

# 4.5 Dangers of Electricity

## Question Paper

<b>Level</b>	IGCSE
<b>Subject</b>	Physics (0625)
<b>Exam Board</b>	Cambridge International Examinations(CIE)
<b>Topic</b>	Electricity and Magnetism
<b>Sub Topic</b>	4.5 Dangers of Electricity
<b>Booklet</b>	Question Paper

**Time Allowed:** 18 minutes

**Score:** /15

**Percentage:** /100

**Grade Boundaries:**

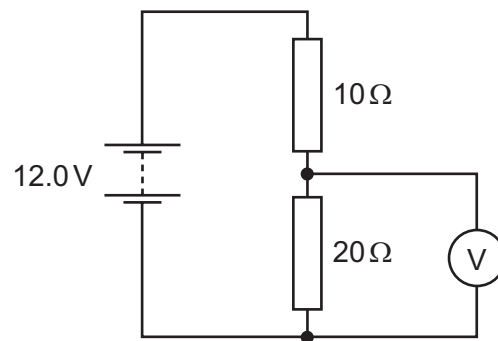
A*	A	B	C	D	E	U
>85%	75%	60%	45%	35%	25%	<25%

- 1 After some building work in a house, a bare (uninsulated) live wire is left protruding from a wall.

What is the greatest hazard?

- A a fire
- B a fuse blows
- C an electric shock
- D no current flows

- 2 The diagram shows a  $10\ \Omega$  resistor and a  $20\ \Omega$  resistor connected in a potential divider circuit.

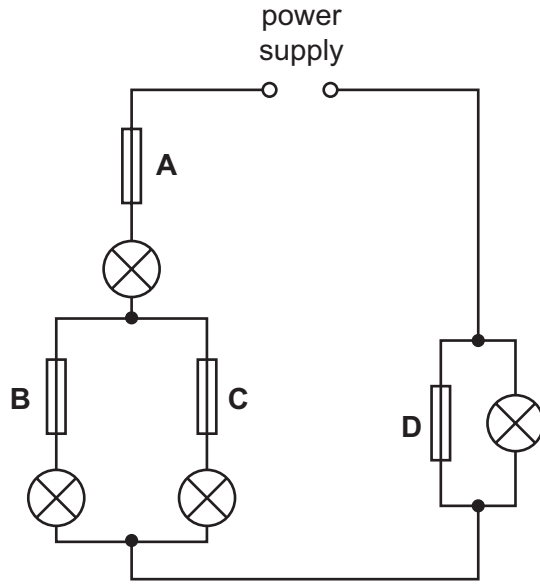


What is the reading on the voltmeter?

- A 4.0V
- B 6.0V
- C 8.0V
- D 12.0V

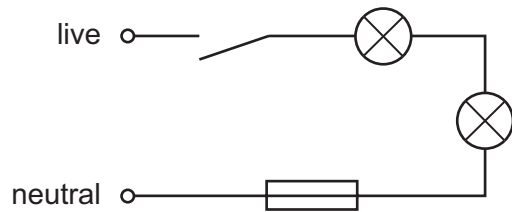
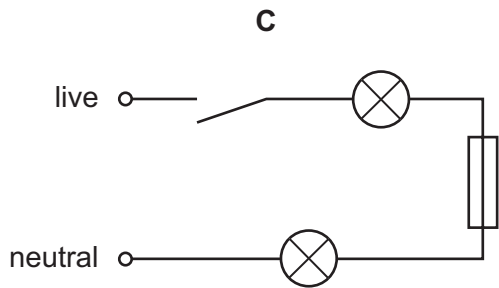
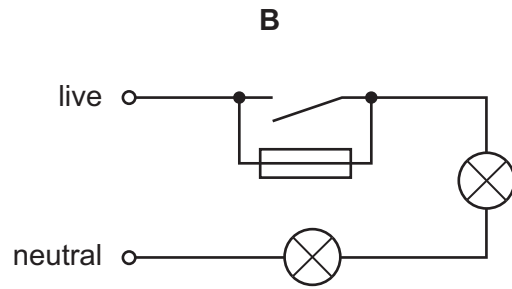
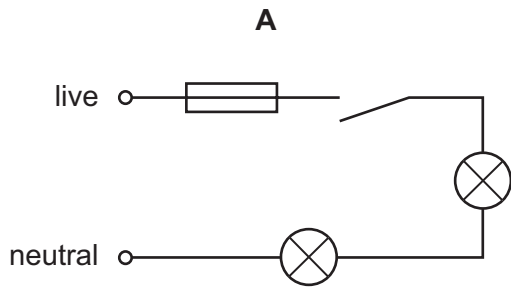
3 In the circuit shown, only one of the fuses has blown, but none of the lamps is lit.

Which fuse has blown?

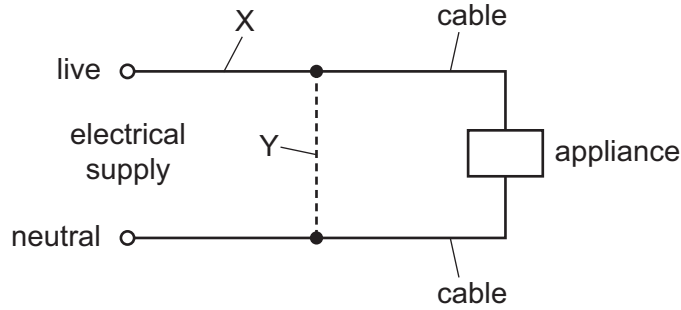


4 A fuse is used to protect an electric circuit.

Which diagram shows where the fuse should be connected?



- 5 Either a fuse or a circuit-breaker can be used to protect electrical cables from large currents that could cause overheating.

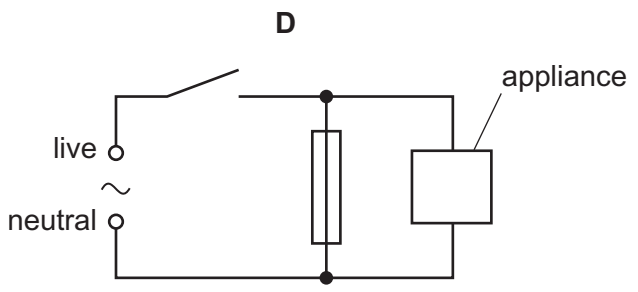
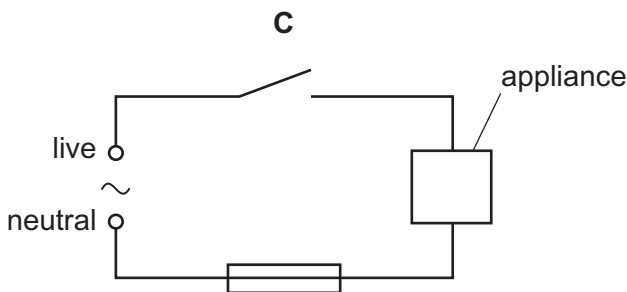
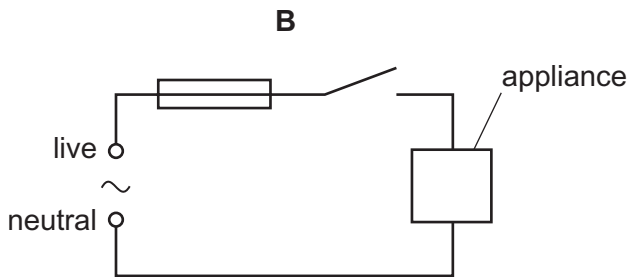
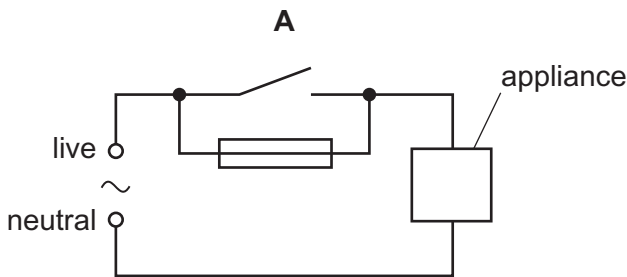


When a fuse is used, where should it be connected, and when a circuit-breaker is used, where should it be connected?

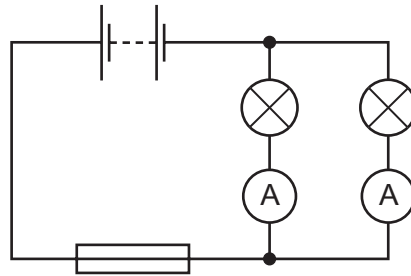
	position of fuse	position of circuit-breaker
<b>A</b>	X	X
<b>B</b>	X	Y
<b>C</b>	Y	X
<b>D</b>	Y	Y

- 6 An appliance is connected to a mains supply. Its circuit also contains a switch and a fuse.

Which circuit shows the fuse in the correct position?



- 7 In the circuit shown, the current from the battery divides equally between the two lamps. Each ammeter reads 6.0A.

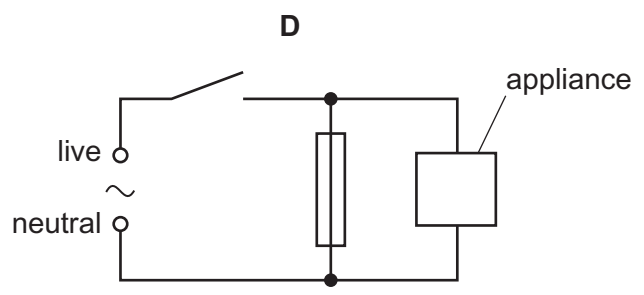
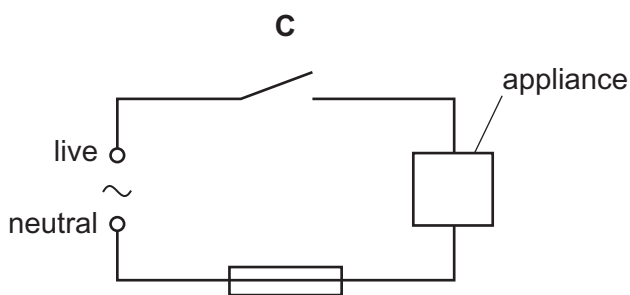
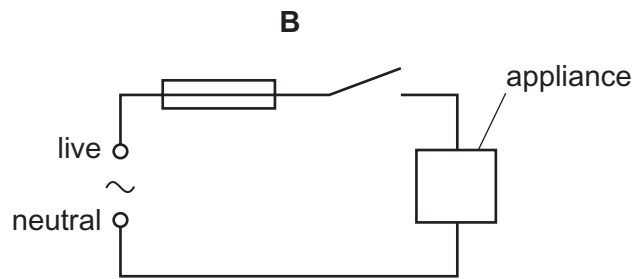
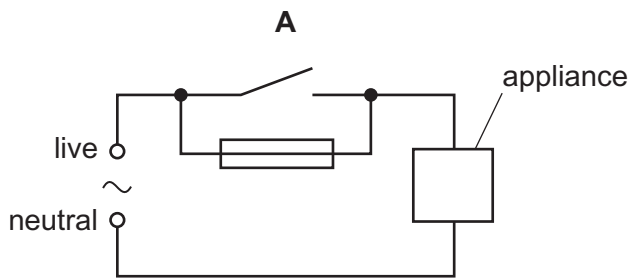


What is a suitable rating for the fuse in this circuit?

- A** 3.0A      **B** 6.0A      **C** 10.0A      **D** 13.0A

- 8 An appliance is connected to a mains supply. Its circuit also contains a switch and a fuse.

Which circuit shows the fuse in the correct position?



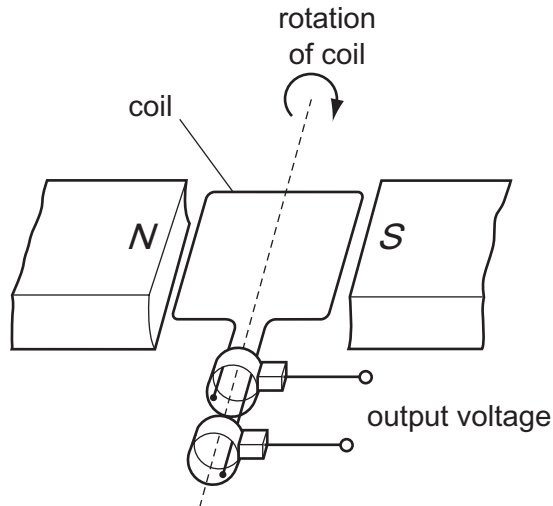
9 The current in a kettle is 10 A and it is protected by a 13 A fuse.

The owner of the kettle replaces the 13 A fuse with a 3 A fuse.

What happens when the kettle is switched on?

- A The fuse blows and the kettle is damaged.
- B The fuse blows and the kettle is undamaged.
- C The fuse does not blow and the kettle works correctly.
- D The fuse does not blow but the kettle fails to work.

10 The diagram shows an a.c. generator.

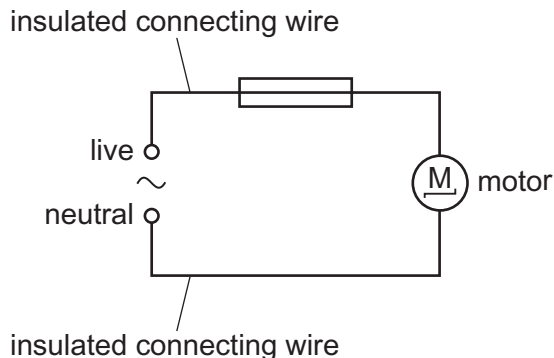


With the coil in the position shown, the output voltage is +10 V.

When does the output voltage become –10 V?

- A when the coil has turned  $90^\circ$
- B when the coil has turned  $180^\circ$
- C when the coil has turned  $270^\circ$
- D when the coil has turned  $360^\circ$

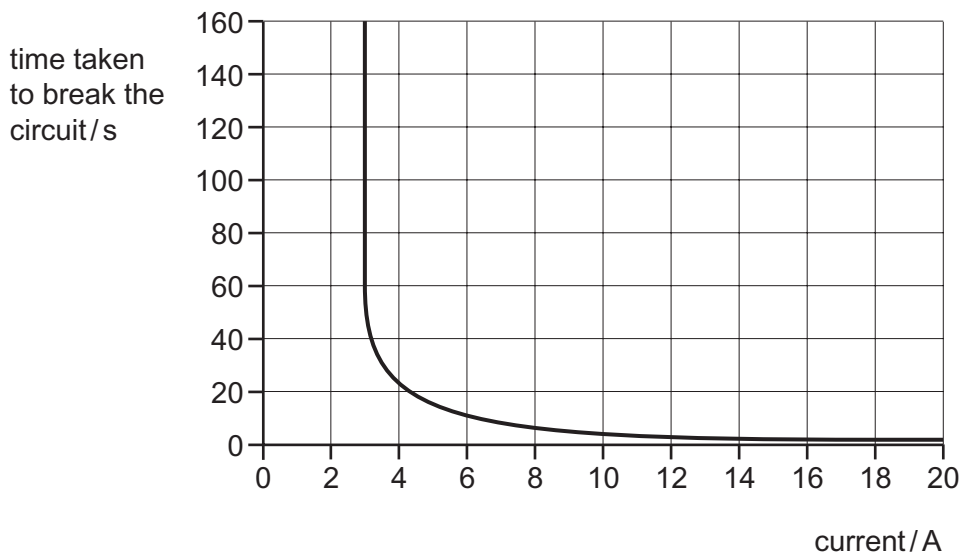
- 11 An electric motor is connected to the mains supply by insulated wires. The circuit is protected by a fuse, but the connecting wires become hot.



How could the wires be prevented from becoming so hot?

- A Connect a second fuse in the neutral wire.
  - B Use a fuse with a higher current rating.
  - C Use thicker connecting wires.
  - D Use thicker insulation on the connecting wires.
- 12 A circuit-breaker is designed to protect a circuit which usually carries a current of 2 A.

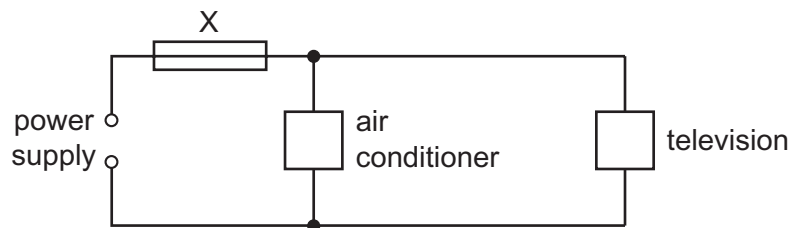
The time taken to break the circuit depends on the current, as shown in the graph.



What happens when the current in the circuit is 2 A and what happens when the current 18 A?

	when the current is 2 A	when the current is 18 A
<b>A</b>	the circuit breaks in less than 5 seconds	the circuit breaks in less than 5 seconds
<b>B</b>	the circuit breaks in less than 5 seconds	the circuit does not break
<b>C</b>	the circuit does not break	the circuit breaks in less than 5 seconds
<b>D</b>	the circuit does not break	the circuit does not break

- 13 An air conditioner and a television are both connected to the same electrical circuit.

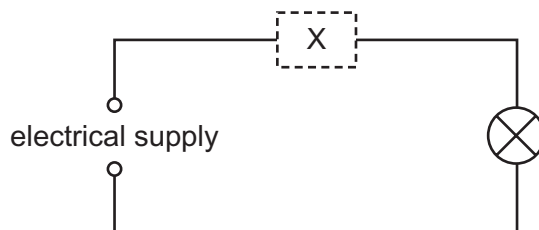


The current in the air conditioner is 4.0 A and the current in the television is 6.0 A.

Several different fuses are available.

Which fuse should be connected at X?

- A** 3 A                      **B** 5 A                      **C** 10 A                      **D** 13 A
- 14 In this circuit, a component at X automatically protects the wiring from overheating if there is a fault.



Which components are suitable to use at X?

- A** a circuit-breaker, a fuse or a switch  
**B** only a circuit-breaker or a fuse  
**C** only a circuit-breaker or a switch  
**D** only a fuse



15 A fuse and a relay each use an effect of an electric current.

Which effect of an electric current is used by a fuse and which effect is used by a relay?

	effect used by a fuse	effect used by a relay
<b>A</b>	heating effect	heating effect
<b>B</b>	heating effect	magnetic effect
<b>C</b>	magnetic effect	heating effect
<b>D</b>	magnetic effect	magnetic effect