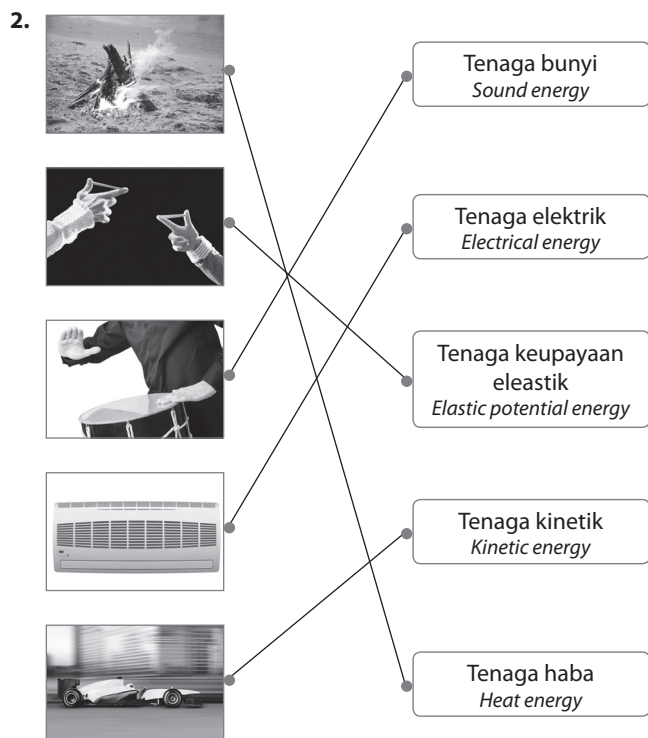


JAWAPAN

Bab 7 Keelektrikan dan Kemagnetan Electricity and Magnetism

7.1 Keelektrikan Electricity

1. (i) pernafasan, pertumbuhan
respiration, growth
(ii) berfungsi
function



3. (a) Ombak/ *Waves*
(b) Biojisim/ *Biomass*
(c) Matahari/ *Sun*
(d) Air/ *Water*
(e) Nuklear/ *Nuclear*
(f) Angin/ *Wind*
4. (i), (iii) dan/ *and* (iv)
5. (a) (i) Neutral / *Neutral*
(ii) Neutral / *Neutral*
(iii) Bercas negatif / *Negatively-charged*
(iv) Bercas positif / *Positively-charged*
(b) pemindahan elektron, positif, hilang, menerima, negatif
electron transfer, positive, loses, gains, negatively

6. Pemerhatian/ *Observation*

1. Mencapah/ *Diverge*
3. Tertarik/ *Attracted*
4. Tertarik/ *Attracted*

Perbincangan/ *Discussion*

1. Cas-cas elektrik yang tidak bergerak
Electrical charges that are not moving

2. Mencapah, sama, menolak
Diverges, same, repel
3. Tarikan, cebisan tisu, rod politena
Attraction, shredded tissue, polythene rod

7. (a) elektron, bebola logam, kubah
electrons, metal ball, dome
(b) Mengalirkan cas-cas elektrik daripada kilat ke Bumi.
Conducting electrical charges from lightning to Earth.

8. (a) terpesong/ *deflect*
(b) pengaliran arus elektrik
flow of electric current

9. Kereta merupakan objek yang dibumikan. Dengan menyentuh badan kereta, cas yang terkumpul boleh disalurkan ke bumi dalam bentuk arus elektrik.
Car is a grounded object. By touching the car, the accumulated charges can be channelled to the ground in the form of electric current.

10. (a)	Definisi <i>Definition</i>	Fizik kuantiti <i>Physical quantity</i>	Unit S.I. <i>S.I. unit</i>
(i)		Voltan <i>Voltage</i>	Volt, V
(ii)		Arus <i>Current</i>	Ampere, A
(iii)		Rintangan <i>Resistance</i>	Ohm, Ω

- (b) (i) Untuk mengukur voltan
To measure voltage
(ii) Untuk mengukur arus
To measure current

11. (a) Berdasarkan aktiviti murid/ *Based on student's activity*
(b)

Aktiviti P <i>Activity P</i>	Apabila panjang dawai nikrom bertambah, rintangan juga bertambah. Maka arus yang melalui litar semakin berkurang. <i>As the length of the nichrome wire increases, the resistance also increases. So, the current through the circuit decreases.</i>
Aktiviti Q <i>Activity Q</i>	Apabila bilangan sel kering bertambah, voltan yang dibekalkan juga bertambah. Maka arus juga bertambah. <i>As the number of dry cells increases, the voltage also increases. Thus, the current increases.</i>

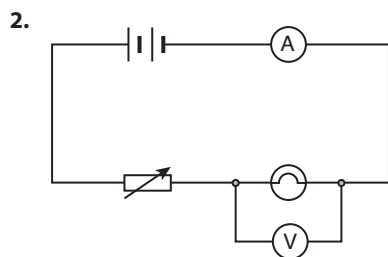
- (c) Hukum Ohm/ *Ohm's law*
(d)

Aktiviti P <i>Activity P</i>	Semakin tinggi rintangan, semakin kecil arus yang mengalir dalam litar. <i>The greater the resistance, the smaller the current flow in the circuit.</i>
Aktiviti Q <i>Activity Q</i>	Semakin besar voltan, semakin besar arus yang mengalir dalam litar. <i>The greater the voltage, the greater the current flow in circuit.</i>

7.2 Pengaliran Arus Elektrik dalam Litar Bersiri dan Litar Selari

Flow of Electric Current in Series Circuit and Parallel Circuit

1. (i) Mentol / Bulb
(ii) Reostat / Rheostat
(iii) Voltmeter / Voltmeter
(iv) Sel kering / Dry cell



3. (a) Litar R: Litar bersiri
Circuit R: Series circuit
Litar S: Litar selari
Circuit S: Parallel circuit

- (b) Litar R / Circuit R

$$R = R_1 + R_2$$

$$R = 4\ \Omega + 4\ \Omega$$

$$R = 8\ \Omega$$

Litar S / Circuit S

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

$$\frac{1}{R} = \frac{1}{4} + \frac{1}{4} = \frac{2}{4}$$

$$R = 2\ \Omega$$

- (b) Litar S / Circuit S

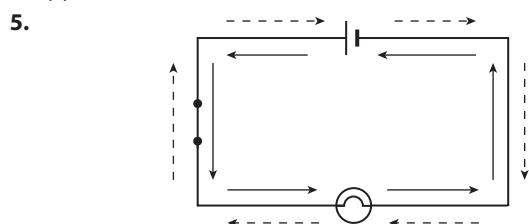
- (d) Litar S, kerana rintangan berkesannya kecil maka arus yang mengalir melaluinya tinggi.

Circuit S, because it has small effective resistance thus the current flowing through it is high.

- (e)

Litar Circuit	Kecerahan mentol Brightness of the bulb		Rintangan berkesan Effective resistance	
R	Berkurang Decreases	✓	Berkurang Decreases	
	Bertambah Increases		Bertambah Increases	✓
S	Berkurang Decreases		Berkurang Decreases	✓
	Bertambah Increases	✓	Bertambah Increases	

4. (i) Q, R, S
(ii) S



6. (a) Sesiri / Series
(b) Untuk mendapatkan jumlah voltan sebanyak 4.5 V.
To obtain a total voltage of 4.5 V.

- (c) Arus tidak mengalir dalam litar.
No current flow in the circuit.

7.

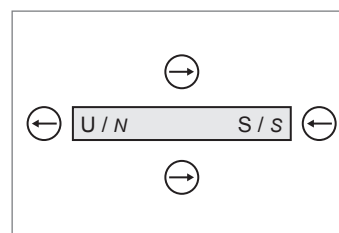
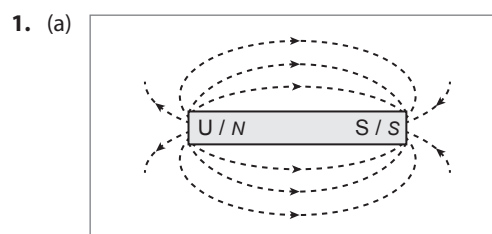
Litar Sesiri / Series circuit	
Kelebihan Advantage	sama same
Kekurangan Disadvantage	rosak, tidak berfungsi burns out, does not work

Litar Selari / Parallel circuit	
Kelebihan Advantage	rosak, berfungsi burns out, functions
Kekurangan Disadvantage	berkurang reduces

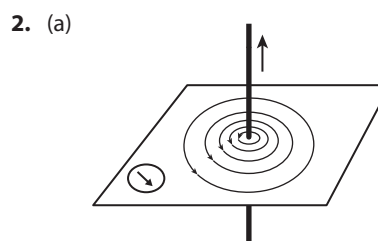
8. Jika salah satu suis ditutup atau komponen elektrik rosak pada bahagian-bahagian tertentu, bahagian lain tetap akan berfungsi.

If one switch is closed or the electrical component is damaged in certain parts, the other part will still work.

7.3 Kemagnetan Magnetism



- (b)
- | |
|---|
| ✓ |
| |
| ✓ |



- (b) Arah medan magnet ikut arah jam.
Direction of magnetic field is clockwise.

3. Kekuatan magnet semakin bertambah apabila mendekati dawai.

The magnetic field becomes stronger when closer to the wire.



4. (a) (i) Semakin banyak lilitan dalam gegelung, semakin banyak bilangan garis medan magnet.
The greater the number of turns in solenoid, the greater the number of magnetic field lines.
- (ii) Semakin banyak bilangan lilitan dalam gegelung, semakin kuat medan magnet.
The greater the numbers of turns in solenoid, the stronger the magnet.
- (b) Garis-garis magnet bertambah. Semakin besar arus yang mengalir, semakin kuat medan magnet.
The magnetic field lines increase. The larger the flowing current, the stronger the magnetic field.
5. 2, 5, 3, 4, 1

POWER PT3

Bahagian A

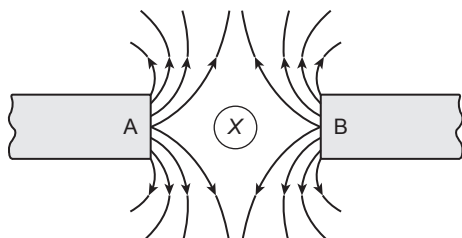
1. C 4. A
 2. C 5. A
 3. D

Bahagian B

1. (a) (i) Perintang/ Resistor
 (ii) Fius/ Fuse
 (b) (i) Palsu/ False
 (ii) Palsu/ False

Bahagian C

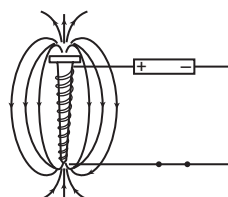
2. (a) Menarik bahan yang mengandungi besi
Attracts objects that contain iron.
- (b) (i) Medan magnet merupakan daya yang dihasilkan oleh magnet dwikutub atau arus elektrik.
A magnetic field is a force that is produced by magnetic dipoles or electric current.
- (ii) A : Kutub utara/ North pole
 B : Kutub utara/ North pole
- (iii)



(c)

	Rajah (a) Diagram (a)	Rajah (b) Diagram (b)
Arus elektrik sedang mengalir di dalam solenoid. <i>Electric current is flowing the solenoid.</i>	X	✓
Elektromagnet dihasilkan. <i>Electromagnet is produced.</i>	X	✓
Pin tertarik ke arah solenoid oleh daya magnet. <i>The pins are attracted towards the solenoid by the magnetic force.</i>	X	✓

(d)



POWER KBAT

1. Tayar kapal terbang dicampurkan dengan karbon bagi mengalirkan cas-cas terkumpul ini ke bumi sebelum mendarat.
Airplane tyres are added with carbon to allow the accumulated charges to flow to the Earth
2. Mentol lebih cerah apabila menggunakan dawai kuprum L_1 . Semakin panjang dawai kuprum, semakin tinggi rintangan.
The bulb is brighter when copper wire L_1 is used. The longer the copper wire, the higher the resistance.

3.

