

Short Answer type questions

1) What is the dimension formula for $\frac{1}{4\pi\epsilon_0}$?

- a) $ML^3T^{-4}A^{-2}$
- b) $ML^3T^{-2}A^{-2}$
- c) $ML^2T^{-4}A^{-2}$
- d) $ML^3T^{-1}A^{-2}$

Ans (a)

2. X,Y,Z are three charged bodies . X and Y repel each other And X attracts Z.
What is the nature of force between B and C?

- a) Attractive
- b) Repulsive

Ans (a)

3. On going away from point charge ,the electric field due to charge decreases . This is also true for small electric dipole.Does the electric field decreases at the same rate?

- a) Yes
- b) No

Ans (b)

The field due to electric charge decrease more rapidly as
Electric Field for electric dipole

$$E \propto \frac{1}{r^3}$$

Electric Field due to charge

$$E \propto \frac{1}{r^2}$$

4. Match the column

Materials	Carrier of electric current
Metallic rod	Electrons and protons
Semiconductor	Positive and negative ions
Super conductor	Electrons and holes
A hydrogen discharge tube	Electron pairs
An electrolytic cell	Free electrons

Ans

Metallic rod -> Free electrons

Semiconductor -> electrons and holes

Super conductor -> Electrons pairs

A hydrogen discharge tube -> electrons and protons

An electrolytic cell -> Positive and negative ions

Question

In the expression,

$$\mathbf{F} = q \mathbf{v} \times \mathbf{B}$$

Which of the following pairs are at right angle always

- a) \mathbf{F} and \mathbf{v}
- b) \mathbf{F} and \mathbf{B}
- c) \mathbf{v} and \mathbf{B}
- d) None of the above

Ans (a) and (b)

Question

What are the dimensions of $1/\sqrt{\mu_0 \epsilon_0}$?

- a) LT^{-1}
- b) LT^{-2}
- c) $LT^{-1}A$
- d) None of the above

Ans (a)

Question

Which off these particles can be accelerated in a cyclotron

- a) Protons
- b) electrons
- c) neutrons
- d) None of the above

Ans (a) and (b)

Question:

Which of the following statements are true?

STATEMENT I-> The energy in charged capacitor resides in the electric field between the plates of the capacitor

STATEMENT II-> The values L/R , CR and \sqrt{LC} have same dimensional formula's

STATEMENT III-> The resistance in LCR circuit is responsible for dying the electric oscillations in the circuit

STATEMENT IV->The current rises to steady value at a constant rate in a LR circuit

Ans (a) (b) and (c)

Question:

Which of the following rays are electromagnetic waves

- a) Cathode rays
- b) X-rays
- c) γ rays
- d) Positive rays
- e) β rays

Ans (b) and (c)