

26 Lecture - PHY101

Important Mcqs

What is the unit of electric potential?

- a) Coulomb (C)
- b) Ampere (A)
- c) Volt (V)
- d) Tesla (T)

Answer: c) Volt (V)

Which of the following is true for an equipotential surface?

- a) The electric field is zero at all points on the surface
- b) The electric field is perpendicular to the surface at all points
- c) The electric field is parallel to the surface at all points
- d) The electric field is maximum at all points on the surface

Answer: a) The electric field is zero at all points on the surface

What is the electric potential due to a point charge at a distance of 2 meters, if the charge is 4 Coulombs?

- a) 2 V
- b) 4 V
- c) 8 V
- d) 16 V

Answer: c) 8 V ($V = kq/r = (9 \times 10^9 \text{ Nm}^2/\text{C}^2) \times (4 \text{ C}) / (2 \text{ m}) = 8 \text{ V}$)

What is the electric potential due to a dipole at a distance of 3 meters, if the dipole moment is 5 Cm and the angle between the dipole moment and the line joining the dipole to the point is 60 degrees?

- a) 1.8 V
- b) 3.6 V

c) 7.2 V

d) 14.4 V

Answer: a) 1.8 V ($V = k(p/r^2)\cos\theta = (9 \times 10^9 \text{ Nm}^2/\text{C}^2) \times (5 \times 10^{-6} \text{ Cm}) / (3 \text{ m})^2 \times \cos 60^\circ = 1.8 \text{ V}$)

The work done in moving a charge on an equipotential surface is:

a) Zero

b) Positive

c) Negative

d) Cannot be determined

Answer: a) Zero

The electric potential energy of a system of two charges is -10 J. What is the work done in moving one of the charges from infinity to a distance of 2 meters from the other charge?

a) 2 J

b) 4 J

c) 8 J

d) 10 J

Answer: d) 10 J (The work done is equal to the change in potential energy, which is -10 J. Therefore, the work done is +10 J)

The electric potential due to a uniformly charged sphere at a distance outside the sphere:

a) Increases as the distance increases

b) Decreases as the distance increases

c) Remains constant as the distance increases

d) Can be zero at some distances

Answer: b) Decreases as the distance increases

What is the electric potential due to a uniform electric field of magnitude 5 N/C?

a) 2 V

b) 5 V

c) 10 V

d) 25 V

Answer: b) 5 V ($V = Ed = 5 \text{ N/C} \times 1 \text{ m} = 5 \text{ V}$)

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

a) The electric potential is zero inside the conductor

b) The electric field is zero inside the conductor

c) The electric potential is maximum at the surface of the conductor

d) The electric field is maximum at the surface of the conductor

Answer: b) The electric field is zero inside the conductor

The electric potential due to a system of charges is the:

a) Vector sum of the electric potentials due to each charge

b) Scalar sum of the electric potentials