24 Lecture - PHY101

Important Mcqs

What is the unit of electric field?

- a. Newtons
- b. Volts
- c. Teslas
- d. Newtons per Coulomb

Answer: d. Newtons per Coulomb

Which law relates the electric field to the electric potential?

- a. Ohm's Law
- b. Coulomb's Law
- c. Gauss's Law
- d. Ampere's Law

Answer: c. Gauss's Law

Which statement about electric potential is correct?

- a. Electric potential is a vector quantity.
- b. Electric potential is a scalar quantity.
- c. Electric potential is the same as electric field.
- d. Electric potential is measured in Amperes.

Answer: b. Electric potential is a scalar quantity.

Which statement about capacitance is correct?

- a. Capacitance depends only on the geometry of the system.
- b. Capacitance depends only on the charge on the capacitor.

- c. Capacitance depends on both the geometry of the system and the dielectric constant of the material between the plates.
- d. Capacitance does not depend on the voltage across the capacitor.

Answer: c. Capacitance depends on both the geometry of the system and the dielectric constant of the material between the plates.

Which of the following is true for a conductor in electrostatic equilibrium?

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- a. There is no electric field inside the conductor.
- b. There is no charge on the surface of the conductor.
- c. The electric field is highest at the center of the conductor.
- d. The potential inside the conductor is different from the potential outside the conductor.

Answer: a. There is no electric field inside the conductor.

What is the formula for the electric potential due to a point charge?

a. V = kq/r

b. $V = kq/r^2$

c. V = kQ/r

d. $V = kQ/r^2$

Answer: a. V = kq/r

What is the relationship between electric potential and electric field?

- a. Electric potential is proportional to electric field.
- b. Electric potential is the negative gradient of electric field.
- c. Electric potential is the curl of electric field.
- d. Electric potential is the divergence of electric field.

Answer: b. Electric potential is the negative gradient of electric field.

Which statement about the dielectric material between the plates of a capacitor is correct?

- a. The dielectric material increases the capacitance of the capacitor.
- b. The dielectric material decreases the voltage of the capacitor.

- c. The dielectric material increases the electric field between the plates.
- d. The dielectric material decreases the energy stored in the capacitor.

Answer: a. The dielectric material increases the capacitance of the capacitor.

What is the formula for the capacitance of a parallel-plate capacitor?

- a. C = ?A/d
- b. C = ?d/A
- c. C = Ad/?
- d. $C = ?A^2/d$

Answer: a. C = ?A/d

What is the electric potential energy of a system of two point charges q1 and q2 separated by a distance r?

- a. U = kq1q2
- b. $U = kq1q2/r^2$
- c. U = kq1q2/r
- d. $U = kq1^2/r + kq2^2/r$

Answer: c. U = kq1q2/r