



Because of Today Tomorrow Will Be better

RK Academy

One step Ahead to Your Success...



WEEKLY TEST

CLASS: XII
SUBJECT: PHY
(1 MARK)

FM: 20
TIME: 40 MIN

1. The electric potential on the axis of an electric dipole at a distance 'r' from its centre is V. Then the potential at a point at the same distance on its equatorial line will be
a) V b) 2V c) V/2 d) zero
2. Write the dimension of electric potential.
3. An electric dipole of moment p is placed parallel to the uniform electric field. The amount of work done in rotating the dipole by 90° is
(a) pE (b) -pE (c) -pE/2 (d) zero
4. Electric field lines are always perpendicular to equipotential surface. (T/F)
5. A proton is taken from point P_1 to point P_2 both located in an electric field. The potentials at points P_1 and P_2 are - 5 V and + 5 V respectively. Assuming that kinetic energies of the proton at points P_1 and P_2 are zero, the work done on the proton is
a. -1.6×10^{-18} b. 1.6×10^{-18} c. zero d. 0.8×10^{-18}
6. What is equipotential surface? Write its two properties. **(2 MARKS)**
7. If a conductor is placed in an electric field, then how the induced electric field behaves inside the conductor at equilibrium. **(2 MARKS)**
8. The electric potential V at any point (x, y, z) is given by $V = 3x^2 + 5yz^3$ where x,y,z are in metres and V in volts. Find the expression of electric field at the point (1 m, 0, 2 m). **(3 MARKS)**
9. Two-point charges of $5 \mu\text{C}$ and $2 \mu\text{C}$ are located in free space at (-4 cm, 0) and (6 cm, 0) respectively. If this system of charges was initially kept in an electric field $E = A/r^2$,
where $A = 8 \times 10^4 \text{ N C}^{-1} \text{ m}^2$, calculate the electrostatic potential energy of the system. **(3 MARKS)**
10. **(5 MARKS)**
 - a) An electric dipole of dipole moment p consists of point charges +q and -q, separated by 2a. Derive an expression for electric potential in terms of its dipole moment at a point at a distance x ($\gg a$) from its centre and lying (I) along its axis, and (II) along its bisector line
 - b) Two-point charges of $5 \mu\text{C}$ and $2 \mu\text{C}$ are located in free space at (-4 cm, 0) and (6 cm, 0) respectively. Calculate the amount of work done to separate the two charges at infinite distance.