DPP ELECTROSTATICS

1. An electric dipole of moment p is placed in a uniform electric field E, with p parallel to E. It is then rotated by an angle θ. The work done is
(a) pEsinθ (b) pEcosθ (c) pE(1–cosθ) (d) pE(1–sinθ)

2. An electric dipole has the magnitude of its charge as q and its dipole moment is p. It is placed in a uniform electric field E. If its dipole moment is along the direction of the field, the force on it and its potential energy are respectively **(S)**
(a) q.E and p.E (b) zero and minimum
(c) q.E and maximum (d) 2q.E and minimum
(d)

3. A dipole of electric dipole moment p is placed in a uniform electric field of strength E. If θ is the angle between positive directions of p and E, then the potential energy of the electric dipole is largest whenθ is
(a) zero (b) π/2 (c)π (d) π/4

4. An electric dipole placed in a non-uniform electric field will experience **(S)**
(a) only a force (b) only a torque
(c) bothforce and torque (d) neither force nor torque.

5. The angle between electric dipole moment and the electric field strength due to it on the axial lineis: **(S)**
(a) 0° (b) 90° (c)180° (d)None of these

6. The ratio of electric potential due to an electric dipole in the end-on position to that in the broad side-on position for the same distance from it, is
(a) ∞ (b) 2 (c)1 (d) zero

7 An electric dipole of dipole moment p placed in uniform electric field E will have minimum potential energy if the angle between p and E is **(S)**

(A)0 (B)π (C) $\frac{\pi}{2}$ (D) $\frac{3\pi}{2}$

8 For a dipole q = 2×10^{-6}C and d = 0.01m. Calculate the maximum torque for this dipole if E = 5×10^{5}N/C
(a) 1 × 10^{3}Nm^{-1} (b) 10 ×10^{-3}Nm^{-1} (c) 10 ×10^{-3}Nm (d) 10 ×10^{2}Nm^{2}

Answer key
1. C 2. B
3. C 4. C
5. A 6. A
7. A 8. C