

Objective Questions

(For Complete Chapter)

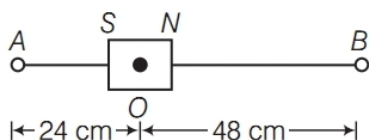
Multiple Choice Questions (MCQs)

1. Which of the following statements is correct? **CBSE 2021 (Term-I)**
- (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.

2. A bar magnet has magnetic dipole moment \mathbf{M} . Its initial position is parallel to the direction of uniform magnetic field \mathbf{B} . In this position, the magnitudes of torque and force acting on it, respectively are

CBSE 2021 (Term-I)

- (a) 0 and \mathbf{MB} (b) \mathbf{MB} and \mathbf{MB}
 (c) 0 and 0 (d) $|\mathbf{M} \times \mathbf{B}|$ and 0
3. A circular loop of radius r , carrying a current I lies in YZ -plane with its centre at the origin. The net magnetic flux through the loop is **All India 2020**
- (a) directly proportional to r
 (b) zero
 (c) inversely proportional to r
 (d) directly proportional to I
4. A bar magnet of length 3 cm has points A and B along its axis at distances of 24 cm and 48 cm on the opposite sides. Ratio of magnetic fields at these points will be



- (a) 8 (b) $1/2\sqrt{2}$
 (c) 3 (d) 4
5. A short bar magnet placed with its axis at 30° with a uniform external magnetic field of 0.16 T experiences a torque of magnitude 0.032 J. The magnetic moment of the bar magnet will be
- (a) 0.23 JT^{-1} (b) 0.40 JT^{-1}
 (c) 0.80 JT^{-1} (d) zero
6. A bar magnet is placed in the position of stable equilibrium in a uniform magnetic field of induction B . If it is rotated through an angle 180° , then the work is (M = magnetic dipole moment of bar magnet)
- (a) $\frac{MB}{2}$ (b) $2MB$
 (c) $\frac{MB}{2}$ (d) zero
7. A long magnet is cut into two equal parts such that the length of each half is same as that of original magnet. If the period of

original magnet is T , then the period of new magnet is

- (a) T (b) $\frac{T}{2}$
 (c) $\frac{T}{4}$ (d) $2T$
8. The intensity of magnetisation of a bar magnet is $5.0 \times 10^4 \text{ Am}^{-1}$. The magnetic length and the area of cross-section of the magnet are 12 cm and 1 cm^2 , respectively. The magnitude of magnetic moment of this bar magnet (in SI unit) is
- (a) 0.6 (b) 1.3
 (c) 1.24 (d) 2.4
9. Relative permeability of iron is 5500, then its magnetic susceptibility will be
- (a) 5500×10^7 (b) 5500×10^{-7}
 (c) 5501 (d) 5499
10. Nickel shows ferromagnetic property at room temperature. If the temperature is increased beyond Curie temperature, then it will show
- (a) paramagnetism
 (b) anti-ferromagnetism
 (c) no magnetic property
 (d) diamagnetism
11. Ferromagnetic materials used in a transformer must have
- (a) low permeability and high hysteresis loss
 (b) high permeability and low hysteresis loss
 (c) high permeability and high hysteresis loss
 (d) low permeability and low hysteresis loss

Assertion-Reason Questions

Directions (Q. Nos. 12-15) *In the following questions, two statements are given- one labelled Assertion (A) and the other labelled Reason (R). Select the correct answer to these questions from the codes (a), (b), (c) and (d) as given below*

- (a) If both Assertion and Reason are correct and Reason is the correct explanation of Assertion.
 (b) If both Assertion and Reason are correct but Reason is not the correct explanation of Assertion.

- (c) If Assertion is correct but Reason is incorrect.
- (d) If both Assertion and Reason are incorrect.

12. Assertion The poles of a bar magnet cannot be separated.

Reason Magnetic monopoles do not exist.

CBSE 2021 (Term-I)

13. Assertion According to Gauss's law for magnetism, the net magnetic flux through any closed surface is zero.

Reason The number of magnetic field lines leaving the surface is balanced by the number of lines entering it.

14. Assertion The poles of a magnet cannot be separated by breaking it into two pieces.

Reason The magnetic moment will be reduced to half when a magnet is broken into two equal pieces.

15. Assertion The net magnetic flux coming out of a closed surface is always zero.

Reason Unlike poles of equal strength exist together.