, of the conductor is uniform
b) In the static situation, the current inside, or on the surface, of the conductor is constantly increasing
c) Since the conductor is charged so the electric field inside it is zero.
d) Since the charge inside the conductor is zero, the electric field is also zero.