DPP

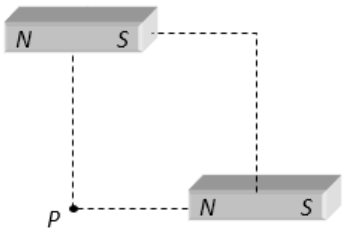
DAILY PRACTICE PROBLEMS

**Class : XIIth** **Subject : PHYSICS**

**Date :** **DPP No. : 3**

# Topic :- MAGNETISM AND MATTER

1. The material of permanent magnet has
   a) High retentivity, low coercivity b) Low retentivity, high coercivity
   c) Low retentivity, low coercivity d) High retentivity, high coercivity
2. There are four light-weight-rod samples, $A, B, C, D$ separately suspended by threads. A bar magnet is slowly brought near each sample and the following observations are noted
   (i) $A$ is feebly repelled
   (ii) $B$ is feebly attracted
   (iii) $C$ is strongly attracted
   (iv) $D$ remains unaffected
   Which one of the following is true
   a) $A$ is of a non-magnetic material
   b) $B$ is of a paramagnetic material
   c) $C$ is of a diamagnetic material
   d) $D$ is of a ferromagnetic material
3. Two short magnets of magnetic moment 1000 $Am^2$ are placed as shown at the corners of a square of side 10 $cm$. The net magnetic induction at $P$ at




a) 0.1 $T$ b) 0.2 $T$ c) 0.3 $T$ d) 0.4 $T$

4. A bar magnet has coercivity $4 \times 10^3$ $Am^{-1}$. It is desired to demagnetise it by inserting it inside a solenoid 12 $cm$ long and having 60 turns. The current that should be sent through the solenoid is
   a) 2 $A$ b) 4 $A$ c) 6 $A$ d) 8 $A$
5. The horizontal component of flux density of earth's magnetic field is $1.7 \times 10^{-5}$T. The value of horizontal component of intensity of earth's magnetic field will be?
   a) 24.5Am$^{-1}$ b) 13.5 Am$^{-1}$ c) 1.53 Am$^{-1}$ d) 0.35 Am$^{-1}$

6. A bar magnet of magnetic moment 200 $A\text{-}m^2$ is suspended in a magnetic field of intensity 0.25 $N/A\text{-}m$. The couple required to deflect it through 30° is
   a) 50 $N\text{-}m$ b) 25 $N\text{-}m$ c) 20 $N\text{-}m$ d) 15 $N\text{-}m$
7. A coil of 50 turns and area $1.25 \times 10^{-3}$ $m^2$ is pivoted about a vertical diameter in a uniform horizontal magnetic field and carries a current of 2 A. When the coil is held with its plane is $N-S$ of 2A. When the coil is held with its plane in $N-S$ direction, it experience a couple of 0.04 N-m; and when its plane is $E-W$, the corresponding couple is 0.03 N-m. The magnetic induction is
   a) 0.2 T b) 0.3 T c) 0.4 T d) 0.5 T
8. The magnetic needle of a tangent galvanometer is deflected at angle of 30° due to a current in its coil. The horizontal component of earth's magnetic field is $0.34 \times 10^{-4}$ T, then magnetic field at the center of the coil due to current
   a) $1.96 \times 10^{-5}$ T b) $1.96 \times 10^{-4}$ T c) $1.96 \times 10^{4}$ T d) $1.96 \times 10^{5}$ T
9. The period of oscillations of a magnetic needle in a magnetic field is 1.0 $sec$. If the length of the needle is halved by cutting it, the time period will be
   a) 1.0 $sec$ b) 0.5 $sec$ c) 0.25 $sec$ d) 2.0 $sec$
10. A magnet is suspended in the magnetic meridian with an untwisted wire. The upper end of wire is rotated through 180° to deflect the magnet by 30° from magnetic meridian. When this magnet is replaced by another magnet, the upper end of wire is rotated through 270° to deflect the magnet 30° from magnetic meridian. The ratio of magnetic moments of magnets is
    a) 1 : 5 b) 1 : 8 c) 5 : 8 d) 8 : 5
11. If a magnetic substance is kept in a magnetic field then which of the following substance is thrown out?
    a) Paramagnetic b) Ferromagnetic c) Diamagnetic d) Antiferromagnetic
12. A magnet performs 10 oscillations per minute in a horizontal plane at a place where the angle of dip is 45° and the total intensity is 0.707 CGS units. The number of oscillations per minute at a place where dip angle is 60° and total intensity is 0.5 CGS units will be
    a) 5 b) 7 c) 9 d) 11
13. Two identical bar magnets are placed one above the other such that they are mutually perpendicular and bisect each other. The time period of this combination in a horizontal magnetic field is $T$. The time period of each magnet in the same field is
    a) $\sqrt{2}\,T$ b) $2^{\frac{1}{4}}\,T$ c) $2^{\frac{1}{4}}\,T$ d) $2^{\frac{1}{2}}\,T$
14. Ratio of magnetic intensities for an axial point and a point on broad side-on position at equal distance $d$ from the centre of magnet will be or The magnetic field at a distance $d$ from a short bar magnet in longitudinal and transverse positions are in the ratio
    a) 1 : 1 b) 2 : 3 c) 2 : 1 d) 3 : 2
15. A magnetic dipole is placed at right angles to the direction of lines of force of magnetic induction $B$. If it is rotated through an angle of 180°, then the work done is
    a) $MB$ b) $2\,MB$ c) $-2\,MB$ d) Zero
16. A domain in a ferromagnetic substance is in the form of a cube of side length 1 $\mu m$. If it contains $8 \times 10^{10}$ atoms and each atomic dipole has a dipole moment of $9 \times 10^{-24}$ $A\,m^2$, then magnetization of the domain is
    a) $7.2 \times 10^{5}$ A $m^{-1}$ b) $7.2 \times 10^{3}$ A $m^{-1}$ c) $7.2 \times 10^{9}$ A $m^{-1}$ d) $7.2 \times 10^{12}$ A $m^{-1}$

17. A bar magnet is placed north-south with its north pole due north. The points of zero magnetic field will be in which direction from center of magnet
    a) North and south
    b) East and west
    c) North-east and south-west
    d) North-east and south-east
18. Aurora Borealis is a luminous electrical discharge in the upper layers of the atmosphere, which is visible more frequently in
    a) Polar regions
    b) Equator
    c) Lunar eclipse
    d) Regions of earth's magnetic poles
19. Needles $N_1, N_2$ and $N_3$ are made of a ferromagnetic, a paramagnetic and a diamagnetic substance respectively. A magnet when brought close to them will
    a) Attract $N_1$ and $N_2$ strongly but reple $N_3$
    b) Attract $N_1$ strongly, $N_2$ weakly and reple $N_3$ weakly
    c) Attract $N_1$ strongly, but reple $N_2$ and $N_3$ weakly
    d) Attract all three of them
20. If a magnetic dipole of dipole moment $M$ rotated through an angle $\theta$ with respect to the direction of the field $H$, then the work done is
    a) $MH \sin\theta$
    b) $MH(1 - \sin\theta)$
    c) $MH \cos\theta$
    d) $MH(1 - \cos\theta)$