Worksheet: Electricity: Magnetic and Heating Effects

IGCSE · Class 8 · Science · 8 questions · 14 marks

Name: _____ Date: _____ Score: _____ / 14

Q1. A coil of copper wire is wound on a rolled paper cylinder with nothing inside it and connected to a cell. A compass is placed near one end. What happens? *[1 mark]*

A) Nothing happens, because copper is not a magnetic material

B) The needle deflects only if the paper is removed

C) The needle deflects, because the current produces a magnetic field

D) Nothing happens, because there is no iron core

Q2. Which statement about a dry cell is correct? *[1 mark]*

A) It is called 'dry' because it contains no electrolyte at all

B) Both terminals are made of carbon

C) The zinc container is the negative terminal and the carbon rod the positive

D) The zinc container is the positive terminal and the carbon rod the negative

Q3. An electromagnet is connected to a cell and lifts 5 paper clips. Which change would leave the strength unchanged but swap its north and south ends? *[1 mark]*

A) Adding a second cell

B) Removing the iron nail from the coil

C) Adding 25 more turns to the coil

D) Reversing the connections at the cell

Q4. Assertion (A): Nichrome, not copper, is used for the heating element of an electric iron. Reason (R): Nichrome offers a higher resistance than copper of the same size and length. *[1 mark]*

A) A is true but R is false

B) A is false but R is true

C) Both A and R are true, and R is the correct explanation of A

D) Both A and R are true, but R is not the correct explanation of A

Q5. An iron nail and a copper strip are dipped into a beaker of pure water and connected through an LED and a switch. The switch is closed. What happens? *[1 mark]*

A) The LED does not glow, because pure water is not an electrolyte

B) The LED glows, because all water conducts electricity

C) The LED glows only if the water is warmed

D) The LED glows, because the two metals are different

Q6. Why does the chapter test the cylindrical coil with only a paper cylinder inside it BEFORE inserting the iron nail? What would be lost if the wire had simply been wound straight onto the nail? *[3 marks]*

Q7. A student writes: 'The wire in Sumana's electromagnet was still warm, so current must still have been flowing, so the cell cannot be the problem.' Where does this reasoning go wrong? *[3 marks]*

Q8. The chapter says an electromagnet's poles can be reversed by reversing the current. Explain why this makes an electromagnet more useful than a permanent magnet, and name one thing about an electromagnet that a permanent magnet does better. *[3 marks]*