12. Magnetic Effects of Electric Current - Board Exam Questions (1 Mark)

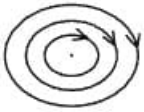
Practice these questions online at pschool.in/science/ncert/g10/chap-12

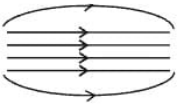
1 Mark Questions (MCQ)

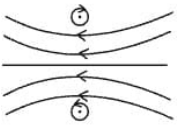
1) *Which one of the following statements is not true about a bar magnet?*
(a) It sets itself in north-south direction when suspended freely
(b) It has attractive power for iron filings
(c) It produces magnetic field lines
(d) The direction of magnetic field lines inside a bar magnet is from its north pole to its south pole

2) *The pattern of the magnetic field produced inside a current carrying solenoid is:*

(a) 

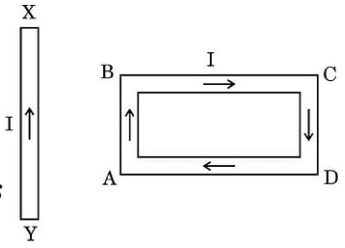
(b) 

(c) 

(d) 

3) *Strength of magnetic field produced by a current carrying solenoid DOES NOT depend upon:*
(a) number of turns in the solenoid
(b) direction of the current flowing through it
(c) radius of solenoid
(d) material of core of the solenoid

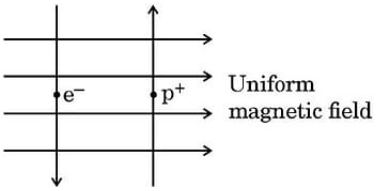
4) *A rectangular loop ABCD carrying a current I is situated near a straight conductor XY, such that the conductor is parallel to the side AB of the loop and is in the plane of the loop. If a steady current I is established in the conductor as shown, the conductor XY will*



(a) remain stationary
(b) move towards the side AB of the loop
(c) move away from the side AB of the loop
(d) rotate about its axis

5) *The current carrying device which produces a magnetic field similar to that of a bar magnet is:*
(a) A straight conductor (b) A circular loop
(c) A solenoid (d) A circular coil

6) *A uniform magnetic field exists in the plane of paper as shown in the diagram. In this field, an electron (e^-) and a positron (p^+) enter as shown. The electron and positron experience forces:*

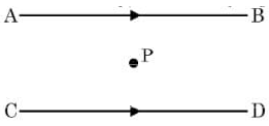


(a) both pointing into the plane of the paper
(b) both pointing out of the plane of the paper
(c) pointing into the plane of the paper and out of the plane of the paper respectively
(d) pointing out of the plane of the paper and into the plane of the paper respectively

7) *In domestic electric circuits the wiring with 15 A current rating is for the electric devices which have*
(a) higher power ratings such as geyser
(b) lower power ratings such as fan

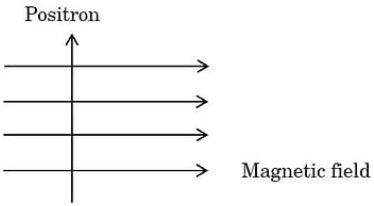
(c) metallic bodies and low power ratings
(d) non-metallic bodies and low power ratings

8) *The resultant magnetic field at point 'P' situated midway between two parallel wires (placed horizontally) each carrying a steady current I is*



(a) in the same direction as the current in the wires
(b) in the vertically upward direction
(c) zero
(d) in the vertically downward direction

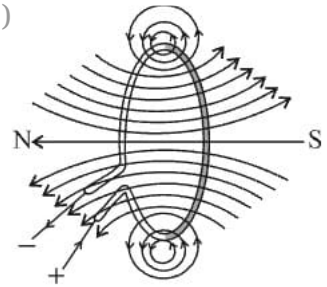
9) *A positron enters a uniform magnetic field at right angles to it as shown. The direction of force experienced by the positron will be:*



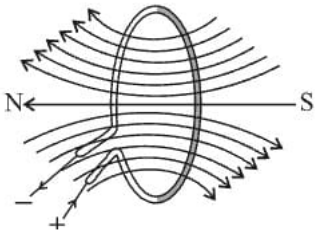
(a) to the right (b) to the left
(c) into the page (d) out of the page

10) *The correct pattern of magnetic field lines of the field produced by a current carrying circular loop is:*

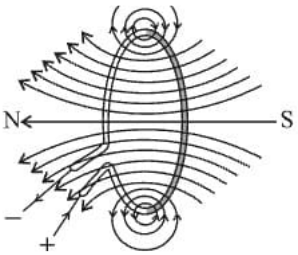
(a)



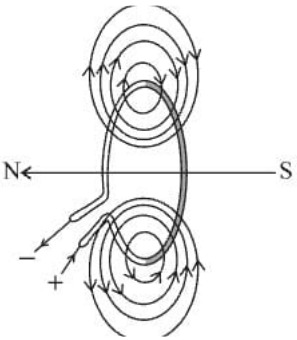
(b)



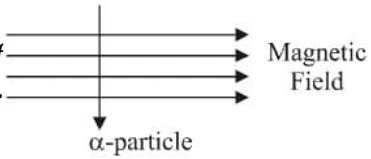
(c)



(d)

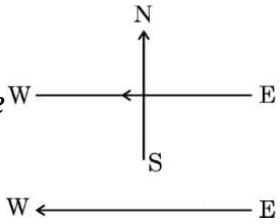


11) *An alpha particle enters a uniform magnetic field as shown. The direction of force experienced by the alpha particle is:*



(a) towards right (b) towards left
(c) into the page (d) out of the page

12) *A constant current flows in a horizontal wire in the plane of the paper from east to west as shown in the figure. The direction of the magnetic field will be north to south at a point:*



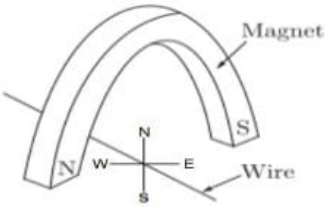
(a) directly above the wire
(b) directly below the wire
(c) located in the plane of the paper on the north side of the wire
(d) located in the plane of the paper on the south side of the wire

13) *For a current in a long straight solenoid, N and S poles are created at the two ends. Among the following statements, the incorrect statement is:*
(a) The magnetic field lines inside the solenoid are in the form of straight lines, which indicates that the magnetic field is uniform at all points inside the solenoid
(b) The strong magnetic field produced inside the solenoid can magnetize the soft iron placed inside it

(c) The pattern of the magnetic field associated with a current carrying solenoid is different from the pattern of the magnetic field around a bar magnet
(d) The N and S poles exchange positions when the direction of current through the solenoid is reversed

14) *The magnetic field inside a long straight current carrying solenoid:*
(a) is zero (b) decreases as we move towards its end
(c) increases as we move towards its end (d) is same at all points

15) *A copper wire is held between the poles of a magnet.*
The current in the wire can be reversed. The pole of the magnet can also be changed over. In how many of the four directions shown can the force act on the wire?



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

16) *Which of the following pattern correctly describes the magnetic field around a long straight wire carrying current?*
(a) straight lines perpendicular to the wire
(b) straight lines parallel to the wire
(c) radial lines originating from the wire
(d) concentric circles centred around the wire

Assertion and Reason

1) *Assertion (A): Direction of force exerted on a current-carrying conductor placed in a magnetic field remains same if the directions of both magnetic field and current flowing through the conductor are reversed.*
Reason (R): The direction of force exerted on a current-carrying conductor placed in an external magnetic field can be determined by using magnetic compass.

2) *Assertion (A): The needle of a compass, kept in an external magnetic field, always aligns itself in the North-South direction of the Earth.*
Reason (R): The behaviour of the needle of the compass is similar to the behaviour of a freely suspended bar magnet.

3) *Assertion (A): With the help of compass, magnetic field lines can be traced outside the bar magnet.*
Reason (R): The north pole of a compass needle always points towards the south pole of the magnet when brought close to it.

4) *Assertion (A): No two magnetic field lines are found to cross each other.*
Reason (R): The compass needle cannot point towards two directions at the point of intersection of two magnetic field lines.

5) *Assertion (A): Magnetic field lines around a bar magnet never intersect each other.*
Reason (R): Magnetic field produced by a bar magnet is a quantity that has both magnitude and direction.

6) *Assertion (A): The pattern of the magnetic field of a solenoid carrying a current is similar to that of a bar magnet.*
Reason (R): The pattern of the magnetic field around a current carrying conductor is independent of the shape of the conductor.

7) *Assertion (A): In the common domestic circuits the earth wire is connected to a metallic plate buried deep inside the earth.*
Reason (R): Earth wire ensures that any leakage of current to the metallic body of the appliance keeps its potential to that of the earth, so the user may not get a severe electric shock.

8) *Assertion (A): The deflection of a compass needle placed near a current carrying wire decreases when the magnitude of an electric current in the wire is increased.*

Reason (R): Strength of the magnetic field at a point due to a current carrying conductor increases on increasing the current in the conductor.

9) *Assertion (A): The strength of the magnetic field produced at the centre of a current carrying circular coil increases on increasing the number of turns in it.*
Reason (R): The current in each circular turn has the same direction and the magnetic field due to each turn then just adds up.

10) *Assertion (A): Magnetic field lines do not intersect each other.*
Reason (R): Magnetic field lines are imaginary lines, the tangent to which at any point gives the direction of the field at that point.

11) *Assertion (A): A current carrying straight conductor experiences a force when placed perpendicular to the direction of magnetic field.*
Reason (R): The net charge on a current carrying conductor is always zero.

12) *Assertion (A): Two magnetic field lines around a current carrying straight wire do not intersect each other.*
Reason (R): The magnitude of the magnetic field produced at a given point increases as the current through the wire increases.

13) *Assertion (A): On freely suspending a current – carrying solenoid, it comes to rest in Geographical N-S direction.*
Reason (R): One end of current carrying straight solenoid behaves as a North pole and the other end as a South pole, just like a bar magnet.