

Building and drawing simple circuits

Grade 6 science (Year 7 · Class 6) · Test answers (mark scheme)

Model answers and mark allocations are given for every question. Award marks for equivalent wording, and check that diagrams show a complete loop with correctly drawn symbols.

Level: Grade 6 science (Year 7 · Class 6) · **Curriculum:** MS-PS2-3

Question 1 Labelled circuit (4 marks)

- a. W is a **cell**.
- b. X is a **switch**.
- c. Y is a **bulb**.
- d. The switch is open, so there is a gap and the circuit is not closed.

Marking: 1 mark for each part.

Question 2 Conductor and insulator (2 marks)

A conductor lets current flow easily (for example copper). An insulator does not let current flow easily (for example rubber).

Marking: 1 mark for each correct definition with an example.

Question 3 Torch that fails (3 marks)

The plastic film is an insulator. It covers the contact, so it makes a gap in the circuit. The circuit is open, so no current can flow and the bulb stays off.

Marking: 1 mark for saying plastic is an insulator, 1 mark for the gap or open circuit, 1 mark for no current so no light.

Question 4 Sorting objects (2 marks)

The **steel spoon** and the **copper pipe**.

Marking: 1 mark for each correct object.

Question 5 Drawing a circuit (3 marks)

A rectangle of straight wires: the cell symbol (long line positive) on one side, the closed switch on the top and the bulb symbol on the other side, with no gaps and each component labelled.

Marking: 1 mark for the three correct symbols, 1 mark for a complete loop with no gaps, 1

mark for labels.

Question 6 Mains warning (2 marks)

Mains electricity carries enough energy to cause a dangerous or fatal electric shock, whereas a small cell is safe.

Marking: 1 mark for danger of shock, 1 mark for the comparison with a cell.

Question 7 Cable covering (2 marks)

The metal core is a conductor, so it carries the current. The plastic is an insulator, which protects people from shocks and stops wires touching each other.

Marking: 1 mark for the metal being a conductor, 1 mark for the plastic being an insulator.

Question 8 Door alarm (2 marks)

Aluminium is a conductor, so the foil closes the circuit and current flows to the lamp. When the door opens the foil moves away, which makes a gap, so the circuit is open and the lamp goes off.

Marking: 1 mark for foil as a conductor completing the loop, 1 mark for the gap when the door opens.