

Magnetism and Matter

1. The earth behaves as a magnet with magnetic field pointing approximately from the geographic
- (a) North to South
 - (b) South to North
 - (c) East to West
 - (d) West to East

▼ **Answer**

Answer: b

2. The strength of the earth's magnetic field is
- (a) constant everywhere.
 - (b) zero everywhere.
 - (c) having very high value.
 - (d) vary from place to place on the earth's surface.

▼ **Answer**

Answer: d

3. Which of the following is responsible for the earth's magnetic field?

- (a) Convective currents in earth's core
- (b) Divergent current in earth's core.
- (c) Rotational motion of earth.
- (d) Translational motion of earth.

▼ **Answer**

Answer: a

4. Which of the following independent quantities is not used to specify the earth's magnetic field?

- (a) Magnetic declination (θ).
- (b) Magnetic dip (δ).
- (c) Horizontal component of earth's field (B_H).
- (d) Vertical component of earth's field (B_V).

▼ **Answer**

Answer: d

5. Let the magnetic field on earth be modelled by that of a point magnetic dipole at the centre of earth. The angle of dip at a point on the geographical equator is

- (a) always zero
- (b) positive, negative or zero
- (c) unbounded
- (d) always negative

▼ **Answer**

Answer: b

6. The angle of dip at a certain place where the horizontal and vertical components of the earth's magnetic field are equal is

- (a) 30°
- (b) 75°
- (c) 60°
- (d) 45°

▼ **Answer**

Answer: d

7. The vertical component of earth's magnetic field at a place is $\sqrt{3}$ times the horizontal component. The value of angle of dip at this place is

- (a) 30°

- (b) 45°
- (c) 60°
- (d) 90°

▼ Answer

Answer: c

8. At a given place on earth's surface the horizontal component of earth's magnetic field is 2×10^{-5} T and resultant magnetic field is 4×10^{-5} T. The angle of dip at this place is

- (a) 30°
- (b) 60°
- (c) 90°
- (d) 45°

▼ Answer

Answer: b

9. Which of the following property shows the property of ferromagnetic substances?

- (a) The ferromagnetic property depends on temperature.
- (b) The ferromagnetic property does not depend on temperature.
- (c) At high enough temperature ferromagnet becomes a diamagnet.
- (d) At low temperature ferromagnet becomes a paramagnet.

▼ Answer

Answer: a

10. The primary origin of magnetism lies in

- (a) atomic current and intrinsic spin of electrons.
- (b) polar and non polar nature of molecules.
- (c) pauli exclusion principle.
- (d) electronegative nature of materials.

▼ Answer

Answer: a

11. Magnetic moment for solenoid and corresponding bar magnet is

- (a) equal for both
- (b) more for solenoid
- (c) more for bar magnet
- (d) none of these

▼ Answer

Answer: a

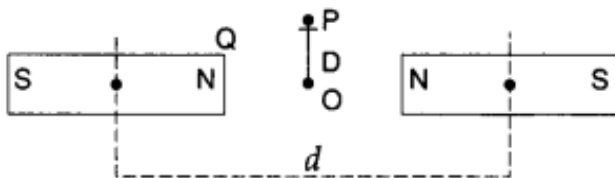
12. Which of the following is correct about magnetic monopole?

- (a) Magnetic monopole exist.
- (b) Magnetic monopole does not exist.
- (c) Magnetic monopole have constant value of monopole momentum.
- (d) The monopole momentum increase due to increase at its distance from the field.

▼ Answer

Answer: b

13. Two identical bar magnets are fixed with their centres at a distance d apart. A stationary charge Q is placed at P in between the gap of the two magnets at a distance D from the centre O as shown in the figure. The force on the charge Q is

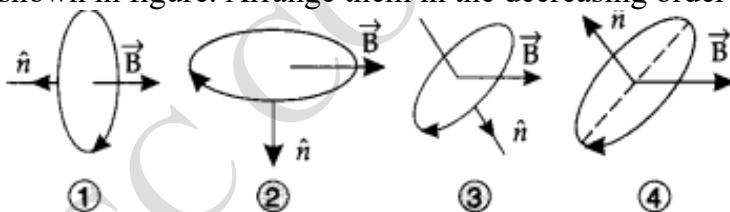


- (a) zero
- (b) directed along OP
- (c) directed along PO
- (d) directed perpendicular to the plane of paper

▼ Answer

Answer: a

14. A current carrying loop is placed in a uniform magnetic field in four different orientations as shown in figure. Arrange them in the decreasing order of potential energy.



- (a) 4, 2, 3, 1
- (b) 1, 4, 2, 3
- (c) 4, 3, 2, 1
- (d) 1, 2, 3, 4

▼ Answer

Answer: b

15. Which of the following is not showing the essential difference between electrostatic shielding by a conducting shell and magnetostatic shielding?

- (a) Electrostatic field lines can end on charges and conductors have free charges.
- (b) Magnetic field lines can end but conductors cannot end them.
- (c) Lines of magnetic field cannot end on any material and perfect shielding is not possible.
- (d) Shells of high permeability materials can be used to divert lines of magnetic field from the interior region.

▼ Answer

Answer: b

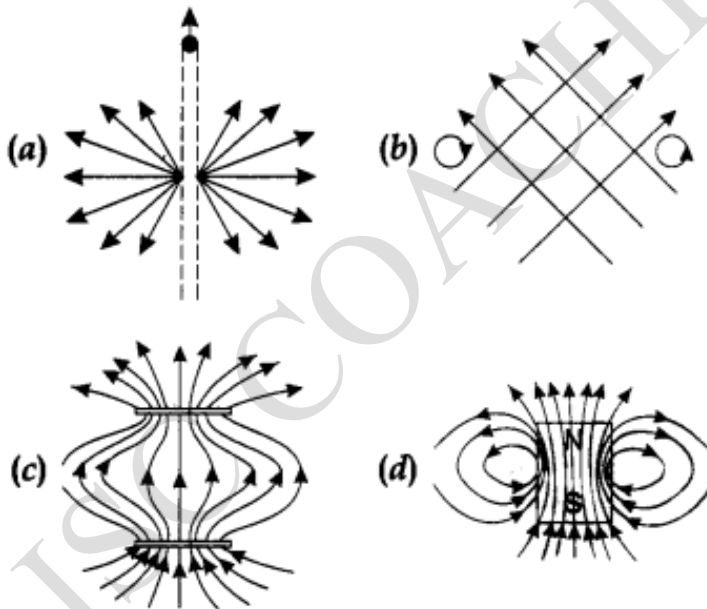
16. The net magnetic flux through any closed surface, kept in a magnetic field is

- (a) zero
- (b) $\frac{\mu_0}{4\pi}$
- (c) $4\pi\mu_0$
- (d) $\frac{4\mu_0}{\pi}$

▼ Answer

Answer: a

17. Point out the correct direction of magnetic field in the given figures.



▼ Answer

Answer: d
