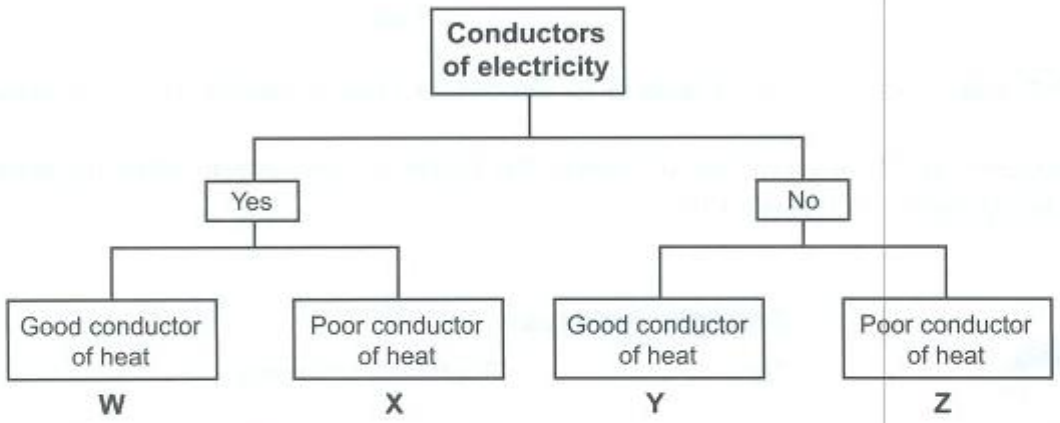
TOPICAL TEST 7A:

30

Section A (10 x 2 marks)

For each question from 1 to 10, four options are given. One of them is the correct answer. Make your choice (1, 2, 3 or 4) and write the answers in the brackets provided.

1. Study the classification chart below.

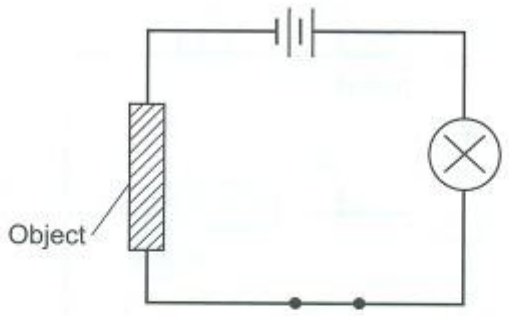


Which letters best represent Copper and Air?

	Copper	Air
(1)	Y	X
(2)	X	Z
(3)	W	Z
(4)	Z	W

( )

2. Yao Hui carried out an experiment to find out which one of the following objects, A, B, C or D is/are conductors of electricity. He connected each object to the same electrical circuit shown below, one at a time.



His results are shown below in the table.

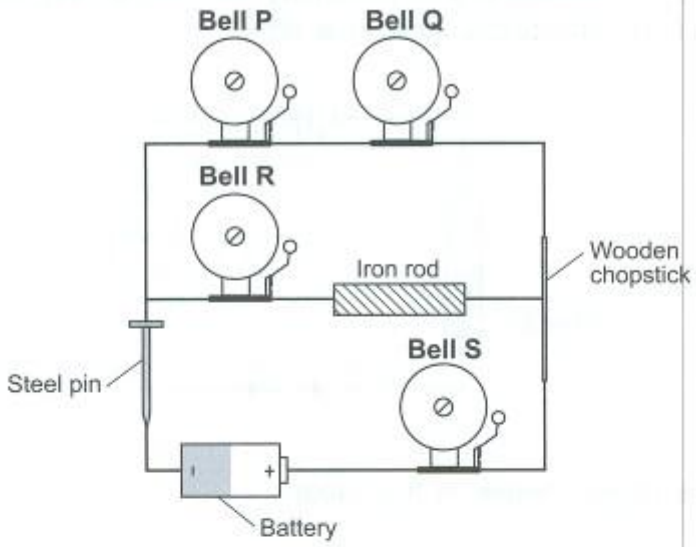
Object	Light produced by the bulb
A	Did not light up
B	Dim
C	Very bright
D	Did not light up

Which of the following best represents Objects A, B, C and D?

	A	B	C	D
(1)	Iron nail	Plastic ruler	Pencil lead	Glass rod
(2)	Pencil lead	Iron nail	Plastic ruler	Glass rod
(3)	Plastic ruler	Glass rod	Pencil lead	Iron nail
(4)	Plastic ruler	Pencil lead	Iron nail	Glass rod

( )

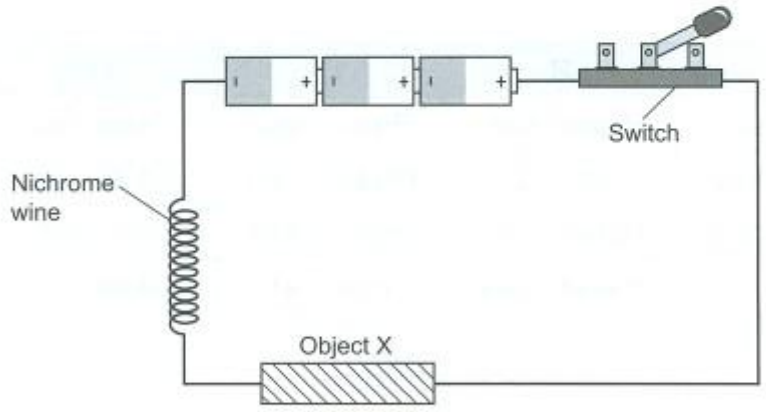
3. Study the electric circuit shown below.



Which bell, P, Q, R, or/and S will ring?

(1) S only
(2) P and Q only
(3) R and S only
(4) None of them ( )

4. Li Jia set up an experiment as shown in the diagram below.

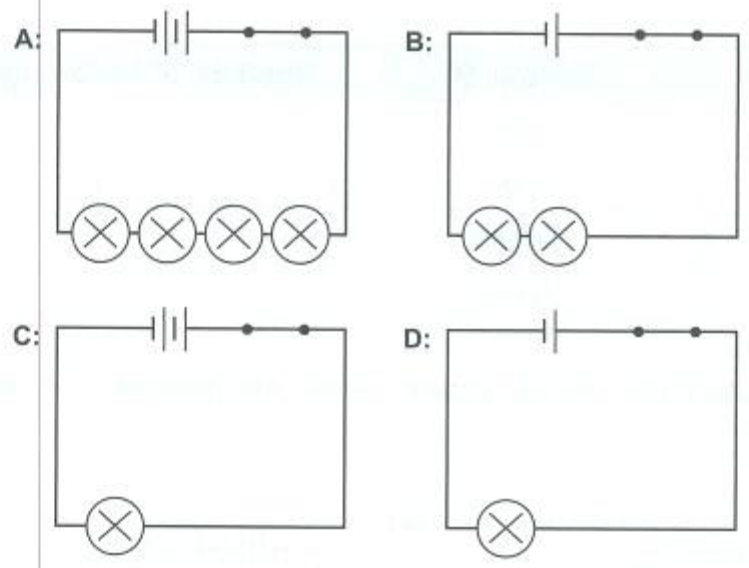


She noticed that the nichrome wire became hot when the switch was closed.

Which of the following statements is definitely true about Object X?

(1) Object X is the fuse.
(2) Object X is an iron rod.
(3) Heat can pass through Object X.
(4) Object X is an electrical conductor. ( )

5. Study the circuit diagrams below.

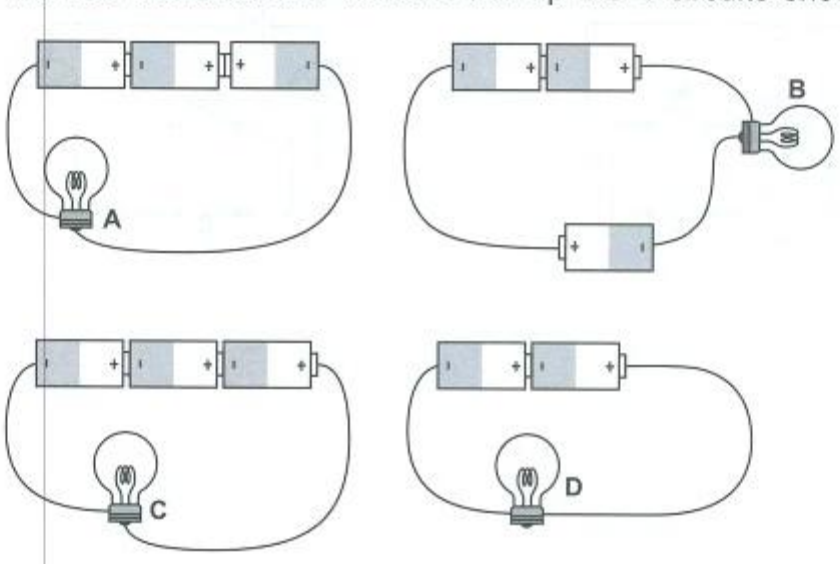


Which of the following circuits will produce the brightest bulb?

(1) A
(2) B
(3) C
(4) D

( )

6. Liling uses identical batteries and bulbs to set up the 4 circuits shown below.



Which of the following statements best describes the results?

(1) Bulb C is the brightest.
(2) Only Bulb D will not light up.
(3) Only Bulbs B and C will light up.
(4) Bulbs A and B are of equal brightness.

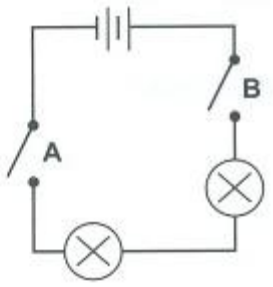
( )

7. Joseph ran some tests on a circuit and recorded the results in the table below.

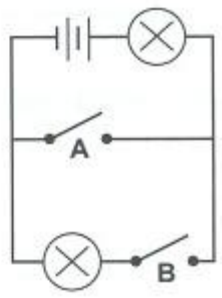
Switch A	Switch B	Number of bulbs lighted up
Open	Open	0
Closed	Open	1
Open	Closed	1
Closed	Closed	2

Which of the electrical circuits shown below will produce the results recorded in the table above?

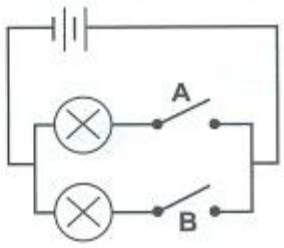
(1)



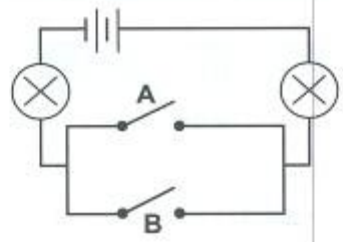
(2)



(3)

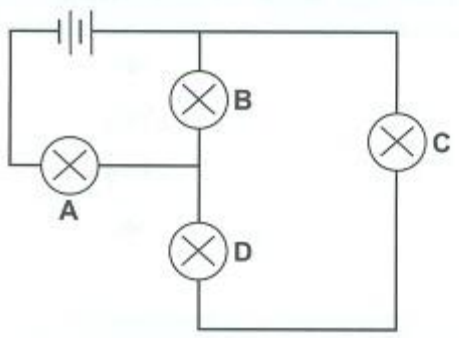


(4)



( )

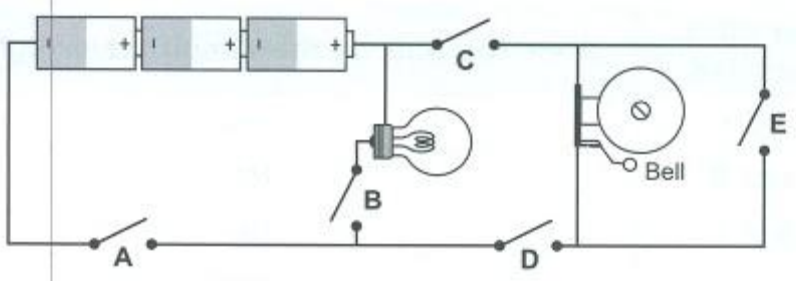
8. Study the circuit diagram shown below.



Which bulb(s) will remain lighted when Bulb D blows?

(1) A only
(2) A and B only
(3) B and C only
(4) A, B and C ( )

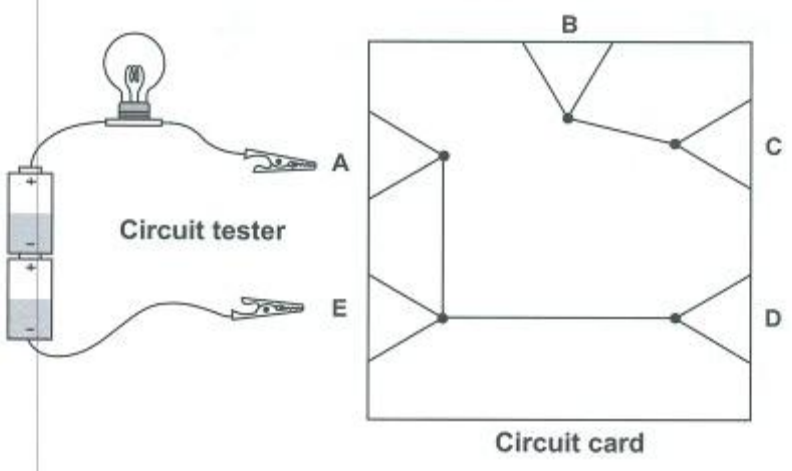
9. Christy set up a circuit as shown below.



Which switch(es), A, B, C, D, or E must she close to enable the bell to ring?

(1) A, C and D only
(2) B, D and E only
(3) A, B, C and E only
(4) A, B, D and E only ( )

10. The diagram below shows a circuit tester and a circuit card consisting of 5 metal paper clips, A, B, C, D and E, connected by wires.



The ends of the circuit tester are connected to two paper clips at a time.
Which of the following tables shows the correct results of the connections?

(1)

Paper clips connected	Does the bulb in the circuit tester light up?	
A and C	No	
A and B	Yes	
D and E	Yes	
C and D	No	

(2)

Paper clips connected	Does the bulb in the circuit tester light up?	
A and C	No	
A and B	Yes	
D and E	No	
C and D	No	

(3)

Paper clips connected	Does the bulb in the circuit tester light up?	
A and C	Yes	
A and B	No	
D and E	No	
C and D	Yes	

(4)

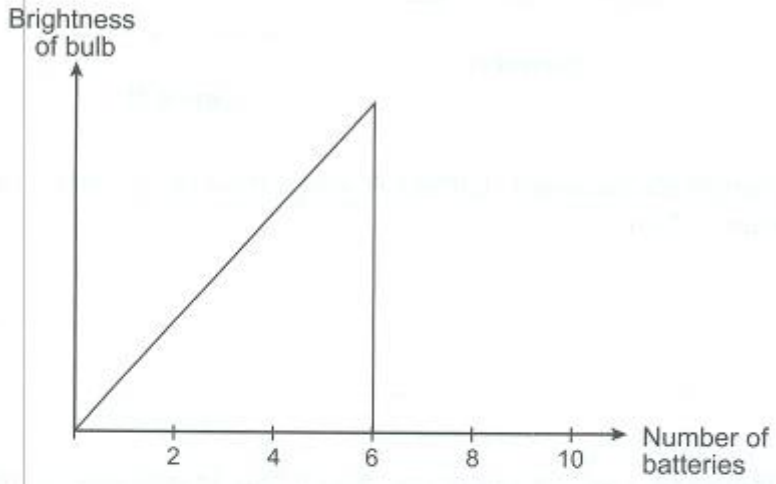
Paper clips connected	Does the bulb in the circuit tester light up?	
A and C	No	
A and B	No	
D and E	Yes	
C and D	No	

( )

Section B (10 marks)

Read each question carefully and write the answers in the spaces provided.

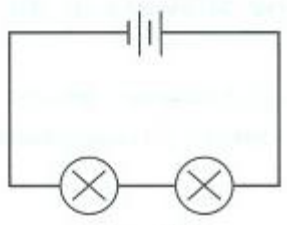
11. Jessie wanted to find out if the number of batteries affects the brightness of a bulb. The graph below shows the results of Jessie's experiment.



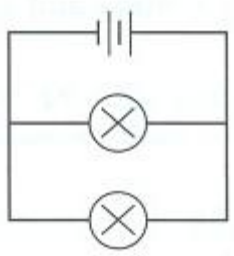
(a) What happened to the brightness of the bulb when the first 5 batteries were added? (1m)

(b) What happened when the 6th battery was added? Explain why it happened. (2m)

12. Study the 2 circuit diagrams shown below.



Circuit A



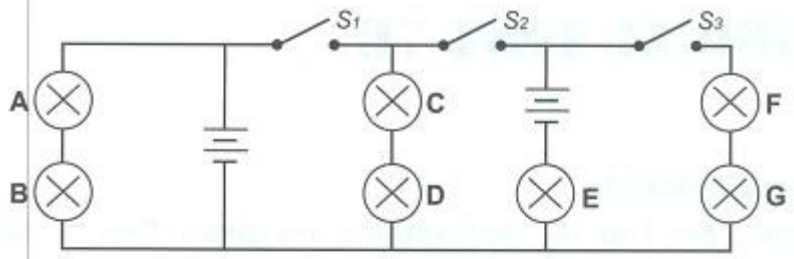
Circuit B

(a) State a similarity between Circuit A and Circuit B in terms of the arrangement of batteries. (1m)

(b) What difference can be observed about the brightness of the bulbs in Circuit A and Circuit B? (1m)

(c) State one advantage that Circuit B has over Circuit A. (1m)

13. Study the circuit diagram below.



(a) If all the switches are closed and Bulb E is fused, how many bulbs will light up? (1m)

_____

_____

(b) If all the switches are open, which bulb(s) will still light up? (1m)

_____

_____

14. Andrea needs to decide which mobile phone to buy. She compares some information about four different mobile phones found in the table below.

Phone	Amount of electrical energy used to fully charge the battery (units)	Amount of talk time on a full battery (minutes)
A	10	60
B	10	70
C	15	60
D	15	70

(a) Which mobile phone should Andrea choose if her aim is to conserve energy? Give a reason for your answer. (1m)

_____

_____

(b) State one reason why is it important to conserve electricity? (1m)

_____

_____

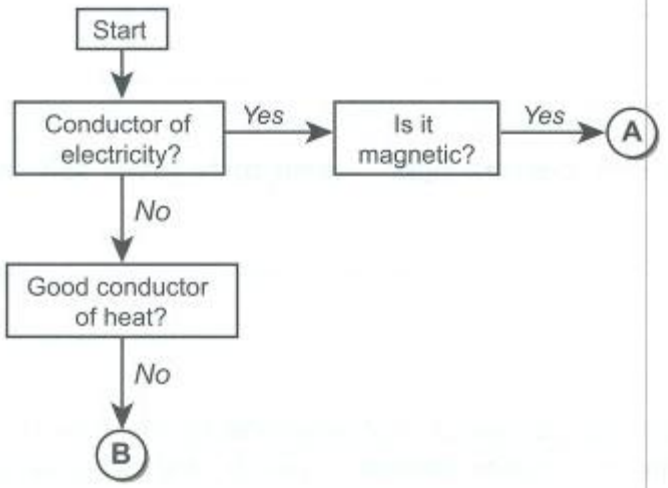
TOPICAL TEST 7B:

30

Section A (10 x 2 marks)

For each question from 1 to 10, four options are given. One of them is the correct answer. Make your choice (1, 2, 3 or 4) and write the answers in the brackets provided.

1. Study the flow chart below.



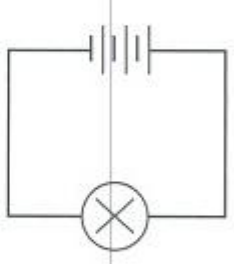
Which of the following best represents A and B?

	A	B
(1)	Plastic spoon	Iron bar
(2)	Steel rod	Copper wire
(3)	Nickel coin	Ceramic spoon
(4)	Gold ring	Aluminium sheet

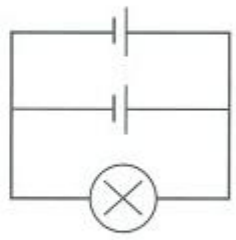
( )

2. Which 2 circuits shown below can be used to show how the arrangement of batteries affects the brightness of the bulb?

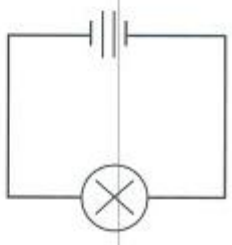
A:



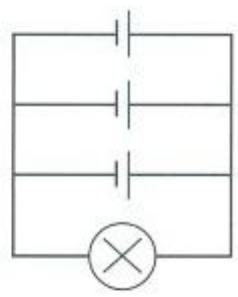
B:



C:

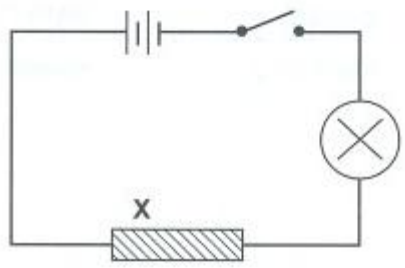


D:



(1) A and B
(2) A and D
(3) B and C
(4) C and D ( )

3. Tim set up the following circuit. X is a 5-cm iron rod.
He closed the circuit and observed the brightness of the bulb.
He repeated the experiment using iron rods of 10 cm, 15 cm and 20 cm in length.

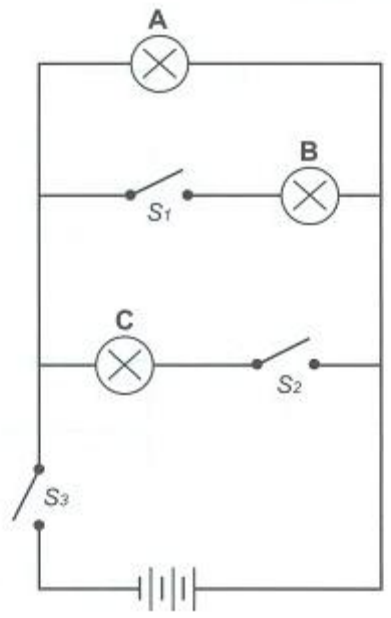


Which one of the following is likely to be Tim's aim for this experiment?

(1) To find out if the presence of the switch affects the flow of electricity.
(2) To find out if the number of batteries affects the flow of electricity.
(3) To find out how the length of the iron rod affects the brightness of the bulb.
(4) To find out how the material of the rod affects the brightness of the bulb.

( )

4. The diagram below shows an electric circuit.

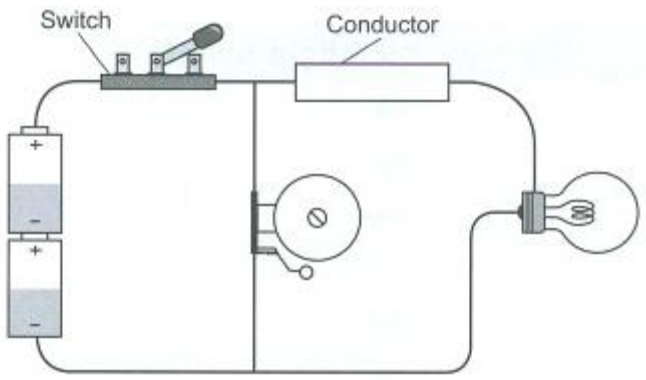


In which order must the switches be closed so that Bulb A lights up first, followed by Bulb B, then Bulb C?

	First	Second	Third
(1)	Switch 1	Switch 2	Switch 3
(2)	Switch 2	Switch 1	Switch 3
(3)	Switch 3	Switch 1	Switch 2
(4)	Switch 3	Switch 2	Switch 1

( )

5. Georgia sets up the following circuit to find out if the different types of conductors would affect the loudness of the bell.

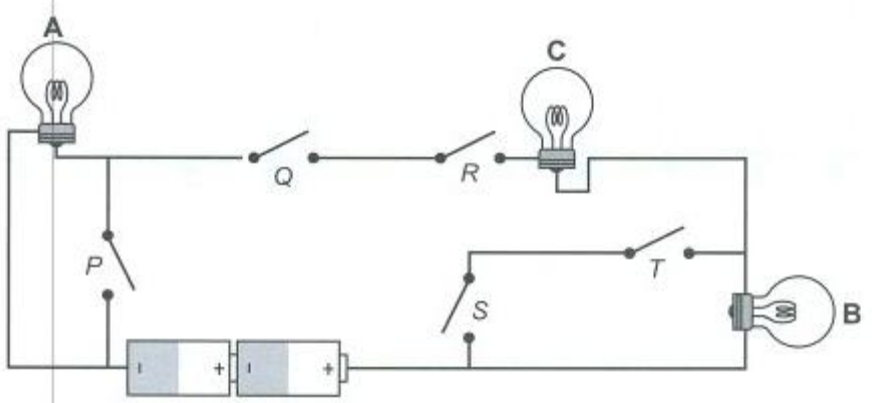


In order to get the correct results, which variables should she keep the same?

A: Voltage of bulb
B: Type of batteries
C: Number of batteries
D: Type of conductors
E: Number of switches

(1) A and B only
(2) B and D only
(3) A, B, C and E only
(4) A, B, C, D and E ( )

6. Wei Ling prepared the circuit shown below. P, Q, R, S, and T are switches.



If Wei Ling wants to switch on only Bulb A and Bulb C using the least number of switches, which switches should she switch on?

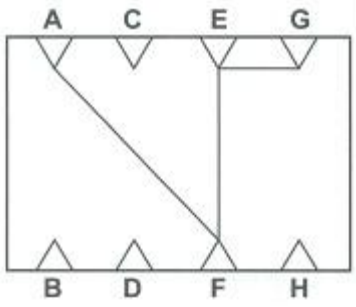
(1) Q and R only
(2) P, R, S and T only
(3) P, Q, R and S only
(4) Q, R, S and T only ( )

7. Harry used a circuit tester to test several points on a circuit card. He then recorded his findings in the table below.

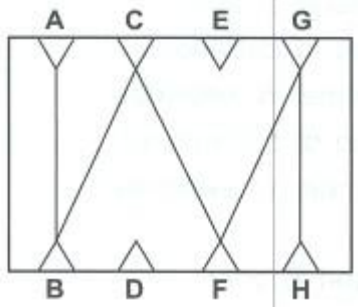
Points	Does the bulb light up?
A E	No
B F	No
F G	Yes
A G	Yes
D E	No
C H	No

Which of the following circuit cards did Harry test?

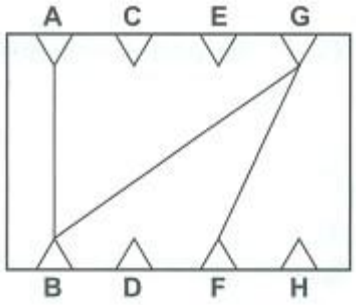
(1)



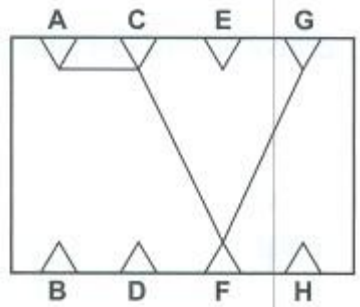
(2)



(3)

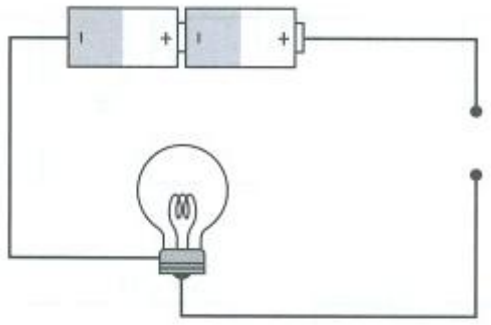


(4)



( )

8. The diagram below shows a circuit tester.



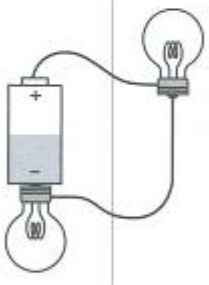
Which of the following items when placed in the gap will cause the bulb to light up?

A: Magnet
B: Pencil lead
C: Iron rod
D: Nickel coin

(1) C only
(2) B and C only
(3) A, B and C only
(4) A, B, C and D ( )

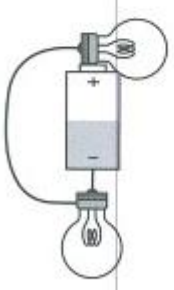
9. Which one of the following electric circuits will allow only 1 bulb to light up?

(1)

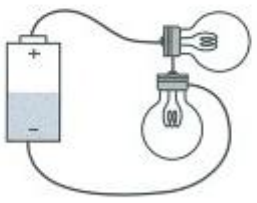


(2)

(3)

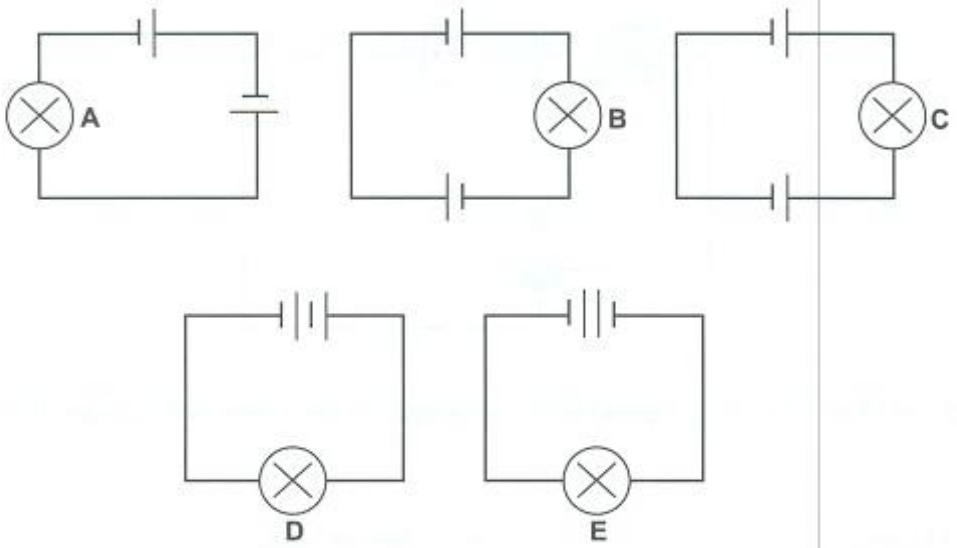


(4)



( )

10. The diagram below shows 5 electric circuits.



Which of the following statements about the bulbs in the circuits above is/are correct?

A: Bulb A is dimmer than Bulb B.
B: Bulb D is brighter than Bulb A.
C: Bulb C and Bulb E will not light up.
D: Bulb B and Bulb D are equally bright.

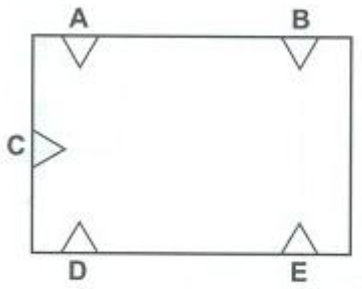
(1) B only
(2) C and D only
(3) B and C only
(4) A, B and D only

( )

Section B (10 marks)

Read each question carefully and write the answers in the spaces provided.

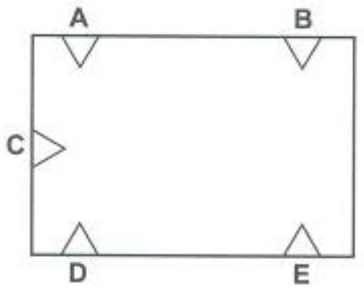
11. Khairul designed a circuit card using some wires and Paper clips A, B, C, D and E as shown below.



The following results are obtained when a circuit tester is used on the card.

Clips tested	Did the bulb light up?
A and B	Yes
B and C	No
C and A	No
A and D	Yes
B and D	Yes
C and D	No
A and E	Yes
B and E	Yes
C and E	No
D and E	Yes

(a) **Draw** only 3 wires on the circuit card to show how the paper clips are connected to get the results shown in the table above. (1m)

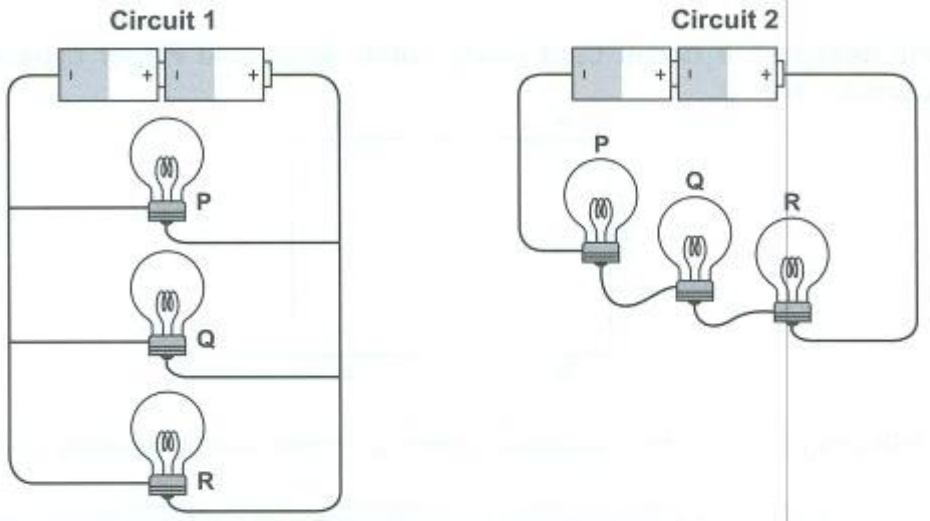


(b) Khairul's teacher told him that it is not advisable to use plastic or rubber-coated paper clips for this experiment. Explain why. (1m)

_____

_____

12. The circuit diagrams below show 3 identical bulbs, P, Q, and R, arranged in two different ways.

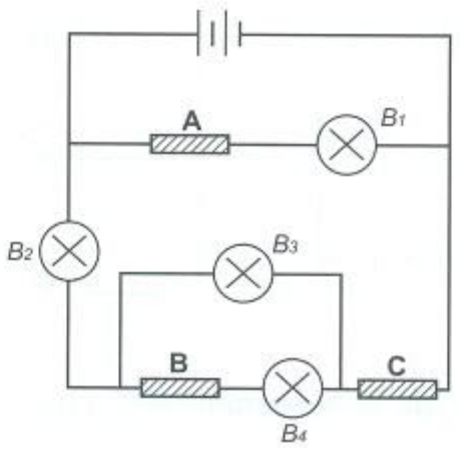


Describe what will happen to Bulbs P and R when Bulb Q in both circuits fused. (2m)

Circuit 1:

Circuit 2:

13. Lex had three rods, A, B and C of different materials. He placed them at different positions of a circuit as shown below.



The results of the experiment were shown in the table below.

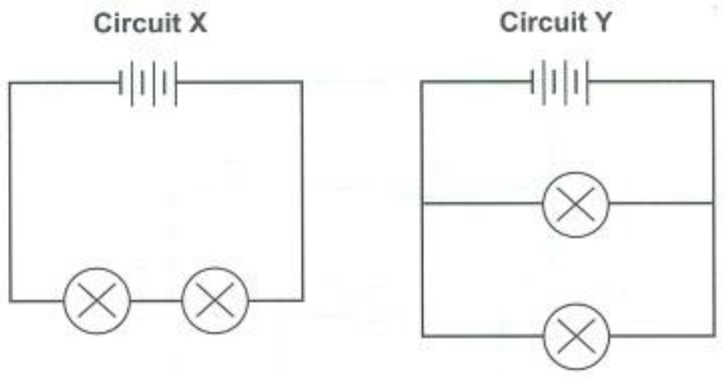
Did the bulb light up?			
B1	**B2**	**B3**	**B4**
Yes	Yes	Yes	No

(a) Based on the results above, what can you conclude about the properties of the materials for Rods A, B and C? (1m)

(b) **Complete** the table below by filling in "Yes" or "No" to show the correct results if the listed materials were used to make Rods A, B and C instead. (2m)

Material of rods			Did the bulb light up?			
A	**B**	**C**	**B1**	**B2**	**B3**	**B4**
Plastic	Steel	Silver				
Aluminium	Copper	Wood				

14. James set up the electric circuits shown below for an experiment.



(a) What could be the aim of his experiment? (1m)

(b) State 2 variables that he should keep the same to make it a fair experiment. (1m)

(c) What observations should he make in order to draw a conclusion from his experiment? (1m)