**Problems on Electric Dipole**

1. An electric dipole consists of charges +2e and -2e separated by 0.78 nm. It is in an electric field of strength 3.4 ×106 N/C. Calculate the magnitude of the torque on the dipole when the dipole moment is (a) parallel to, (b) perpendicular to, and (c) antiparallel to the electric field.
2. An electric dipole consisting of charges of magnitude 1.50 nC separated by 6.20 µm is in an electric field of strength 1100 N/C. What are (a) the magnitude of the electric dipole moment and (b) the difference between the potential energies for dipole orientations parallel and antiparallel to E?
3. How much work is required to turn an electric dipole 180° in a uniform electric field of magnitude E =46.0 N/C if the dipole moment has a magnitude of p =3.02× 10-25 C.m and the initial angle is 64°?
4. A certain electric dipole is placed in a uniform electric field of magnitude 20 N/C. The maximum potential energy of the dipole is U= 100 ×10-28 J.What is the magnitude of p?