

Electrical Circuits

Question Paper 4

Level	IGCSE
Subject	Physics (0625/0972)
Exam Board	Cambridge International Examinations (CIE)
Topic	General Physics
Sub-Topic	Electrical Circuits
Booklet	Question Paper 4

Time allowed: 16 minutes

Score: /13

Percentage: /100

Grade Boundaries:

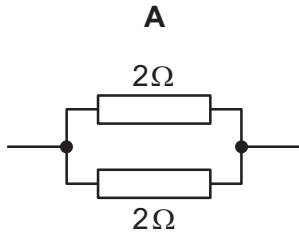
9	8	7	6	5	4	3	2	1
>85%	75%	68%	60%	55%	50%	43%	35%	<30%

Question 1

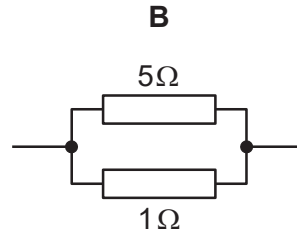
A student connects various resistors in parallel pairs.

Underneath each diagram is a statement about the total resistance of each pair of resistors.

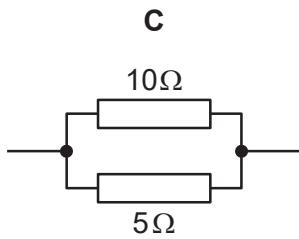
Which statement is correct?



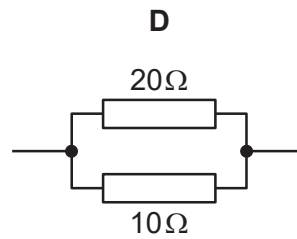
The total resistance is 4Ω .



The total resistance is between 1Ω and 5Ω .



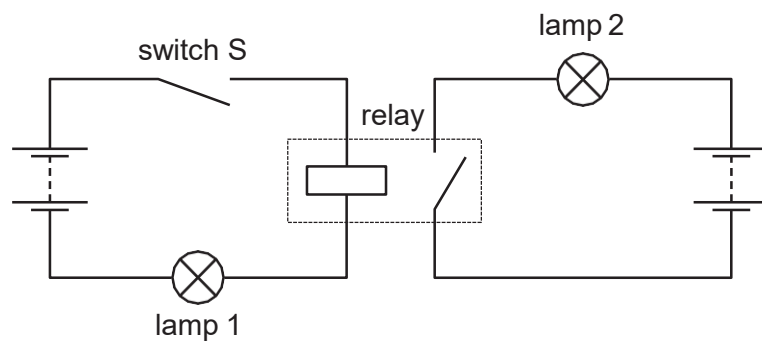
The total resistance is less than 5Ω .



The total resistance is more than 20Ω .

Question 2

The circuit shown contains a relay.
Both lamps are initially off.



When switch S is closed, the relay operates. What is the state of the lamps?

	lamp 1	lamp 2
A	on	on
B	on	off
C	off	on
D	off	off

Question 3

The diagram shows an electrical component.

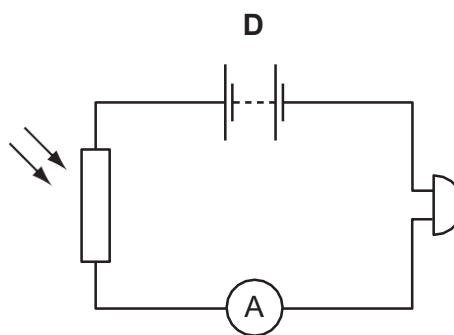
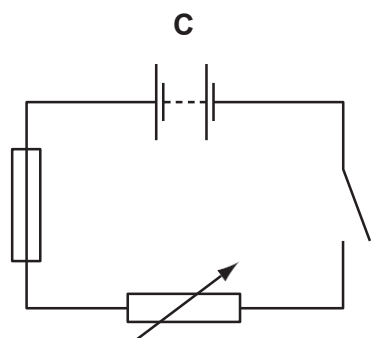
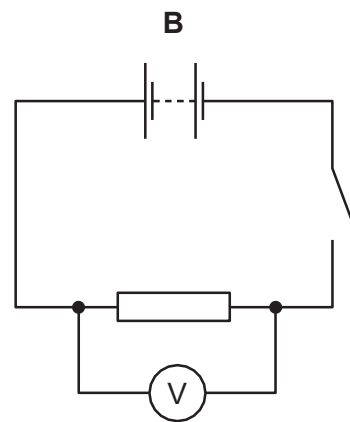
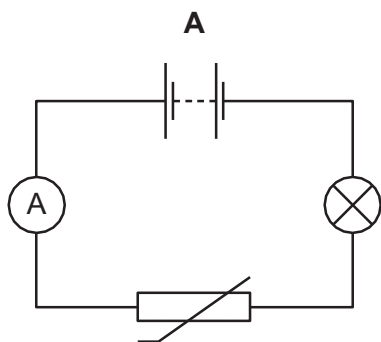


What is it?

- A. a capacitor
- B. a light-dependent resistor
- C. a thermistor
- D. a variable resistor

Question 4

Which circuit contains a fuse?



Question 5

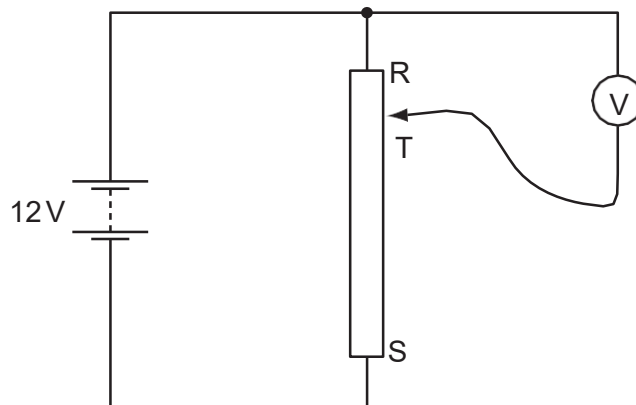
A thermistor is used in a circuit to control a piece of equipment automatically.

What might this circuit be used for?

- A. lighting an electric lamp as it becomes darker
- B. ringing an alarm bell if a locked door is opened
- C. switching on a water heater at a pre-determined time
- D. turning on an air conditioner when the temperature rises

Question 6

A student connects a variable potential divider (potentiometer) circuit.

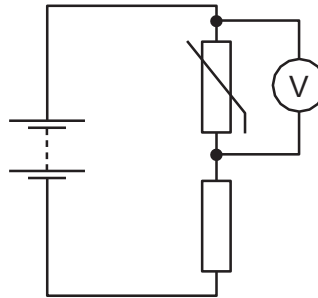


What happens to the reading on the voltmeter as the sliding terminal T is moved from R to S?

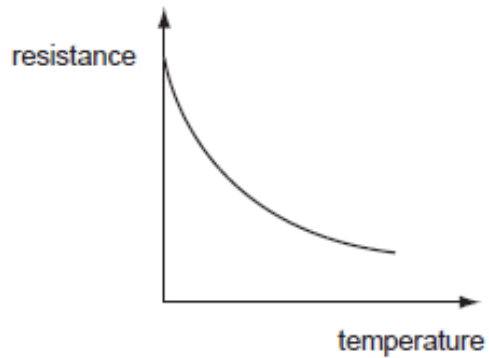
- A It decreases from 12V to 0V.
- B It increases from 0 V to 12 V.
- C It remains at 0V.
- D It remains at 12V.

Question 7

The diagram shows a thermistor in a potential divider. A voltmeter is connected across the thermistor.



The graph shows how the resistance of the thermistor changes with temperature.

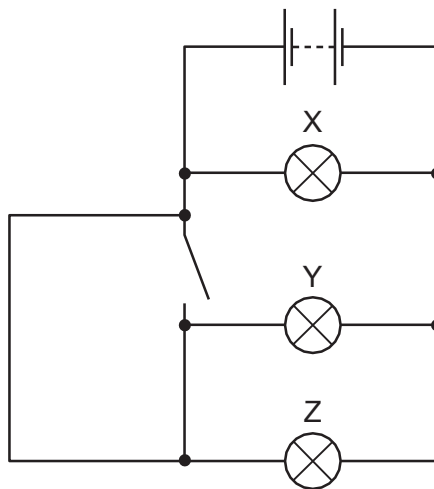


As the thermistor becomes warmer, what happens to its resistance and what happens to the reading on the voltmeter?

	resistance	voltmeter reading
A	decreases	decreases
B	decreases	increases
C	increases	decreases
D	increases	increases

Question 8

A student sets up the circuit shown. The switch is open (off).

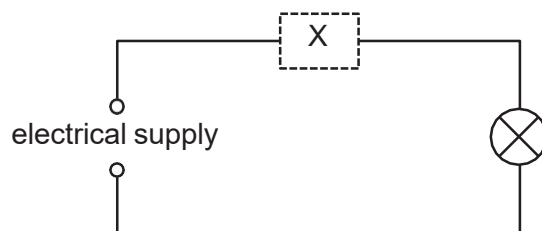


Which lamps are on and which lamps are off?

	lamp X	lamp Y	lamp Z
A	off	off	off
B	on	off	off
C	on	off	on
D	on	on	on

Question 9

In this circuit, a component at X automatically protects the wiring from overheating if there is a fault.



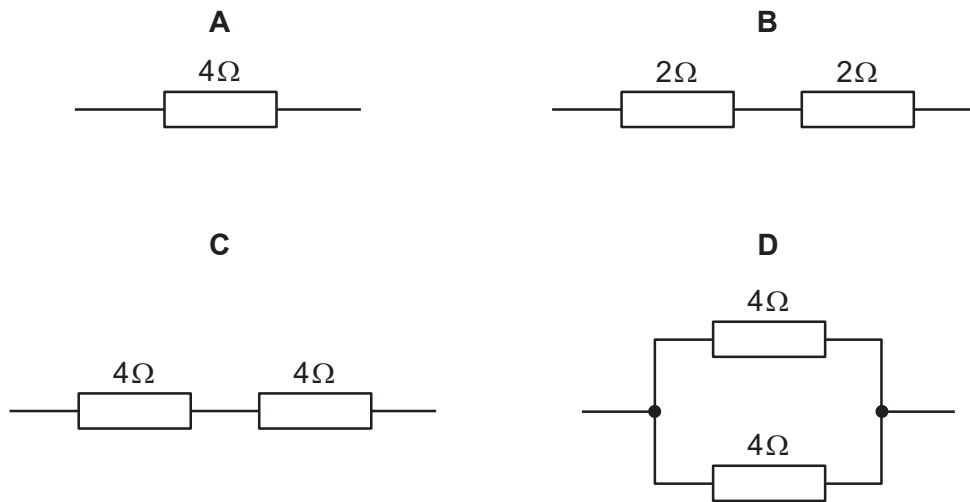
Which components are suitable to use at X?

- 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

Question 10

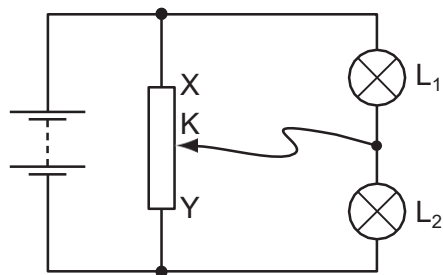
The diagrams show four arrangements of resistors.

Which arrangement has the **smallest** total resistance?



Question 11

The diagram shows a potential divider circuit with two identical lamps L_1 and L_2 .



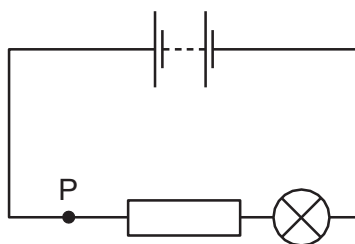
The contact K is halfway between X and Y and the lamps are equally bright.

What will happen to the brightness of the lamps when contact K is moved a short distance towards X?

	lamp L_1	lamp L_2
A	brighter	brighter
B	brighter	dimmer
C	dimmer	brighter
D	dimmer	dimmer

Question 12

The diagram shows a lamp in a circuit.



Which change to the circuit would increase the current in the lamp?

- A. adding another resistor in parallel with the one in the circuit
- B. adding another resistor in series with the one in the circuit
- C. decreasing the electromotive force (e.m.f.) of the battery in the circuit
- D. moving the lamp to point P in the circuit

Question 13

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
A	heating effect	heating effect
B	heating effect	magnetic effect
C	magnetic effect	heating effect
D	magnetic effect	magnetic effect