

TEST-03 . TIME DURATION- 1 hour.

- 1) Obtain an expression for electric potential 'V' at a point in axial position.
- 2) Define 1 volt & write the dimension formula of volt.
- 3) Calculate the potential due to dipole of dipole moment 3.5×10^{-11} C/m at a distance 0.7 m from it.
 - (i) on its axis
 - (ii) on its perpendicular bisector.

[Note: The distance is taken from the centre of dipole.]

- 4) Consider a point charge $+q$ placed at the origin and another point charge $-2q$ placed at a distance of 9 m from charge $+q$. Determine the point between the two charges at which electric potential is zero.

5) How much work has to be done in moving a charge 'q' from point A to a point B on an equipotential surface where $AB = 10 \text{ cm}$?

6) Three charges $2q$, q & q are kept at the vertices A, B, C respectively of an equilateral triangle ABC having each side equal to a . Electrostatic potential energy of the system is zero. This is possible if q is equal to

(a) q

(b) $q/2$

(c) $-q/2$

(d) None of the above.

7) What is the electric potential energy of a system of two positive point charges of $1 \mu\text{C}$ each placed in air 1 m apart?

8) How much work is required to bring together the three charges from infinity to the corners of an equilateral triangle of side length 1 cm ?

$$q_1 = 4 \mu\text{C}, \quad q_2 = 6 \mu\text{C}, \quad q_3 = 3 \mu\text{C}.$$

$$k = 9 \times 10^9 \text{ N}.$$