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Date: 9-05-2021

Class: 10th Genesis

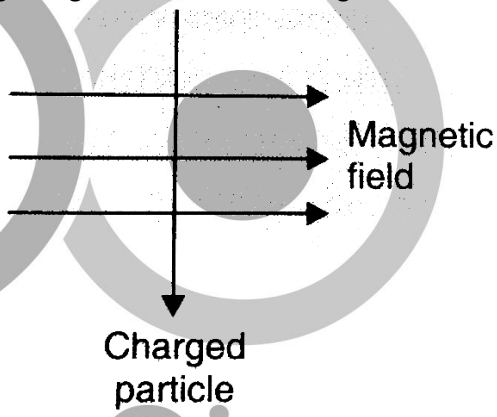
Subject: Science

Test code: SECT01(21041308)

Physics

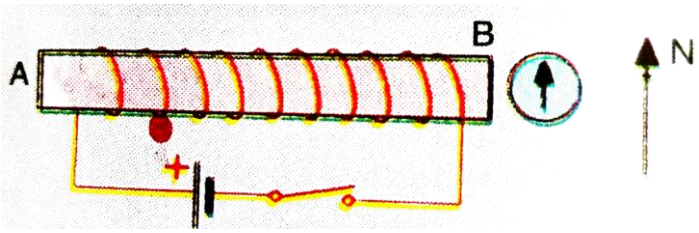
M. Marks: 20

1. A resistance of 20 ohms has a current 2 amperes flowing in it. What potential difference is there between its ends? (1 marks)
2. What is the force on a current – carrying wire that is parallel to a magnetic field? Give reason for your answer. (1 marks)
3. A charged particle enters at right angles into a uniform magnetic field as shown: (1 marks)



What should be the nature of charge on the particle if it begins to move in a direction pointing vertically out of the page due to its interaction with the magnetic field?

4. Define ohm's law and also explain graphically. (2 marks)
5. In the straight wire A, current is flowing in the vertically downward direction whereas in wire B the current in flowing in the vertically upward direction. What is the direction of magnetic field: Lines as seen from above in both cases. (2 marks)
   (a) In wire A?
   (b) In wire B?
6. For the coil in the diagram below, when the switch is pressed: (2 marks)
   (a) What is the polarity of end A?
   (b) Which way will the compass point then?



7. The directions of current flowing in the coil of an electromagnet at its two ends X and Y are as shown below: (2 marks)

(a) What is the polarity of end X?
(b) What is the polarity of end Y?

8. A thick wire is hanging from a wooden table vertically. An anticlockwise magnetic field as seen from above is to be produced around the wire by passing current through this wire by using a battery. Which terminal of the battery should be connected to the: (2 marks)
(a) Top end of wire?
(b) Bottom end wire?
Give reason for your choice.

9. State Fleming's left – hand rule. Explain it with the help of labelled diagrams. (2 marks)

10. (a) What is a solenoid? Draw a sketch to show the magnetic field pattern produced by a current – carrying solenoid. (5 marks)
(b) name the type of magnet with which the magnetic field pattern of a current – carrying solenoid resembles.
(c) What is the shape of field lines inside a current – carrying solenoid? What does the pattern of field lines inside a current – carrying solenoid indicate?
(d) List three ways in which the magnetic field strength of a current – carrying solenoid can be increased?
(e) What type of core should be put inside a current – carrying solenoid to make an electromagnet?