**5-MAGNETISM**

**1. Coulomb’s Law and Dipole Moment of a Magnet**

1. Magnetic dipole moment,  2. Coulomb’s law, 

**2. Magnetic Field of a Bar Magnet**

Magnetic field of a bar magnet of length 2*l* and dipole moment *m* at a distance *r* from its centre, 1.  (*on the axial line*) 2.  (*on the equatorial line*) For a short magnet, *I< <r,* so 3.  (on the axial line) 4. 

**3.Torque and Potential Energy of a Dipole, and Magnetic Moment of a Current Loop**

1. Torque,  or  2. Work done in turning the dipole or P.E. of a dipole  3. If initially the dipole is perpendicular to the field,  (i) When is parallel to  Potential energy of the dipole is minimum. It is in a state of stable equilibrium. (ii) Whenis *perpendicular* to  (iii) When is *antiparallel*  Potential energy of the dipole is maximum. It is in a state of unstable equilibrium. 4. Magnetic moment of a current loop, *m = NIA*5. 5. Orbital magnetic moment of an electron in nth orbit.  6. Bohr magneton is the magnetic moment of an electron in first *(n =1)* orbit. 

**4. Earth’s Magnetism and Neutral Points**

1. Declination (α) = Angle between geographic meridian and magnetic meridian. 2. Relations between elements of earth’s magnetic field are  and   and  3. For a magnet placed with its N-pole pointing north, neutral points lie at its equatorial line.  (for a short magnet) 4. For a magnet placed with its N-pole pointing south, neutral points lie on its axial line.  (for a short magnet)

**5. Magnetic Properties of Materials**

1. Intensity of magnetization,  2.  3.  4.  5.  (Curie’s law) 6.  7. 