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