

# **Home Assignment – 05**

## **UNIT – III MOVING CHARGES AND MAGNETISM**

### **Chapter – 5 MAGNETISM AND MATTER**

#### **CBSE 2023 (Compartment)**

(SET -1)

1. A bar magnet is cut into two equal halves parallel to its magnetic axis. The physical quantity that remains unchanged is :  
(a) pole strength      (b) magnitude of magnetisation      (c) moment of inertia      (d) magnetic moment
2. Two identical bars, one of a paramagnetic material and another of a diamagnetic material are kept in a uniform magnetic field. Show diagrammatically the modification in the pattern of magnetic field in each case. How are two materials affected by increase in temperature? (2)

(SET 2)

1. A small bar, when placed near a magnet is repelled by it. This is because the bar is made of  
(a) Iron      (b) Copper      (c) Aluminium      (d) Nickel

(SET 3)

1. A bar magnet of pole strength ( $m$ ) and magnetic moment ( $M$ ) is cut perpendicular to its axis in two equal halves. The new pole strength ( $m'$ ) and magnetic moment ( $M'$ ) of each part are respectively  
(a)  $m$  and  $M$       (b)  $m$  and  $M/2$       (c)  $m/2$  and  $2M$       (d)  $2m$  and  $M/2$

#### **CBSE 2023**

1. Assertion (A) : Diamagnetic substances exhibit magnetism.  
Reason (R) : Diamagnetic materials do not have permanent magnetic dipole moment.

#### **CBSE 2022**

1. Which of the following statements is correct?  
(a) Magnetic field lines do not form closed loops.  
(b) Magnetic field lines start from North Pole and end at South Pole of a magnet.  
(c) The tangent at a point on a magnetic field line represents the direction of the magnetic field at that point.  
(d) Two magnetic field lines may intersect each other.
3. A bar magnet has magnetic dipole moment  $\vec{M}$ . Its initial position is parallel to the direction of uniform magnetic field  $\vec{B}$ . In this position, the magnitudes of torque and force acting on it respectively are –  
(a) 0 and  $MB$       (b)  $MB$  and  $MB$       (c) 0 and 0      (d)  $MB$  and 0

#### **CBSE 2020**

( SET – 1 )

1. Above Curie temperature, a  
(a) Ferromagnetic material becomes diamagnetic.      (b) Ferromagnetic material becomes paramagnetic.  
(c) Paramagnetic material becomes Ferromagnetic.      (d) paramagnetic material becomes diamagnetic.

( SET – 2 )

1. The material which is **not** suitable for making a permanent magnet is  
(a) Steel                      (b) Ticonal                      (c) Lead                      (d) Alnico

### **CBSE 2019**

1. The magnetic susceptibility of magnesium at 300 K is  $1.2 \times 10^5$ . At what temperature will its magnetic susceptibility become  $1.44 \times 10^5$ ? (1)
2. The magnetic susceptibility of a given material is -0.5. Identify the magnetic material. (1)

### **CBSE 2018**

1. The susceptibility of a magnetic material is 0.9853. Identify the type of magnetic material. Draw the modification of the field pattern on keeping a piece of this material in a uniform magnetic field. (2)
2. A bar magnet of magnetic moment 6 J/T is aligned at  $60^\circ$  with a uniform magnetic field of 0.44 T. 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, and  
(b) the torque on the magnet in the final orientation in case (ii). (3)

### **CBSE 2017**

1. Write the two properties of a material suitable for making (a) a permanent magnet, and (b) an electromagnet.

### **CBSE 2016**

1. In what way is the behaviour of a diamagnetic material different from that of a paramagnetic, when kept in external magnetic field? (1)

### **CBSE 2014**

1. Show diagrammatically the behaviour of magnetic field lines in the presence of (i) paramagnetic and (ii) Diamagnetic substances. How does one explain this distinguishing feature? (2)