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IGCSE PHYSICS 0625 · TOPICAL PAST PAPERS

Practical Electricity

Paper 1 — Multiple-Choice Questions (topical compilation)

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PRACTICAL ELECTRICITY

PAPER 1 QUESTIONS

Uses of electricity

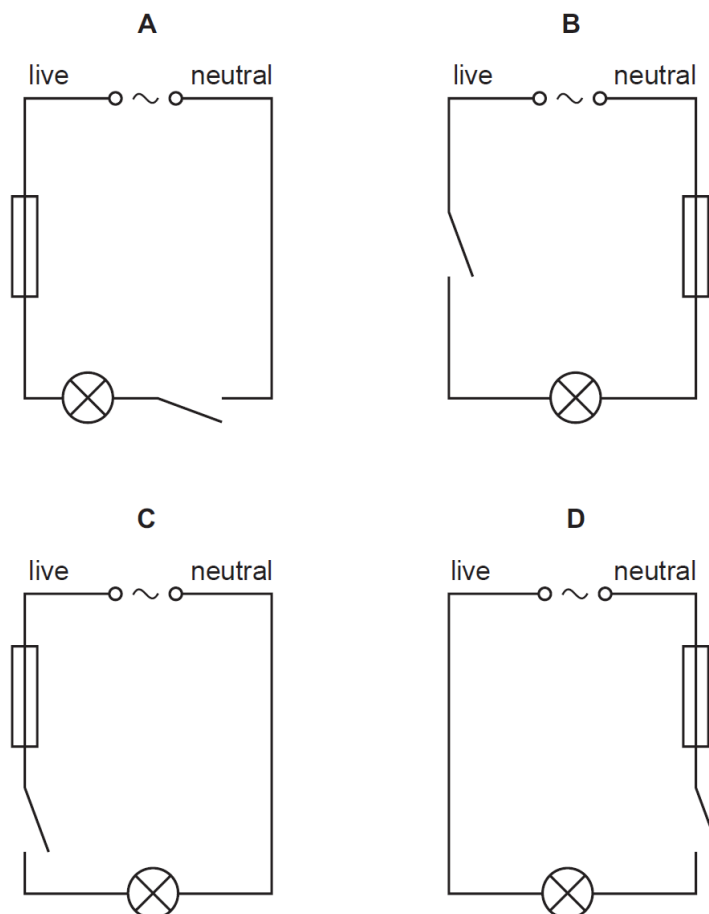
Dangers of electricity

Safe use of electricity in the home

QUESTION # 1: M/J 16 P11

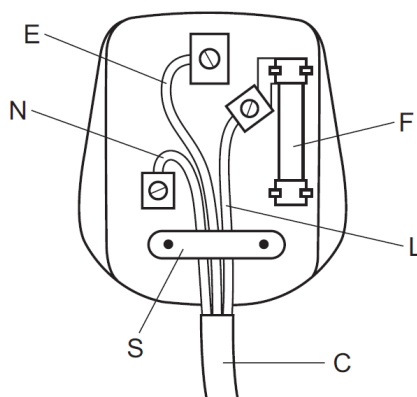
33 A lamp is connected to the a.c. mains supply in series with a switch and a fuse.

Which circuit shows these components wired correctly?



QUESTION # 2: M/J 16 P12

30 The diagram shows the wiring of a three-pin mains plug. There is an error in the diagram.



What is the error?

- A** The cable cover C is not under the clip S.
- B** The earth wire E is connected to the wrong terminal.
- C** The fuse F is connected to the live wire L.
- D** The live wire L is connected to the wrong end of the fuse F.

QUESTION # 3: M/J 16 P12

31 A 100 W lamp is switched on for five hours each day for three weeks.

The cost of one unit of electricity is \$0.24.

How much does it cost to run the lamp for this time?

- A** \$0.36 **B** \$0.84 **C** \$2.52 **D** \$25.20

QUESTION # 4: M/J 18 P11

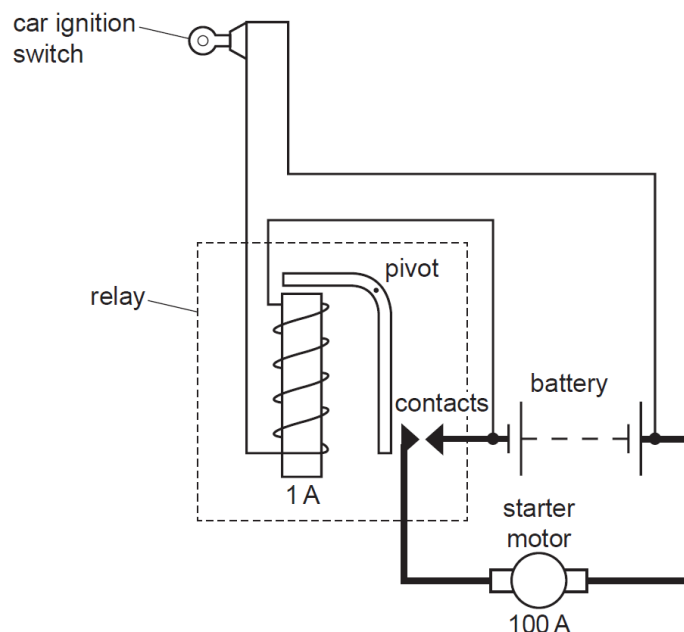
31 An electrical appliance is plugged into a socket in the wall. The plug contains a fuse.

What is the main purpose of the fuse?

- A** to earth the appliance
- B** to earth the plug
- C** to protect the user from electric shock
- D** to protect the wiring from overheating

QUESTION # 5: M/J 19 P11

30 The diagram shows a car ignition switch and starter motor.



The ignition switch is in a circuit with long, thin wires. The starter motor is in a circuit with short, thick wires.

What is the explanation for the choice of wires?

- A** Each circuit needs to contain the same total mass of wire.
- B** Thicker wires heat up more quickly when the relay is switched on.
- C** Thin wires have lower resistances.
- D** The ignition switch circuit carries a smaller current than the starter motor circuit.

QUESTION # 6: M/J 19 P11

35 The cable to an electric cooker contains a live wire, a neutral wire and an earth wire.

When the cooker is working correctly, in which wires are the currents equal?

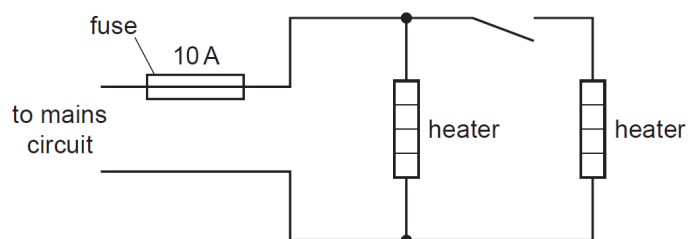
- A** the live, the neutral and the earth
- B** the live and the earth only
- C** the neutral and the earth only
- D** the neutral and the live only

QUESTION # 7: M/J 19 P12

- 36** The manufacturer of an electrical heater states that only one heater must be connected to the mains wiring through any fuse.

The current in the circuit with only one heater is 9 A. The fuse rating is 10 A.

Despite the warning, a second identical heater is added, as shown. When the switch is closed the fuse blows.



The fuse is replaced with a 20 A fuse.

What happens when the switch is closed?

- A** Each heater only receives half the correct current.
- B** Each heater receives twice the correct current.
- C** The circuit wiring connecting the heaters to the mains may overheat.
- D** The fuse melts when the heaters are switched on.

QUESTION # 8: M/J 20 P11

- 40** A kettle is connected to the 240 V mains supply using a plug containing a 13 A fuse.

The kettle contains water.

When it is switched on, the fuse blows. This happens again after a new fuse is fitted.

Someone replaces the fuse with a nail, and the kettle works.

What else might happen as a result of replacing the fuse with a nail?

- A** A very large current overloads the wiring, causing a fire.
- B** The kettle boils the water less quickly.
- C** The kettle uses more energy to boil the water.
- D** The water boils at a higher temperature.

QUESTION # 9: O/N 16 P12

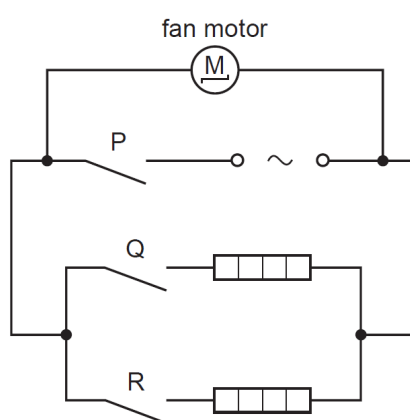
35 The headlamp circuit in a car includes a 7A fuse.

What is the purpose of the fuse?

- A** It increases the resistance of the circuit.
- B** It makes it easier for the current to flow.
- C** It protects the wiring from overheating.
- D** It reduces the voltage across the lamp.

QUESTION # 10: O/N 17 P11

32 The diagram shows the circuit for a hair-dryer.



The fan motor has a power rating of 0.10 kW and the heaters each have a rating of 0.40 kW. The cost of electricity is 8.0 cents/kW h.

What is the cost of running the hair-dryer for two hours with switches P and Q closed and switch R open?

- A** 1.6 cents **B** 4.0 cents **C** 6.4 cents **D** 8.0 cents

QUESTION # 11: O/N 17 P11

33 Why are the metal casings of electrical appliances earthed?

- A** to complete the circuit
- B** to ensure the casing is not at a dangerous voltage
- C** to ensure the fuse blows when the current in the appliance is too large
- D** to protect the appliance from overheating

QUESTION # 12: O/N 18 P11

31 The power of an electrical heater is 3.0 kW.

The heater is switched on for a time of 2 hours and 30 minutes.

The cost of using the heater for this time is 120 c.

What is the cost of 1.0 kWh of electrical energy?

- A** 16 c **B** 17 c **C** 40 c **D** 48 c

QUESTION # 13: O/N 18 P11

32 In a lighting circuit, the switch is placed in the live wire.

Why is this?

- A** A lamp in the circuit can be isolated from the supply.
B The fuse is in the neutral wire.
C The switch does not work in the neutral wire.
D Too much current flows in the earth wire.

QUESTION # 14: O/N 18 P12

34 Which cable transmits electrical energy at the highest voltage?

- A** a cable from a bicycle dynamo to a lamp
B a household lighting cable
C a power cable between towns
D an electric cooker cable

QUESTION # 15: O/N 19 P11

36 A lamp is connected to a mains plug.

Where are the switch and the fuse connected so that the lamp is safe to use?

	switch	fuse
A	live wire	live wire
B	live wire	neutral wire
C	neutral wire	live wire
D	neutral wire	neutral wire

QUESTION # 16: O/N 19 P12

36 A mains electric circuit is fitted with a circuit breaker rather than a fuse.

Where is the circuit breaker connected and what happens when the current is too large?

	A circuit breaker is connected in...	When the current is too large...
A	the live wire.	a thin wire melts and breaks the circuit.
B	the live wire.	an electromagnet opens a switch.
C	the neutral wire.	a thin wire melts and breaks the circuit.
D	the neutral wire.	an electromagnet opens a switch.

QUESTION # 17: O/N 20 P11

39 A student calculates the amount of energy used by an electric heater.

What is the equation for calculating the energy E in kWh?

- A** $E = I \text{ (ampere)} \times V \text{ (volt)} \times t \text{ (second)}$
B $E = I \text{ (ampere)} \times V \text{ (volt)} \times t \text{ (hour)}$
C $E = I \text{ (ampere)} \times V \text{ (volt)} \times t \text{ (second)} \div 1000$
D $E = I \text{ (ampere)} \times V \text{ (volt)} \times t \text{ (hour)} \div 1000$

QUESTION # 18: O/N 20 P12

33 A 240V mains circuit contains eight 60W lamps in parallel. At the time when the lamps are switched on, the filaments are cold and the current is four times as large as the final steady current in the circuit.

What is the initial current supplied by the mains?

- A** 0.25 A **B** 1.0 A **C** 2.0 A **D** 8.0 A