

Class: X
Subject: physics
Topic: Magnetic Effects of Current
No. of Questions: 20
Duration: 60 Min
Maximum Marks: 60

1. A positively-charged particle (alpha-particle) projected towards west is deflected towards north by a magnetic field. The direction of magnetic field is,
- A. Towards South
 - B. Towards East
 - C. Downward
 - D. Upward

Ans. D (Use Fleming's Left hand rule)

2. A rectangular coil of copper wires is rotated in a magnetic field. The direction of the induced current changes once in each,
- A. Two revolutions
 - B. One revolution
 - C. Half revolution
 - D. One fourth revolution

Ans. C (In half revolution, magnetic flux changes from increasing to decreasing or vice versa)

3. Which of the following correctly describes the magnetic field near a long straight wire?
- A. The field consists of straight lines perpendicular to the wire.
 - B. The field consists of straight lines parallel to the wire.
 - C. The field consists of radial lines originating from the wire.
 - D. The field consists of concentric circles centered on the wire.

Ans. D

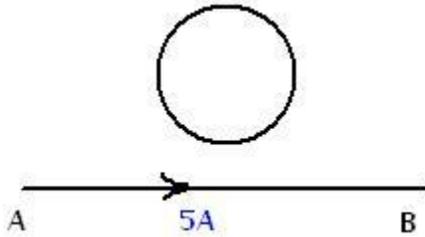
4. A magnet AB is broken into two pieces. What is the polarity of A, B, C and D ?



- A. A,D : North and B,C : South
- B. A,B : North and C,D : South
- C. A,C : North and B,D : South
- D. A,D : South and B,C : North

Ans. C

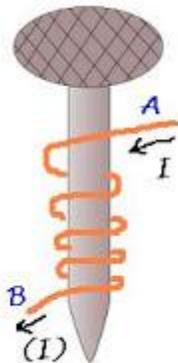
5. A current of 5A is flowing through a conductor AB. Will the current be induced in a circular wire of radius 1m?



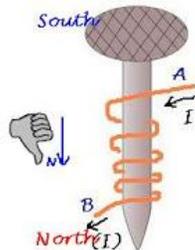
- A. Yes
- B. No
- C. Depends on the location of the wire AB.
- D. Depends on the inclination of the circular wire.

Ans. B (Since a steady current of 5A is flowing, no EMF is induced)

6. Identify the North and South pole.



- A. Top: North, Tip: South
- B. Top: South, Tip: North
- C. Poles aren't induced in the nail.
- D. Only when the current will change, the poles will be induced in the nail.

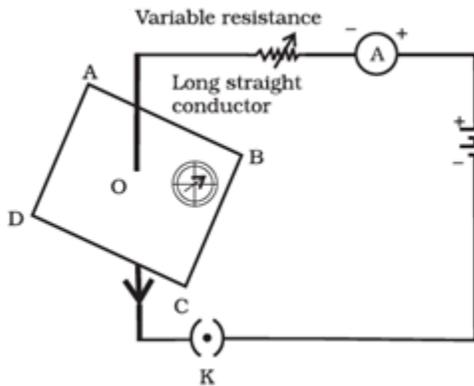


Ans. B (Use Right hand rule)

7. Choose the incorrect statement from the following regarding magnetic lines of field
- A. The direction of magnetic field at a point is taken to be the direction in which the north pole of a magnetic compass needle points
 - B. Magnetic field lines are closed curves
 - C. If magnetic field lines are parallel and equidistant, they represent zero field strength
 - D. Relative strength of magnetic field is shown by the degree of closeness of the field lines

Ans. C (If the magnetic field lines are parallel and equidistant, they represent zero field strength)

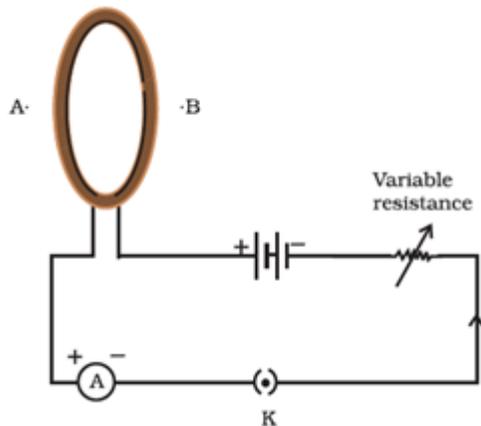
8. If the key in the arrangement (shown in following figure) is taken out (the circuit is made open) and magnetic field lines are drawn over the horizontal plane ABCD, the lines are



- A. Concentric circles
- B. Elliptical in shape
- C. Straight lines parallel to each other
- D. Concentric circles near the point O but of elliptical shapes as we go away from it

Ans. C

9. A circular loop placed in a plane perpendicular to the plane of paper carries a current when the key is ON. The current as seen from points A and B (in the plane of paper and on the axis of the coil) is anti-clockwise and clockwise respectively. The magnetic field lines point from B to A. The N-pole of the resultant magnet is on the face close to



- A. A
- B. B
- C. A if the current is small, and B if the current is large
- D. B if the current is small and A if the current is large

Ans. A

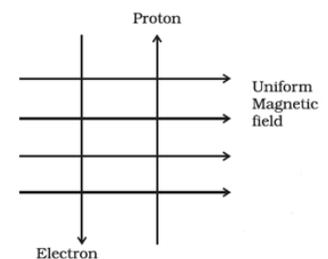
10. For a current in a long straight solenoid N- and S-poles are created at the two ends.

Among the following statements, the incorrect statement is

- A. The field lines inside the solenoid are in the form of straight lines which indicates that the magnetic field is the same at all points inside the solenoid
- B. The strong magnetic field produced inside the solenoid can be used to magnetise a piece of magnetic material like soft iron, when placed inside the coil
- C. The pattern of the magnetic field associated with the solenoid is different from the pattern of the magnetic field around a bar magnet
- D. The N- and S-poles exchange position when the direction of current through the solenoid is reversed

Ans. C (The pattern of the magnetic field associated with the solenoid is different from the pattern of the magnetic field around a bar magnet)

11. A uniform magnetic field exists in the plane of paper pointing from left to right as shown in following figure. In the field an electron and a proton move as shown. The electron and the proton experience

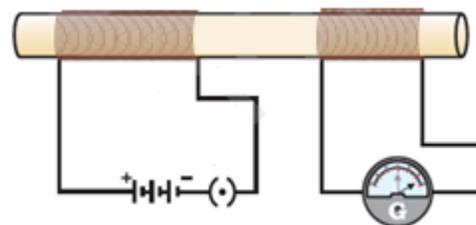


- A. Forces both pointing into the plane of paper
- B. Forces both pointing out of the plane of paper
- C. Forces pointing into the plane of paper and out of the plane of paper, respectively

- D.** Force pointing opposite and along the direction of the uniform magnetic field respectively

Ans. C (Forces pointing into the plane of paper and out of the plane of paper, respectively)

12. In the arrangement shown in following figure there are two coils wound on a non-conducting cylindrical rod. Initially the key is not inserted. Then the key is inserted and later removed. Then



- A.** The deflection in the galvanometer remains zero throughout
B. There is a momentary deflection in the galvanometer but it dies out shortly and there is no effect when the key is removed
C. There are momentary galvanometer deflections that die out shortly; the deflections are in the same direction
D. There are momentary galvanometer deflections that die out shortly; the deflections are in opposite directions

Ans. C (There are momentary galvanometer deflections that die out shortly; the deflections are in the same direction)

13. Choose the incorrect statement

- A.** Fleming's right-hand rule is a simple rule to know the direction of induced current
B. The right-hand thumb rule is used to find the direction of magnetic fields due to current carrying conductors
C. The difference between the direct and alternating currents is that the direct current always flows in one direction, whereas the alternating current reverses its direction periodically
D. In India, the AC changes direction after every 1/50 second

Ans. D (In India, the AC changes direction after every 1/50 second)

14. The strength of magnetic field inside a long current carrying straight solenoid is,

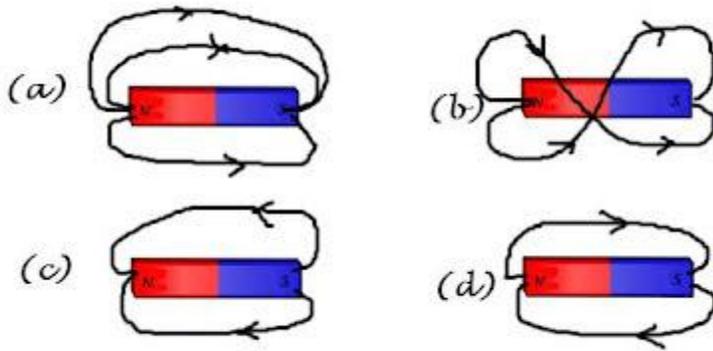
- A.** More at the ends than at the centre
B. Minimum in the middle
C. Same at all points
D. Found to increase from one end to the other

Ans. C (Same at all points)

15. The most important safety method used for protecting home appliances from short circuiting or overloading is,
- A. Earthing
 - B. Use of fuse
 - C. Use of stabilizers
 - D. Use of electric meter

Ans. B (Use of fuse)

16. The correct field lines are,



Ans. A

17. An electric current passes through a straight wire in the direction of south to north. Magnetic compasses are placed at points A and B as shown in the figure.



What is your observation?

- A. The needle will not deflect.
- B. Only one of the needles will deflect.
- C. Both the needles will deflect in the same direction.
- D. The needles will deflect in the opposite directions.

Ans. D

18. A commutator changes the direction of current in the coil of,
- A. A DC motor
 - B. A DC motor and an AC generator
 - C. A DC motor and a DC generator
 - D. An Ac generator

Ans. C

19. An electric generator actually acts as
- A. Source of electric charge
 - B. Source of heat energy
 - C. An electromagnet
 - D. A converter of energy

Ans. D

20. Magnetic lines of force inside a solenoid are
- A. from N to S
 - B. from S to N
 - C. circular
 - D. intersect one another

Ans. B