Assignment: 2

1. Explain an electric dipole. Also derive expression of E due to an electric dipole.
2. State and explain the Gauss's law.
3. Derive the Maxwell's first equation applied to Electrostatic by using equations of divergence and Gauss's law for electric flux density.
4. Define the potential gradient. Derive relationship between potential and electric field intensity.
5. Derive equation of potential difference Vab within the electric field produced by a point charge.
6. A circular loop located on x2 + y2 = 9, z = 0 carries a direct current of 10 A along aø. Determine H at (0, 0, 4) and (0, 0, -4).
7. A 15-nC point charge is at the origin in free space. Calculate V1 if point P1 is located at P1(−2,3,−1) and (a) V=0 at (6,5,4); (b) V=0 at infinity; (c) V = 5V at (2,0,4).
8. An electric dipole located at the origin in free space has a moment p = 3ax-2ay+az nC.m (a) find V at PA (2,3,4).
9. A charge of -0.3 μC is located at A(25,-30,15) (in cm), and a second charge of 0.5 μC is at B(-10,8,12) cm. Find Electric field intensity E at (a) the origin; (b) P(15,20,50) cm.

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