

SCIENCE FORM 3

MODULE 7: ELECTRICITY

Arahan:

1. Modul ini mengandungi **empat puluh satu** soalan. Semua soalan adalah dalam bahasa Inggeris.
2. Modul merangkumi **enam** konstruk yang diuji
K1-Memahami soalan dalam Bahasa Inggeris
K3-Memahami istilah sains dalam Bahasa Inggeris
K5-Menguasai konstruk pengetahuan
K6-Menguasai konstruk kefahaman
K7-Menguasai konstruk kemahiran
K10-Memahami pengajaran dan pembelajaran dalam Bahasa Inggeris
3. Murid hendaklah menulis maklumat diri dalam kertas jawapan objektif disediakan. Murid juga perlu memastikan maklumat konstruk, nombor soalan dan jumlah soalan seperti yang dibaca oleh guru di dalam ruangan disediakan dalam kertas jawapan objektif sebelum ujian.
4. Bagi **soalan objektif**, anda perlu menandakan jawapan dengan **menghitamkan pilihan jawapan** pada pilihan jawapan **A , B , C** atau **D** pada kertas jawapan objektif.

Contoh:

Antara berikut, yang manakah haiwan?

A. Pokok B. Kambing C. Kereta D. Pen

A

C

D

E

5. Untuk **soalan subjektif**, jawapan hendaklah **ditulis pada kertas berasingan** yang disediakan oleh guru.
6. Bagi **soalan 37 hingga 41**, murid hendaklah mendengar arahan daripada guru.
7. Jawab **semua** soalan.

Modul ini mengandungi **24** halaman bercetak

- 1 Two insulating materials are rubbed together to produce static electrical charges.
How are static electrical charges formed?
- A The materials are tied together
 - B The materials are pressed together
 - C The materials are moved against each other repeatedly
- 2 Electrical energy is used for lighting, cooking, freezing and entertainment but not for driving and cycling. Which of the following does not need electrical energy?
- A Driving and cycling
 - B Lighting and cooking
 - C Cooking and freezing
 - D Freezing and entertainment
- 3 Static electrical charges are charges which are at rest. Which of the following statement is **correct**? Static electrical charge_____
- A do not move
 - B move randomly
 - C move slowly
- 4 The area around a magnet which has the influence of the magnet is called a magnetic field. It consists of magnetic field lines which do not cross each other. Choose a correct statement.
- A Magnetic field is found outside a magnet
 - B Magnetic field is formed inside a magnet
 - C Magnet is made up of magnetic field lines that cross each other in the center

- 5 An electromagnet can be made stronger if we increase the number of coils in the solenoid. In order to make an electromagnet stronger, the number of coils should be _____
- A raised
 - B reduced
 - C kept the same
- 6 Electrostatic is the study of electrical charges that do not move. They can be produced by rubbing two objects together. Choose the correct statement.
- I Electrostatic is the study of static electrical charges
 - II Electrical charges that move is electrostatics
 - III Rubbing two objects produces electrical charges
- A I and II
 - B I and III
 - C II and III
 - D I, II and III
- 7 Various sources of electrical energy in everyday life are dry cell, accumulator and generator. This means that dry cell, accumulator and generator can
- A consume electrical energy
 - B convert electrical energy
 - C produce electrical energy

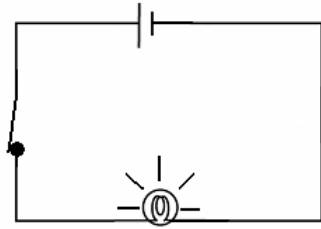
- 8 The number of positive charges and negative charges in a neutral object is the same. Which of the following object is neutral?

	Object	Number of positive charges	Number of negative charges
A	X	7	7
B	Y	4	10
C	Z	10	4

- 9 An electrical conductor a resists current flow. This property is known as _____

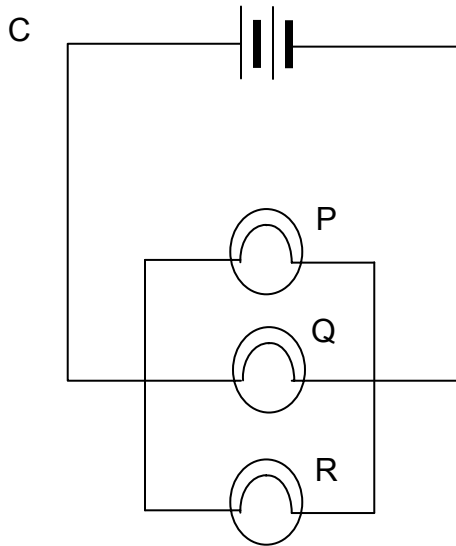
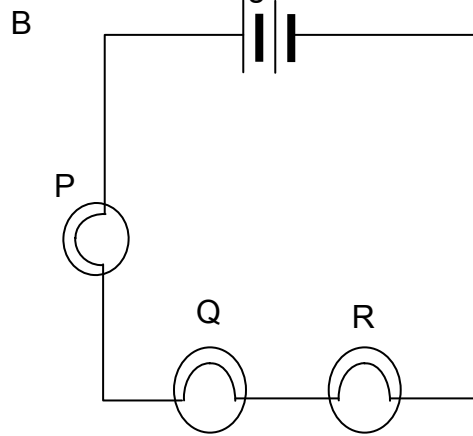
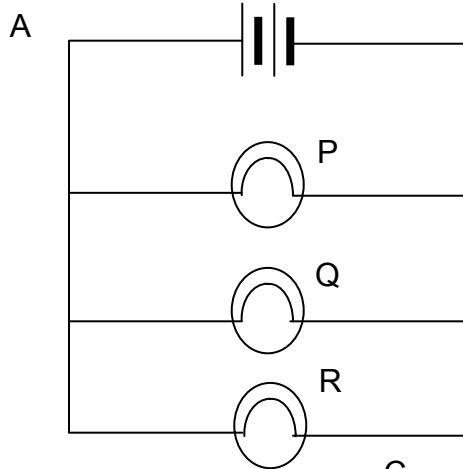
- A voltage
 - B current
 - C resistance
- 10 Electromagnetism is the _____
- A magnetism produced by the flow of electric current
 - B electricity produced by a magnet
 - C current found in a magnet

- 11 The figure shows an electric circuit. When the switch is turned on, electric current flows and the bulb lights up.



The information describes a /an _____ circuit

- A closed
 - B open
 - C parallel
- 12 Which of the following shows bulbs P, Q and R are arranged in **series**?



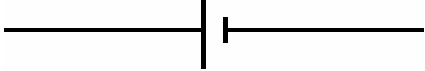

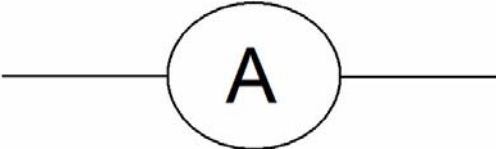
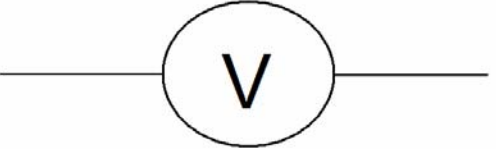
- 13 Which statement is related to the concept of electrostatics?
- A Electric current flows through a conductor produces a magnet
 - B A positively charged balloon attracts a negatively charged balloon
 - C A conductor wire becomes hot when electric current flows through it

14 Given that $V = IR$.

R represents _____

- A Electric current
- B Resistance
- C Voltage

15 Which of the following is correctly matched?

	Symbol	Electrical component
A		Dry cell
B		Rheostat
C		Voltmeter
D		Ammeter

16 Choose a device that contains a permanent magnet.

- A electric iron
- B bread toaster
- C electric bell
- D electric kettle

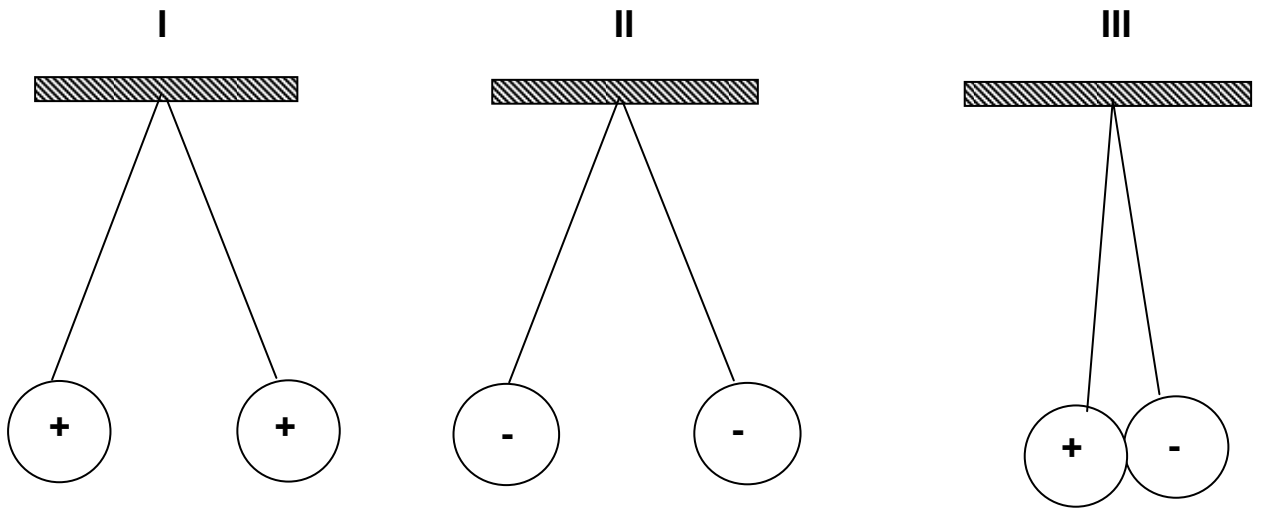
17 Voltage is measured in _____

- A ampere
- B ohm
- C volt

18 Electric current flows through a conductor. What is the type of magnet produced?

- A Electromagnet
- B Electromagnetism
- C Permanent magnet

19 The figure shows the observations when two charged objects are brought close together.

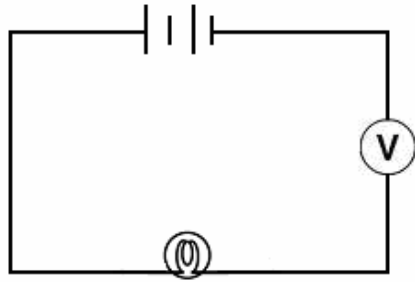


Which figures best describe the observations?

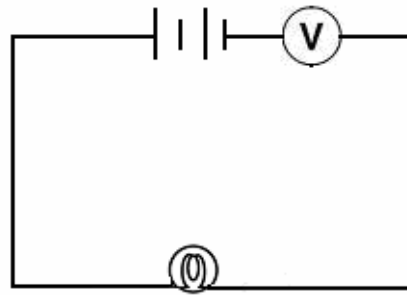
- A I and II
- B I and III
- C II and III
- D I, II and III

20 Which of the following circuits shows the **correct** way to measure the voltage of the batteries?

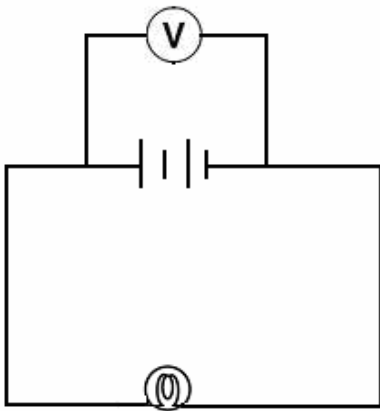
A



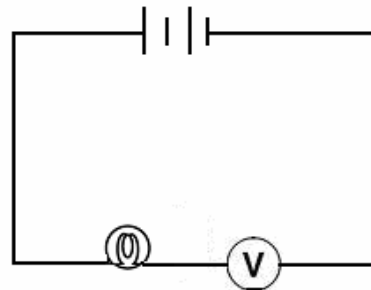
C



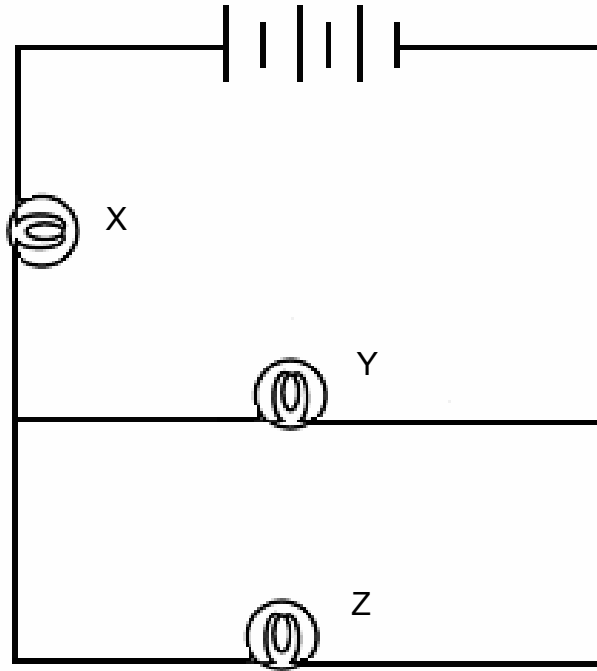
B



D



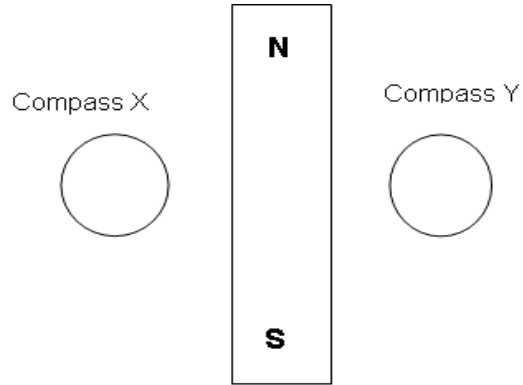
- 21 The figure shows an electric circuit with three similar bulbs X, Y and Z.



When the switch is turned on, which of the following is the **correct** observation?

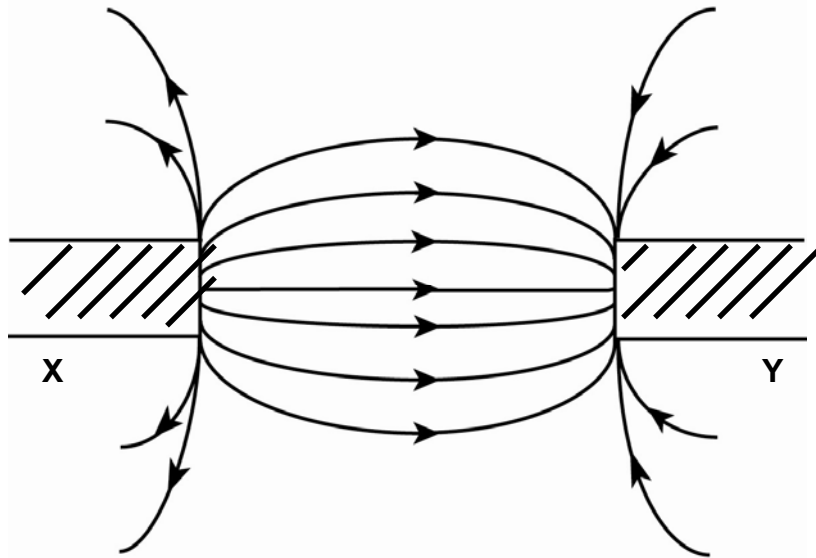
- A Bulb X is the brightest
- B Bulb Y is the brightest
- C Bulb X and Y have the same brightness
- D Bulb X, Y and Z have the same brightness

- 22 Based on the figure, which of the following is the correct direction of the needles of compasses X and Y.



	Compass X	Compass Y
A		
B		
C		
D		

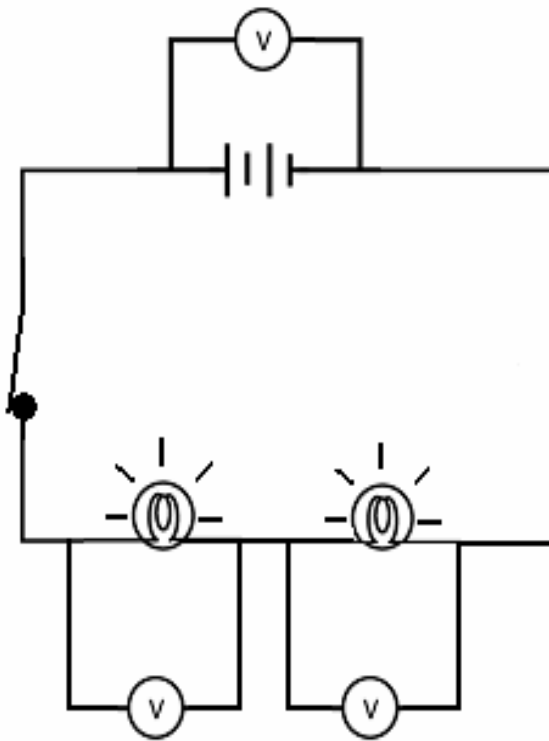
- 23 The diagram shows the magnetic field formed when two bar magnets X and Y are placed side by side



Which of the following pairs shows the correct poles of the magnet?

	X	Y
A	North	North
B	South	South
C	North	South
D	South	North

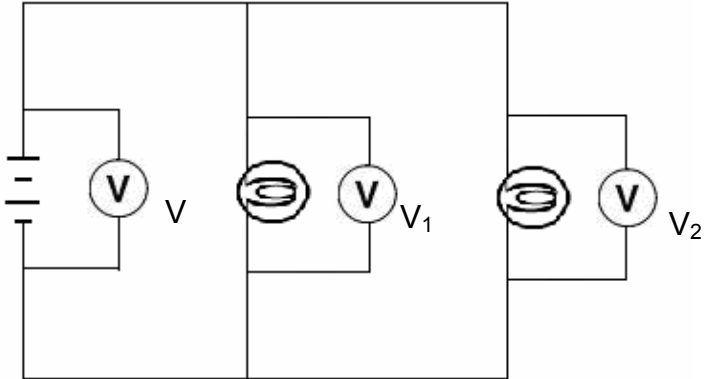
24 The figure shows a complete series circuit.



Based on the figure, choose the **correct** statement.

- A The total current increases when another bulb is added to the circuit in series
- B The sum of individual voltage across each bulb is higher than the total voltage of the circuit
- C The current flowing through each bulb is the same as the total current in the circuit

25 An electrical circuit is set up as shown.



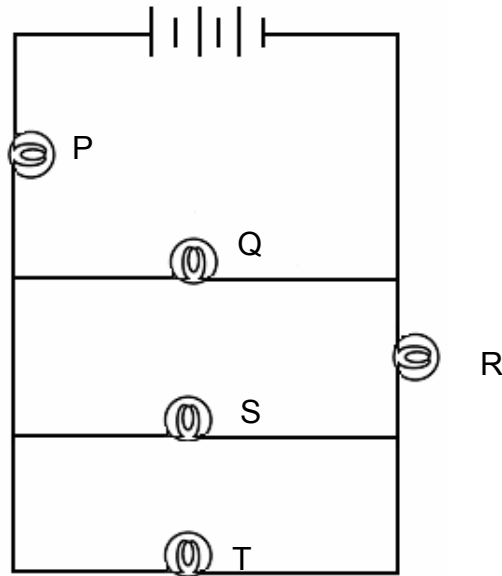
Two bulbs are arranged in parallel. What is the relationship between V , V_1 and V_2 ?

A $V = V_1 + V_2$

B $V = V_1 = V_2$

C $V = \frac{V_1}{V_2}$

- 26 The figure shows an electrical circuit with five identical bulbs P, Q, R, S and T.



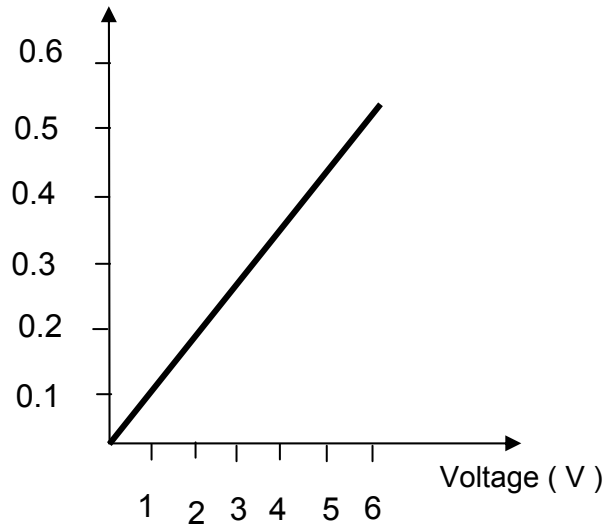
- If bulb S burns out, which of the following bulbs will continue to light up?
- A P and Q only
 - B P, Q and R only
 - C P, Q, R and T only
- 27 Ohm's Law states that :

$$\text{Current (I)} = \frac{\text{Voltage (V)}}{\text{Resistance (R)}}$$

- Based on the given information, choose the **correct** statement.
- A when voltage is increased, the current increases
 - B when resistance is increased, the current increases
 - C when voltage is decreased, the current increases

28 The graph shows the relationship between current and voltage.

Current (A)



What happens to the current when the voltage is increased to 10 V?

- A increases
- B decreases
- C remains the same

- 29 Three objects A, B and M with different charges are placed as in Figure 1.

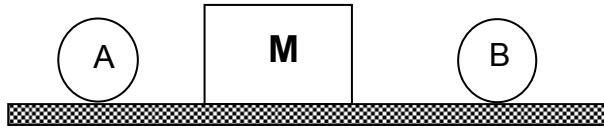


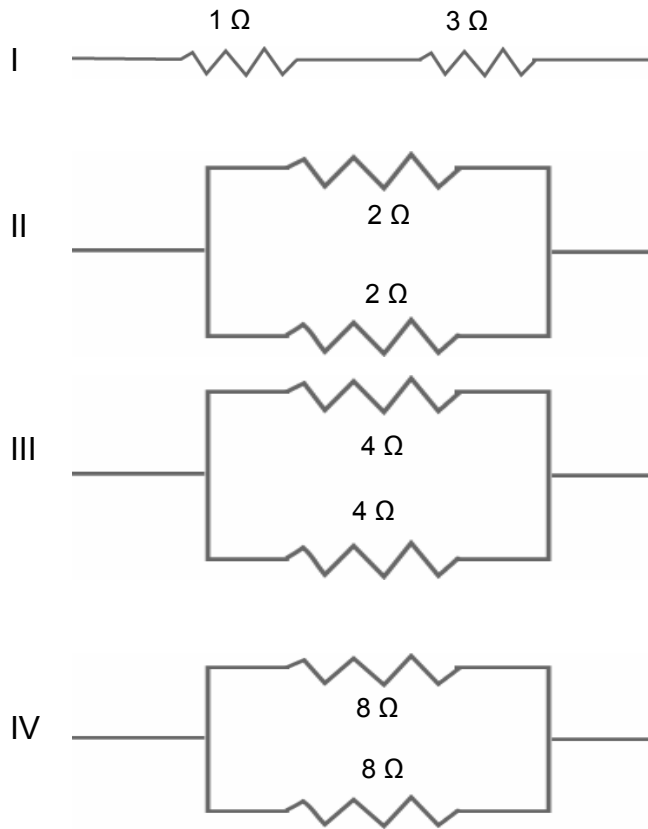
Figure 1



Figure 2

- When the three objects are brought nearer to each other, the observation is as in Figure 2. Based on Figure 2, what is your inference?
- A A and B have the same charges
 - B A and B have different charges
 - C M and B have the same charges
- 30 In an electric circuit with a 2Ω resistor, a battery supplies a voltage of $4V$. If given $V = IR$, calculate the current which flows in the circuit.
- A 0.5 A
 - B 2 A
 - C 6 A
 - D 8 A

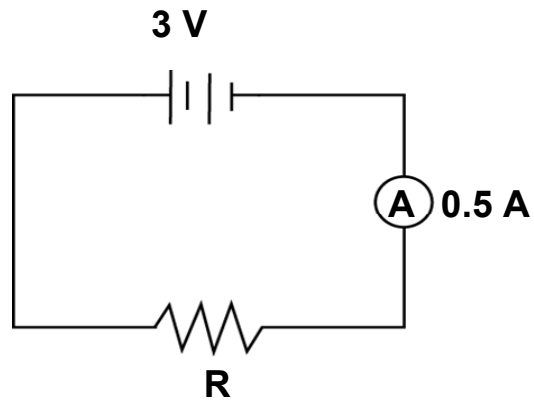
31 The figures below show a part of a complete circuit.



Which circuits have a total resistance of $4\ \Omega$

- A I and IV only
- B II and III only
- C II, III and IV only
- D I, II, III and IV

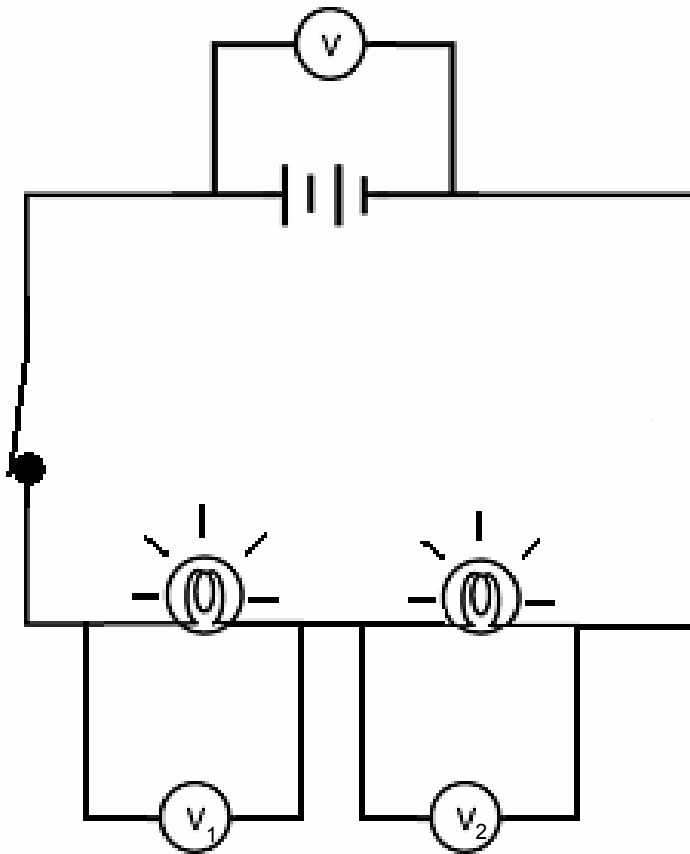
32 The figure shows an electric circuit.



What is the value of R?

- A 1.5Ω
- B 4.5Ω
- C 6.0Ω
- D 9.0Ω

33 The figure shows a complete series circuit



Based on the figure, state the relationship of the voltage value.

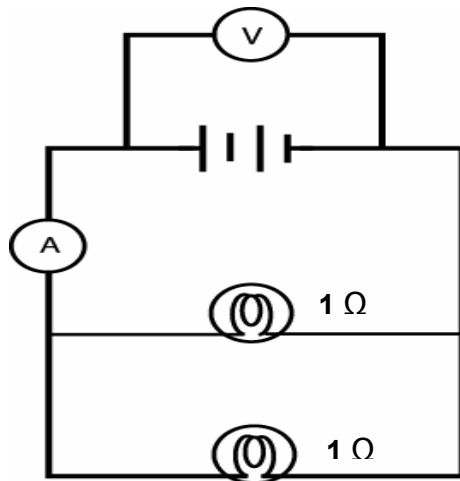
A $V = \frac{V_1}{V_2}$

B $V = V_1 - V_2$

C $V = V_1 = V_2$

D $V = V_1 + V_2$

- 34 A circuit is set up as shown.

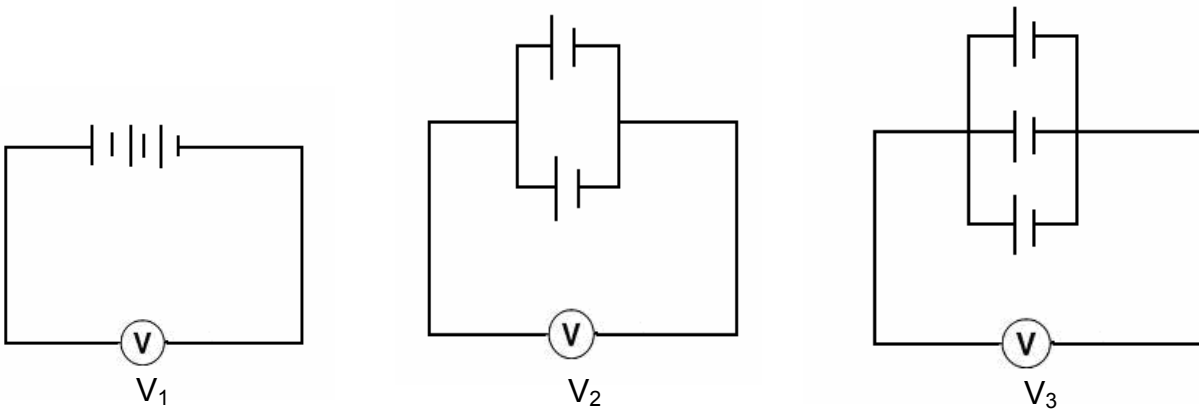


If the current that passes through the circuit is 2A, determine the reading shown on the voltmeter.

$$\frac{1}{R} = \frac{1}{R_1} + \frac{1}{R_2}$$

- A 0.5 V
B 1.0 V
C 1.5 V
D 2.0 V
- 35 A current of 4A flows through an electrical appliance which consists a 6 Ω fuse. Calculate the voltage used by the appliance.
- A 10 V
B 12 V
C 24 V
D 46 V

36 The figure shows three electrical circuits.



If each dry cell has a voltage of 1.5 V, determine the voltage reading of each voltmeter.

	V_1	V_2	V_3
A	1.5	3.0	4.5
B	3.0	1.5	1.5
C	4.5	1.5	1.5
D	3.0	3.0	4.5

Question 37 to 41.

Listen carefully to the text read by the teacher. Then, answer the questions.

37 How many path (s) can be found in a series circuit.

- A 1
- B 2
- C 3

38 What type of charges is produced when strong wind rubs against water particles in the clouds?

- A positive
- B negative
- C neutral

- 39 Describe the direction of current and electron flow in an electric circuit
- I Electric current flows from negative terminal to the positive terminal
 - II Electrons flow from the positive terminal to the negative terminal
 - III Electric current flows from the positive terminal to the negative terminal
 - IV Electrons flow from the negative terminal to the positive terminal
- A I and II only
B I and III only
C II and III only
D III and IV only
- 40 Which figure shows the correct arrangement of the ammeter and voltmeter in the electric circuit?
- A Electromagnet
B Electromagnetism
C Permanent magnet
- 41 What happens when a north pole of a magnet is brought near to a south pole of another magnet?
- A The second magnet moves toward the first magnet
B The second magnet moves away from the first magnet
C The second magnet remains at the same position



KEMENTERIAN PELAJARAN MALAYSIA
KERTAS JAWAPAN OBJEKTIF
Ujian Diagnostik



Nama Pelajar:

Tahun/ Tingkatan : 3 Mata Pelajaran: SAINS

Nama Sekolah: Modul: 7

**GUNAKAN PENSIL 2B ATAU BB SAHAJA.
TENTUKAN TIAP-TIAP TANDA ITU HITAM DAN MEMENUHI KESELURUHAN RUANG.
PADAMKAN HINGGA HABIS MANA-MANA TANDA YANG ANDA UBAH
SILA HITAMKAN JAWAPAN DI BAWAH MENGIKUT HURUF JAWAPAN YANG ANDA PILIH**

- 1 (A) (B) (C) (D) (E)
- 2 (A) (B) (C) (D) (E)
- 3 (A) (B) (C) (D) (E)
- 4 (A) (B) (C) (D) (E)
- 5 (A) (B) (C) (D) (E)

- 31 (A) (B) (C) (D) (E)
- 32 (A) (B) (C) (D) (E)
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- 35 (A) (B) (C) (D) (E)

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- 6 (A) (B) (C) (D) (E)
- 7 (A) (B) (C) (D) (E)
- 8 (A) (B) (C) (D) (E)
- 9 (A) (B) (C) (D) (E)
- 10 (A) (B) (C) (D) (E)

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- 16 (A) (B) (C) (D) (E)
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- 25 (A) (B) (C) (D) (E)
- 26 (A) (B) (C) (D) (E)
- 27 (A) (B) (C) (D) (E)
- 28 (A) (B) (C) (D) (E)
- 29 (A) (B) (C) (D) (E)
- 30 (A) (B) (C) (D) (E)

	<u>Konstruk</u>	<u>No. Soalan</u>	<u>Jumlah Soalan</u>	<u>Bilangan Soalan Gagal Dijawab</u>	<u>Kegunaan Guru</u>
1	K1	1-8	8	<input type="text"/>	<input type="text"/>
2	K3	9-13	5	<input type="text"/>	<input type="text"/>
3	K5	14-18	5	<input type="text"/>	<input type="text"/>
4	K6	19-29	11	<input type="text"/>	<input type="text"/>
5	K7	30-36	7	<input type="text"/>	<input type="text"/>
6	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
7	K10	37-41	5	<input type="text"/>	<input type="text"/>
8	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
9	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
10	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>