Class 10 Science · Chapter 12: Magnetic Effects of Electric Current

Worksheet · 20 marks · about 40 minutes · based on NCERT

Name _____ Class and section _____ Date _____

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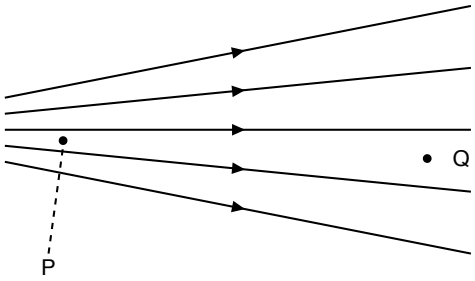
1. A straight wire runs under a glass table-top, and a compass on the table above it deflects by a small angle when the current flows. Which change will make the deflection larger? [1]

(a) adding one more cell in series to increase the current
(b) lifting the compass onto a thick book on the table
(c) reversing the battery connections
(d) removing one of the cells

2. A compass needle near a current-carrying wire deflects towards the east. Mohan swaps the connections at the battery terminals. The needle now [1]

(a) deflects towards the east, more than before
(b) does not deflect at all
(c) deflects towards the west
(d) keeps swinging to and fro

3. The figure shows part of the field-line pattern in a region. At which point is the magnetic field stronger, and why? [1]



(a) equal at P and Q, because the same lines pass both
(b) at Q, because the lines are farther apart there
(c) at P, because the lines are closer together there
(d) at Q, because the arrows point towards it

4. An iron pin on a table slides towards a magnet only when the magnet is brought within about 5 cm of it. The space around the magnet in which such a pull can be detected is the magnet's [1]

(a) north pole
(b) magnetic field
(c) field line
(d) solenoid

5. The first observation that a current in a metal wire deflects a nearby compass needle was made by [1]

(a) Ampere, in 1820
(b) Oersted, in 1820
(c) Oersted, in 1920
(d) Fleming, in 1820

6. A long straight wire hangs vertically, and the current in it flows downwards. (a) Name the rule that compares the wire with a corkscrew. (b) A corkscrew is driven downwards along the wire, in the direction of the current. Seen from above, in which sense do the magnetic field lines go round the wire? [2]

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7. A small magnet is fixed on a trolley just below a long horizontal wire. When a current is passed, the field of the wire pushes the trolley along. (a) What force does the magnet exert on the wire? (b) Name the scientist who first suggested this. [2]

8. The electric supply reaches Farah's house on an overhead pole. Inside the house, at the meter-board, it passes through three things before it reaches the line wires of the separate circuits. Name them in order. [2]

9. The fuse of a 5 A circuit in Meera's study melts when she plugs in a heater. (a) Explain how the fuse breaks the circuit. (b) Why must the fuse be connected in series and not across the appliances? (c) Why are the lamp, fan and heater of the room connected in parallel with each other? [3]

10. In a toy crane, a coil of many close turns of insulated copper wire is wound on a cardboard tube. With the current on, the coil picks up only one or two iron pins. When a soft-iron nail is pushed into the tube, it picks up a whole cluster. (a) Name the coil and describe the field inside it. (b) Explain the effect of the nail. (c) Name the device the coil and nail together make. [3]

11. Arjun hides an unknown magnetised object under a sheet of paper. He moves a small plotting compass about on the sheet, marks the ends of the needle at each position, and joins the marks into smooth lines. (a) What do the lines he obtains represent? (b) How will he mark the direction on each line? (c) How can he tell from the drawing where the field of the object is strongest? [3]