CAMBRIDGE IGCSE PHYSICS · 0625

PHYSICS



EXAM QUESTION PACK

TOPIC 4: ELECTRICITY AND MAGNETISM

SCORE	PERCENTAGE
/	%

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Electrical Quantities

Question Paper 1

Level	IGCSE
Subject	Physics (0625/0972)
Exam Board	Cambridge International Examinations (CIE)
Topic	General Physics
Sub-Topic	Electrical Quantities
Booklet	Question Paper 1

Time allowed: **23 minutes**

Score: **/18**

Percentage: **/100**

Grade Boundaries:

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

Question 1

What is an electric field?

A. a region around a wire carrying an electric current in which a compass needle experiences a force

B. a region in which an electric charge experiences a force

C. a region in which an electric charge is attracted by the Earth's gravity

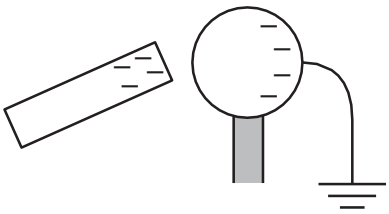
D. a region through which electromagnetic radiation is passing

Question 2

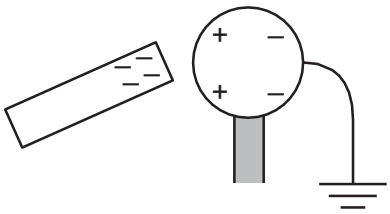
A negatively charged rod is held close to one side of a metal sphere. The other side of the sphere is earthed.

Which diagram shows the distribution of charge on the metal sphere?

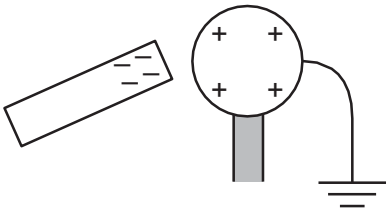
A



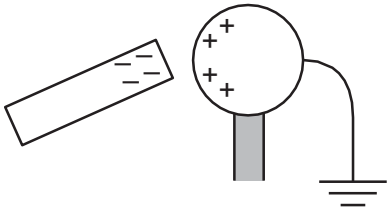
B



C

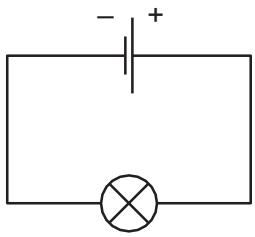


D



Question 3

A cell is connected to a lamp, as shown.



A charge of 4.0 C flows through the lamp in 2.0 s.

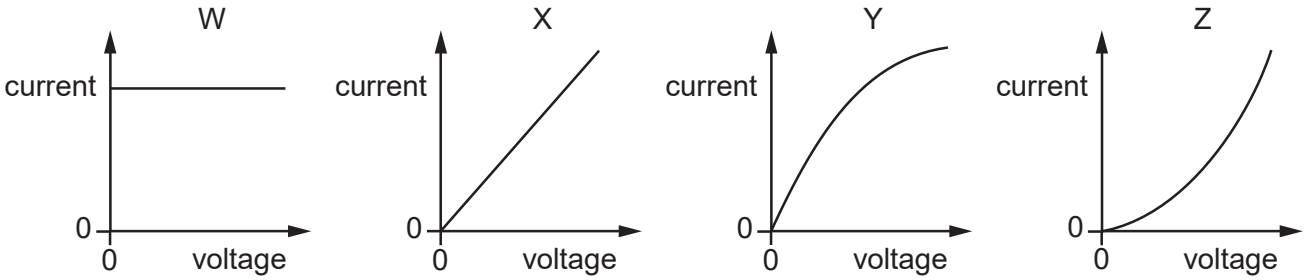
What is the direction of the electron flow in the lamp and what is the current in the lamp?

	direction of electron flow in lamp	current / A
A	from left to right	2.0
B	from left to right	8.0
C	from right to left	2.0
D	from right to left	8.0

Question 4

The diagrams show four current-voltage graphs.

Which two graphs show the characteristics of an ohmic resistor and of a filament lamp?



	ohmic resistor	filament lamp
A	W	Y
B	X	Y
C	W	Z
D	X	Z

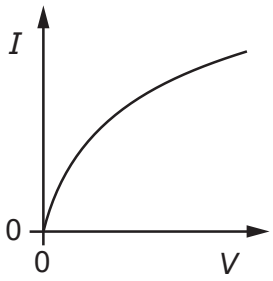
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Question 5

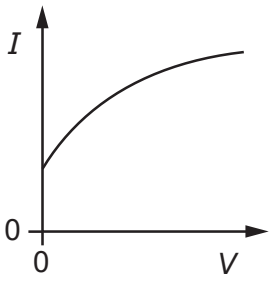
A small potential difference V is applied across a filament lamp. The current I in the lamp is measured. V is increased in stages and I is measured at each stage.

Which graph shows the results obtained?

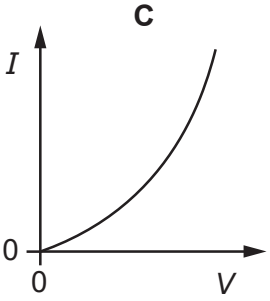
A



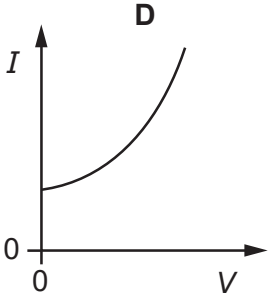
B



C



D



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Question 6

A resistor of resistance R is connected to a battery of e.m.f. V.

There is a current I in the resistor.

Power P is dissipated by the resistor, and in time t the energy transferred is E.

Which expression is correct?

A $E = IVt$ B $E = PIt$ C $P = VIR$ D $P = \frac{V}{R}$

Question 7

A wire has a certain electrical resistance.

The diameter and length of the wire may be changed.

Which pair of changes must cause the resistance of the wire to increase?

	change of diameter	change of length
A	decrease	decrease
B	decrease	increase
C	increase	decrease
D	increase	increase

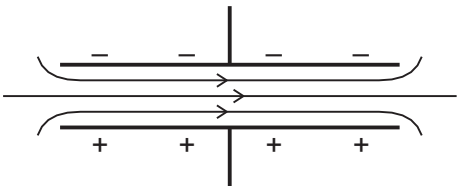
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Question 8

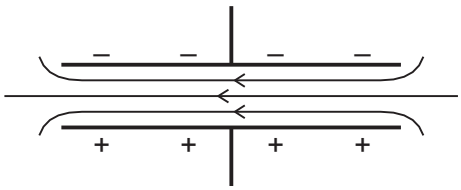
Each diagram shows two charged metal plates.

Which diagram shows the pattern and the direction of the electric field between the plates?

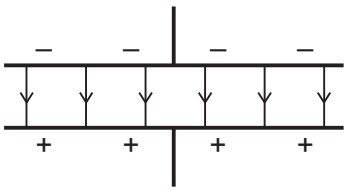
A



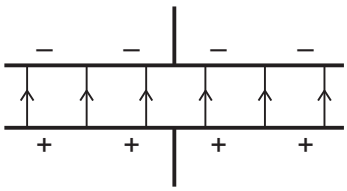
B



C

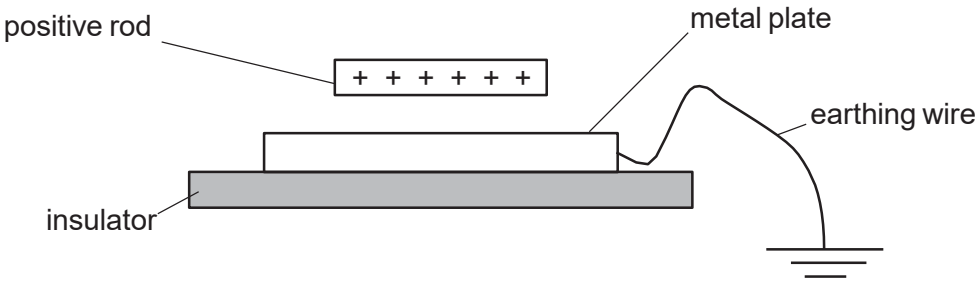


D



Question 9

A positively charged plastic rod is placed just above a thick metal plate. The metal plate rests on an insulator and is connected to the earth by a wire.



A student disconnects the earthing wire and then removes the positively charged rod.

The experiment is repeated. This time the student removes the positively charged rod and then removes the earthing wire.

Which statement is correct?

A When the earthing wire is disconnected first, the metal plate becomes positively charged.

B When the earthing wire is disconnected first, the metal plate becomes negatively charged.

C When the plastic rod is removed first, the metal plate becomes positively charged.

D When the plastic rod is removed first, the metal plate becomes negatively charged.

Question 10

The resistance of a wire depends on its length l and on its cross-sectional area A.

The resistance is

A directly proportional to l and directly proportional to A.

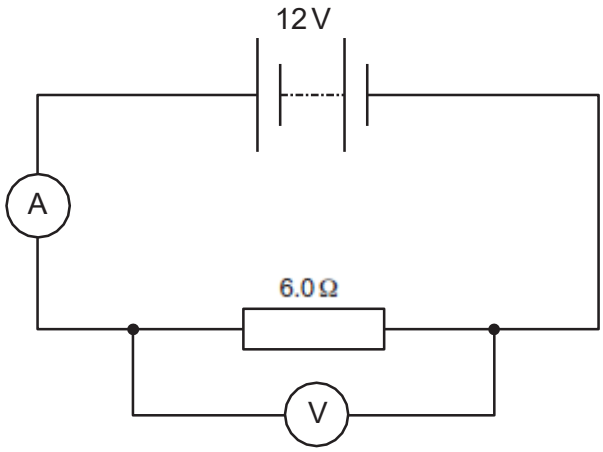
B directly proportional to l and inversely proportional to A.

C inversely proportional to l and directly proportional to A.

D inversely proportional to l and inversely proportional to A.

Question 11

In the circuit shown, the ammeter reads 2.0 A and the voltmeter reads 12 V.



How much energy is transferred by the resistor in 10 seconds?

A 2.4 J

B 14.4 J

C 240 J

D 1440 J

Question 12

The diagram shows a piece of metal resistance wire.



Which wire, made of the same metal, has a smaller resistance?

A a wire of the same length with a larger diameter

B a wire of the same length with a smaller diameter

C a wire of greater length with the same diameter

D a wire of greater length with a smaller diameter

Question 13

What is the unit of electromotive force (e.m.f.)?

A. ampere

B. joule

C. volt

D. watt

Question 14

A student has wires of different lengths and different diameters. The wires are all made of the same metal.

The student measures the resistance of one wire.

Which wire has a greater resistance than the wire he has measured?

A. a shorter wire with a larger diameter

B. a shorter wire with the same diameter

C. a wire of the same length with a larger diameter

D. a wire of the same length with a smaller diameter

Question 15

Diagram 1 shows two thin, uncharged strips of plastic.

Diagram 2 shows the same strips after they have been rubbed with a dry cloth.

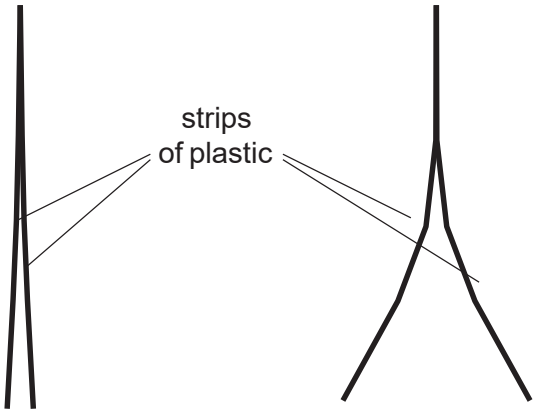


diagram 1 diagram 2

Which row describes the charge on the strips after rubbing, and the force between the strips after rubbing?

	charge on strips	force between strips
A	opposite	attraction
B	opposite	repulsion
C	the same	attraction
D	the same	repulsion

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Question 16

What is the unit of electromotive force (e.m.f.)?

A. ampere

B. newton

C. ohm

D. volt

Question 17

Which sample of copper wire has the greatest electrical resistance?

	length of wire / m	diameter of wire / mm
A	1.0	2.0
B	1.0	4.0
C	10	2.0
D	10	4.0

Question 18

What is the unit of electrical power?

A. ampere

B. joule

C. volt

D. watt

Electric Circuits

Question Paper 2

Level	IGCSE
Subject	Physics (0625/0972)
Exam Board	Cambridge International Examinations (CIE)
Topic	General Physics
Sub-Topic	Electric Circuits
Booklet	Question Paper 2

Time allowed: **19 minutes**

Score: **/15**

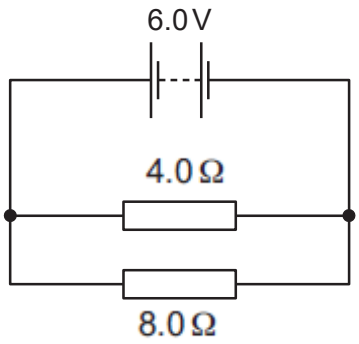
Percentage: **/100**

Grade Boundaries:

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

Question 1

The circuit diagram shows a 4.0 Ω resistor and an 8.0 Ω resistor connected to a 6.0V battery.

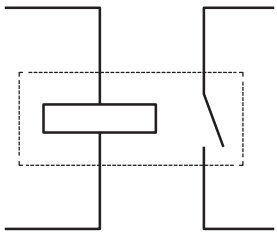


What is the current in the 8.0 Ω resistor?

A 0 A B 0.50 A C 0.75A D 1.0A

Question 2

Which component is represented by this circuit symbol?



A. a bell

B. a fuse

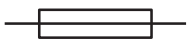
C. a relay

D. a transformer

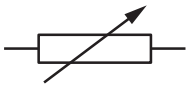
Question 3

What is the circuit symbol for a variable resistor?

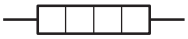
A



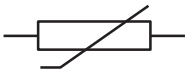
B



C

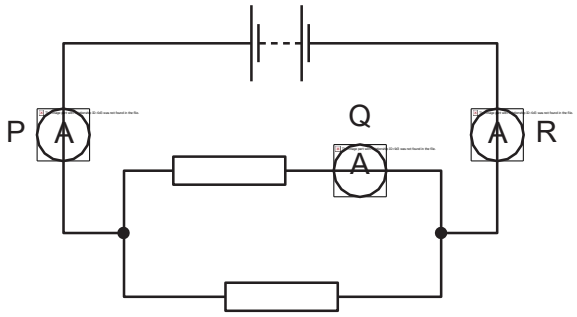


D



Question 4

The diagram shows a circuit containing three ammeters P, Q and R.



Which statement about the readings on the ammeters is correct?

A. The reading on P is equal to the reading on Q.

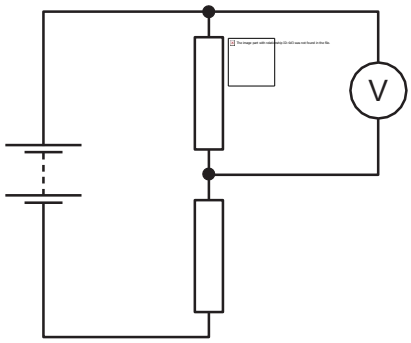
B. The reading on P is equal to the reading on R.

C. The reading on Q is greater than the reading on P.

D. The reading on Q is greater than the reading on R.

Question 5

The diagram shows a light-depen tential divider circuit.



The brightness of the light falling on the LDR is increased.

Which row shows what happens to the resistance of the LDR, and what happens to the reading on the voltmeter?

	resistance of LDR	reading on voltmeter
A	decreases	decreases
B	decreases	increases
C	increases	decreases
D	increases	increases

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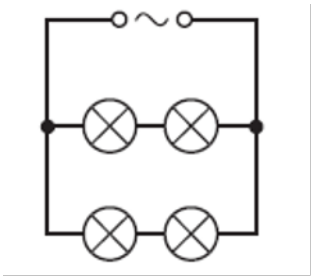
Question 6

Four lamps are each labelled '60 W 230 V'.

In which circuit are the lamps connected so that they operate at normal brightness?

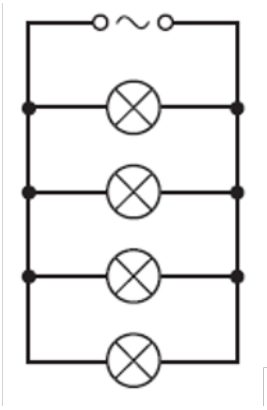
A

230V



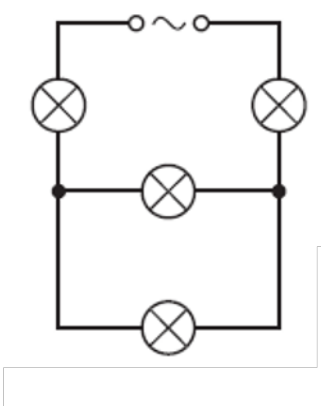
B

230V



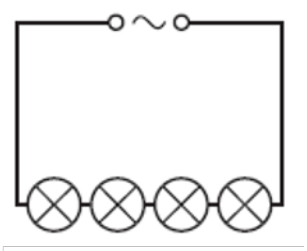
C

230V



D

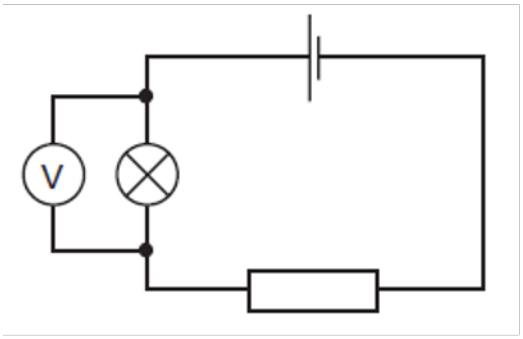
230V



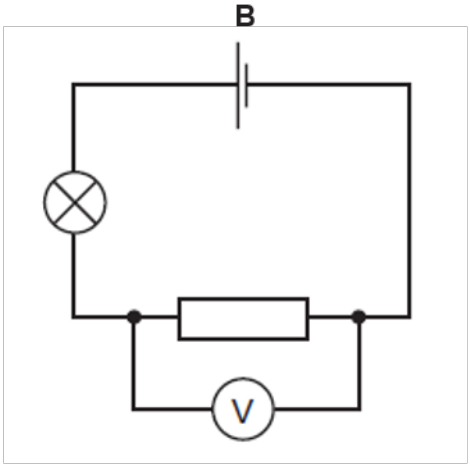
Question 7

Which circuit shows a voltmeter measuring the p.d. across a resistor?

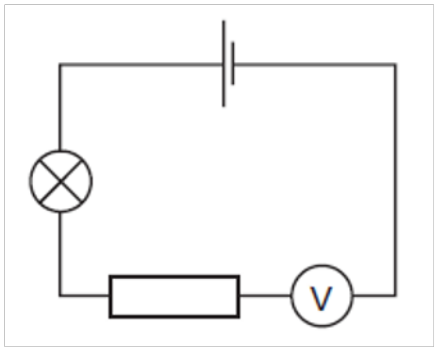
A



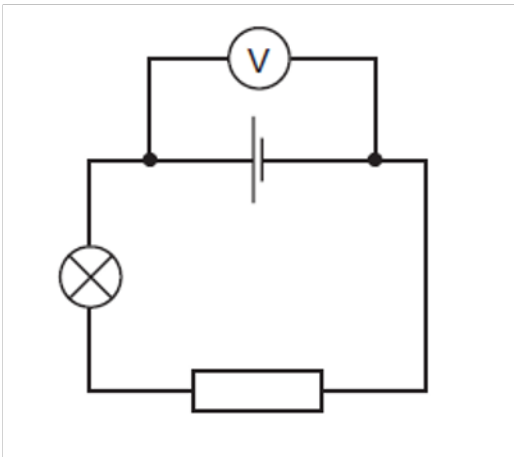
B



C

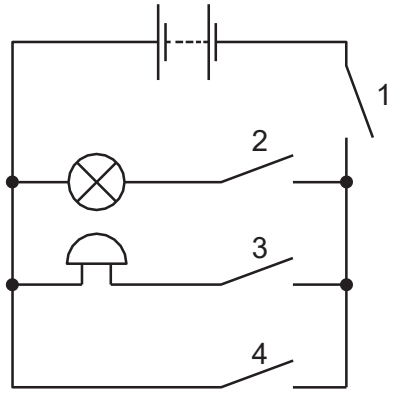


D



Question 8

A student connects the circuit



Which switches must be closed for both the bell to ring and the lamp to light?

A. 1 and 4 only

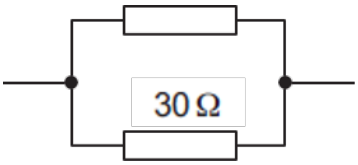
B. 2 and 3 only

C. 1, 2 and 3 only

D 1, 2, 3 and 4

Question 9

Two resistors are connect

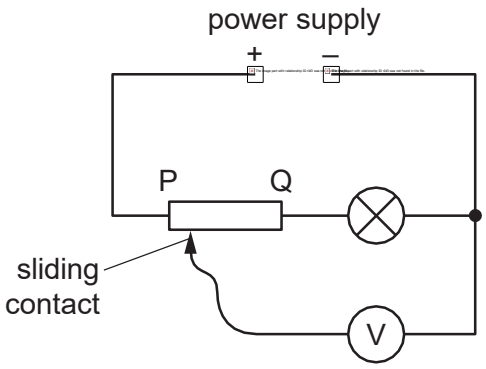


Which value could be the resistance of the combination?

A 12 Ω B 20 Ω C 25 Ω D 50 Ω

Question 10

The circuit contains a variable potential divider PQ, a lamp and a voltmeter.



The sliding contact of the potential divider is moved towards end Q.

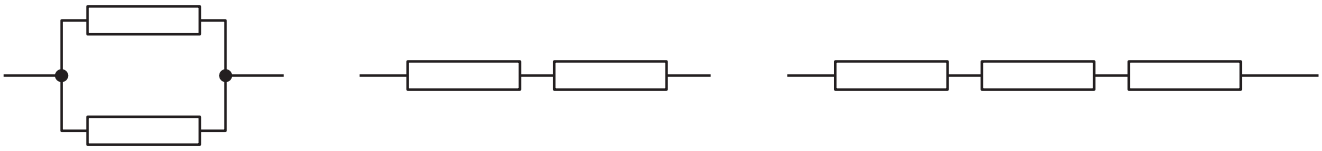
What happens to the brightness of the lamp and what happens to the voltmeter reading?

	brightness of lamp	voltmeter reading
A	becomes brighter	decreases
B	becomes brighter	increases
C	does not change	decreases
D	does not change	increases

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Question 11

Identical resistors are connected together to form arrangements X, Y and Z.



arrangement X arrangement Y arrangement Z

What is the correct order of the resistances of the arrangements from the largest to the smallest?

A X → Y → Z

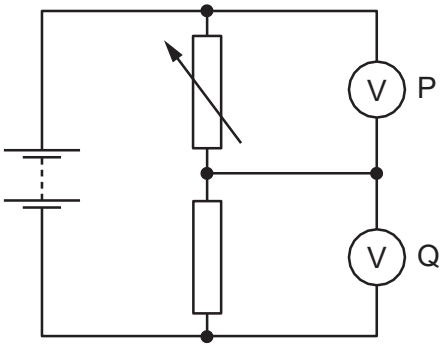
B Y → X → Z

C Z → X → Y

D Z → Y → X

Question 12

The diagram shows a potential divider circuit.



The resistance of the variable resistor is increased.

Which row shows what happens to the readings on voltmeter P and on voltmeter Q?

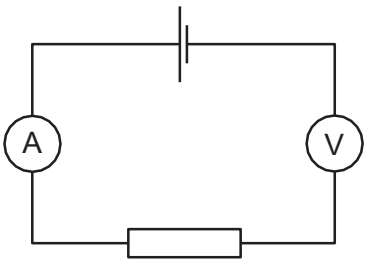
	reading on voltmeter P	reading on voltmeter Q
A	decreases	decreases
B	decreases	increases
C	increases	decreases
D	increases	increases

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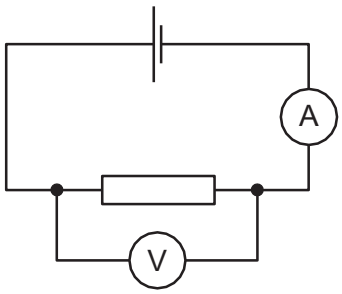
Question 13

A student wishes to determine the resistance of a resistor. She uses an ammeter and a voltmeter in a circuit.
In which circuit are the ammeter and voltmeter connected correctly?

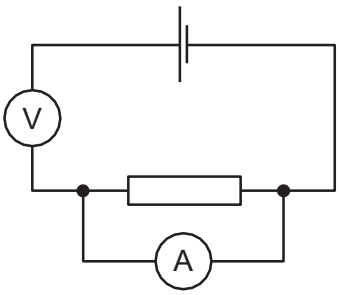
A



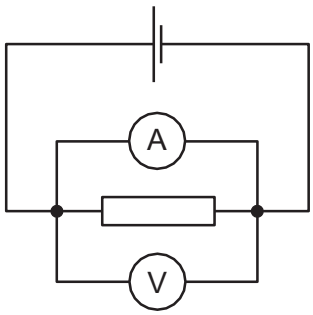
B



C



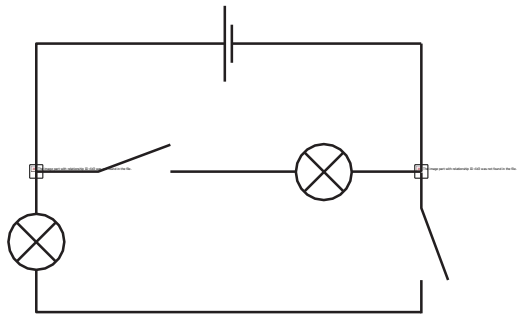
D



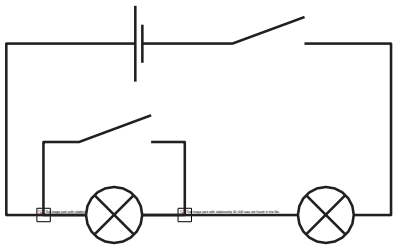
Question 14

In which circuit can the lamps be switched on and off independently?

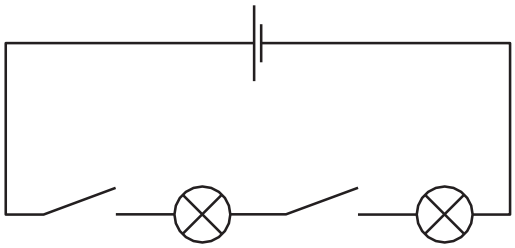
A



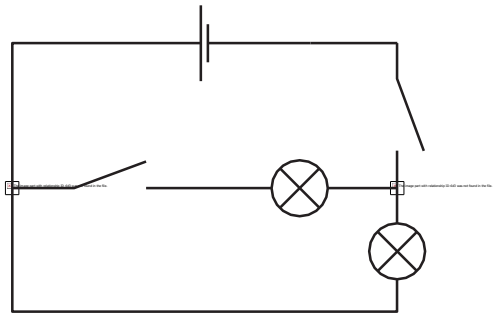
B



C



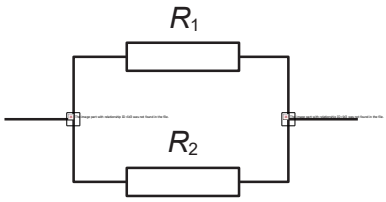
D



Question 15

Two resistors, with resistances R_1 and R_2, are connected in parallel.

The resistance R_1 is greater than the resistance R_2.



What is the resistance of the parallel combination?

A. less than either R_1 or R_2

B. equal to R_1

C. equal to R_2

D. the average of R_1 and R_2