[Magnetism]

[PHYSICS BY RAJAT SACHDEV] [9580951094]

① Two magnetic south poles are located 4 cm apart. If the poles of each magnet have a strength of 8 A-m and are 20 cm apart, find the force exerted by one south pole on the the other. [Ans- 4×10^{-3} N]

② Derive an expression for the magnetic field intensity at a point on the equatorial line of a bar magnet. What is the direction of this field?

③ A bar magnet of magnetic moment 6 J/T is aligned at 60° with a uniform external magnetic field of 0.44T. Calculate (a) the work done in turning the magnet to align its magnetic moment (i) normal to the magnetic field (ii) opposite to the magnetic field (b) the torque on the magnet in the final orientation in case (ii)   [Ans (i) 1.32 J (ii) 3.96 J (b) 0]

④ Define – (i) Magnetic susceptibility
              (ii) Magnetic Induction

⑤ Derive relation between magnetic susceptibility and magnetic susceptibility.

⑥ Define and explain – Diamagnetic substances, Paramagnetic Substances and Ferromagnetic substances.   [9580951094]

⑦ How does the (i) pole strength and (ii) magnetic moment of each part of a bar magnet changed if it is cut into two equal pieces transverse to its length?

⑧ What is the basic difference between the atom or molecule of a diamagnetic and paramagnetic material?