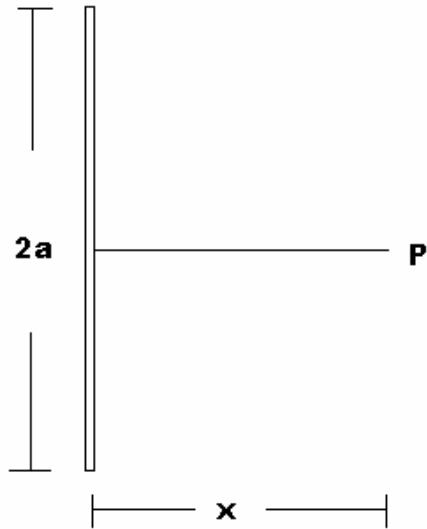**5. (20%)**

Electric charge is distributed along a thin rod of length $2a$, with total charge Q. Find the potential at a point P along the perpendicular bisector of the rod at a distance x from its center.

6. (20%)

A circular coil of wire 0.1 m in radius, with 20 turns, lies in a horizontal plane. It carries a current of 2.0 A in a counterclockwise sense when viewed from above. The coil is in a uniform magnetic field directed toward the right, with magnitude 2.5 T. Find the magnetic moment and the torque on the coil.