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55/2  
SCIENCE  
Kertas 2/P  
Ogos 2011  
1½ Jam

NAMA	
TINGKATAN	

## SCIENCE

Tingkatan 3

Kertas 2

Satu Jam Tiga Puluh Minit

### JANGAN BUKA KERTAS SOALAN INI SEHINGGA DIBERITAHU.

1. Tulis **nama penuh** dan **tingkatan** anda pada ruang yang disediakan.
2. Kertas soalan ini adalah dalam dwibahasa.
3. Soalan dalam bahasa Inggeris mendahului soalan yang sepadan dalam bahasa Melayu
4. Calon dibenarkan menjawab keseluruhan atau sebahagian soalan sama ada dalam bahasa Inggeris atau bahasa Melayu.
5. Calon dikehendaki membaca maklumat di halaman belakang kertas soalan ini.

Kod Pemeriksa			
Bahagian	Soalan	Markah Penuh	Markah Diperole
A	1	6	
	2	6	
	3	6	
	4	6	
	5	8	
	6	8	
B	7	10	
	8	10	
JUMLAH		60	

Kertas soalan ini mengandungi 28 halaman bercetak.



**Section A**  
**Bahagian A**

[40 marks]  
[40 markah]

Answer all questions  
Jawab semua soalan

For  
examiner's  
use

- 1 Diagram 1.1 shows three unicellular and multicellular organisms.  
Rajah 1.1 menunjukkan organisma unisel dan multisel.

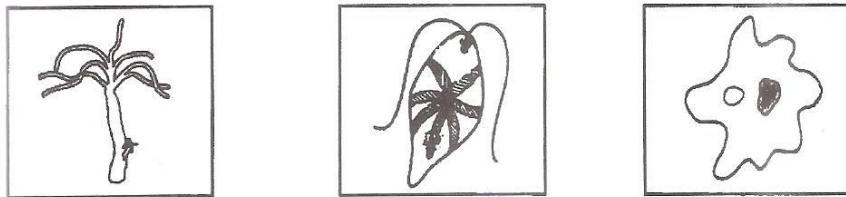


Diagram 1.1 / Rajah 1.1

P: ..... Q: ..... R: .....

- (a) Based on Diagram 1.1, label the organisms P, Q and R using the following words:

Berdasarkan pada Rajah 1.1, label organisma P, Q dan R menggunakan perkataan berikut:

Unicellular Unisel	Multicellular Multisel
-----------------------	---------------------------

- (b) Using letters P, Q and R, which organism can make their own food  
Menggunakan huruf P, Q dan R, organisma manakah yang dapat membuat makanannya sendiri

[1 mark]

1(a)

3
---

1(b)

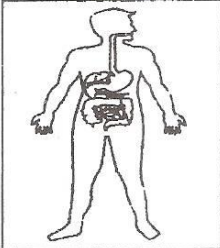
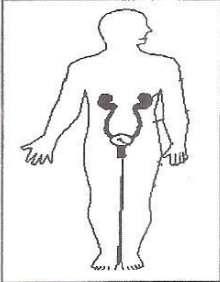
1
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- (c) Draw lines to match each system of the human body with its function.  
*Lukis garisan untuk memadankan setiap sistem badan manusia dengan fungsinya.*

For  
examiner's  
use

System Sistem	Functions Fungsi
	To digest food so that it can be readily absorbed <i>Untuk mencerna makanan supaya ia mudah diserap</i>
	To remove waste product from the body . <i>Untuk menyingkir bahan buangan dari badan</i>
	To support the weight of the body and protect internal organs <i>Untuk menyokong berat badan dan melindungi organ dalaman</i>

[2 marks]

1(c)

2

Total

6



- 2 Diagram 2.0 shows the excretory organs ,P, Q, R in the human body.  
Rajah 2.0 menunjukkan organ perkumuhan P,Q,R dalam badan manusia.

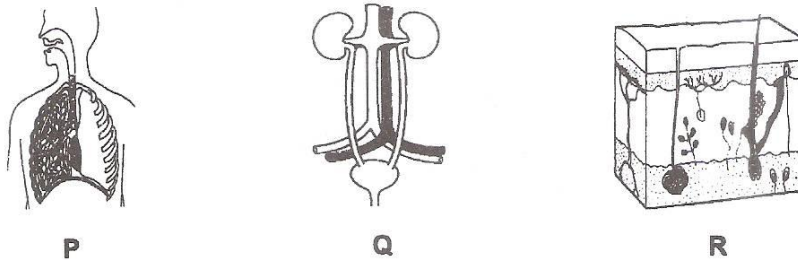


Diagram 2 .0 / Rajah 2.0

- (a) Name the processes involved where wastes are removed by excretory organs P, Q and R  
Namakan proses yang terlibat di mana bahan kumuh disingkirkan oleh organ P,Q dan R

P : .....  
Q : .....  
R : .....

[3 marks]

- b) Complete the table 2.0 by naming the waste product excreted by organs in Diagram 2.0.  
Lengkapkan Jadual 2.0 dengan menamakan bahan kumuh yang disingkirkan oleh organ-organ dalam Rajah 2.0.

Organ Organ	Waste Products Bahan-bahan kumuh
P	
Q	
R	

Table 2 .0 / Jadual 2.0

[3 marks]

For  
examiner's  
use

2(a)

3
---

2(b)

3
---

Total

6
---



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- 3 (a) Diagram 3.0 shows the exchange of substances during the process of photosynthesis.  
*Rajah 3.0 menunjukkan pertukaran bahan ketika proses fotosintesis.*

For  
examiner's  
use

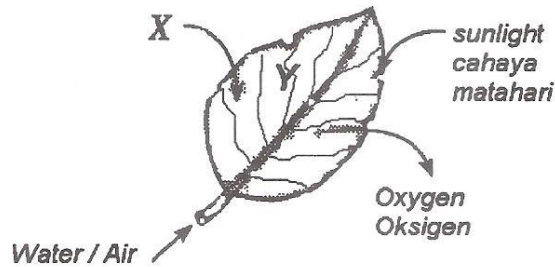
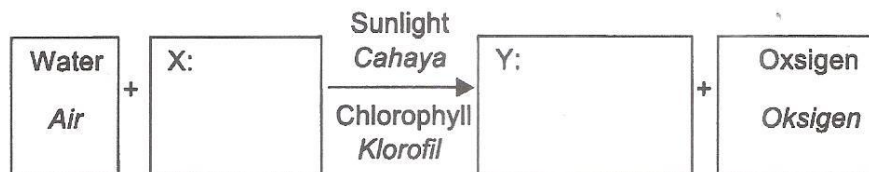


Diagram 3.0  
*Rajah 3.0*

- (i) Complete the word' equation for this process .  
*Lengkapkan persamaan perkataan bagi proses ini.*



[2 marks]

3 (a)(i)

	2
--	---

- (ii) State one importance of this process.  
*Nyatakan kepentingan proses ini.*

3 (a)(ii)

	1
--	---

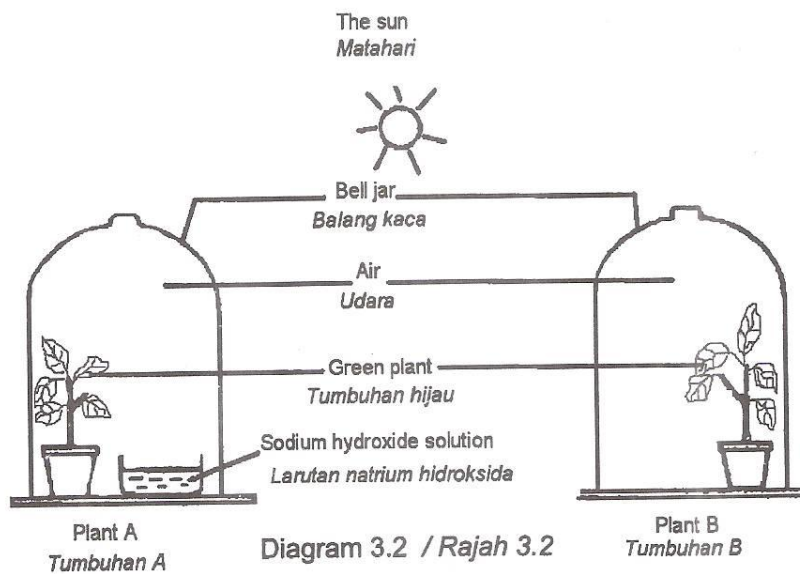
[1 mark]





- b) Diagram 3.1 shows an apparatus set up to study one factor that is needed for photosynthesis. Both plants A and B are kept in dark for two days before the experiment. Then apparatus with plants A and B it were placed under the sun for three hours.

*Rajah 3.1 menunjukkan satu susunan radas untuk mengkaji satu faktor yang diperlukan untuk fotosintesis. Sebelum eksperimen dijalankan kedua-dua tumbuhan A dan B diletakkan di tempat gelap selama dua hari dan susunan radas dan tumbuhan a dan B diletakkan di bawah matahari selama tiga jam.*



- i) What is the function of sodium hydroxide solution ?  
*Apakah fungsi larutan natrium hidroksida ?*
- .....
- [1 mark]
- ii) Which plant shows the presence of starch at the end of the experiment?  
*Tumbuhan manakah menunjukkan terdapat kanji di akhir eksperimen ini?*
- .....
- [1 mark]
- iii) Give one reason for the answer in (b)(ii).  
*Berikan satu sebab untuk bagi jawapan anda di (b)(ii)*
- .....
- [1 mark]

For  
examiner's  
use

3 (b)(i)

1
---

3 (b)(ii)

1
---

3 (b)(iii)

1
---

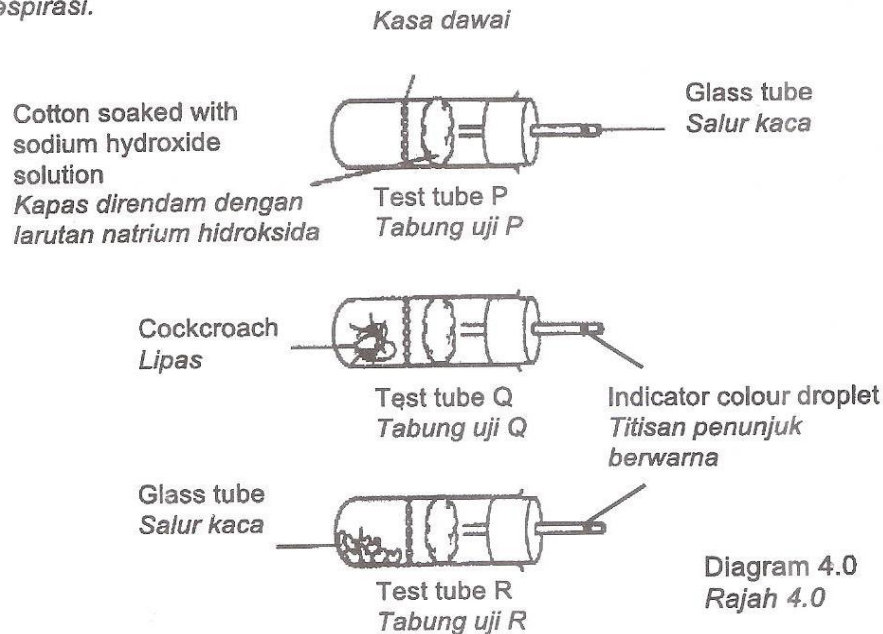
Total

6
---



- 4 Diagram 4.0 shows the apparatus set up to study living things during respiration.

Rajah 4.0 menunjukkan susunan radas untuk mengkaji benda hidup semasa respirasi.



- a) (i) What will be observed to the indicator colour droplet in test tube Q after two hours?

Apakah yang akan diperhatikan kepada titisan penunjuk berwarna dalam tabung uji Q selepas dua jam?

[1 mark]

- (ii) Based on answer in a (i), what happens to volume of air in boiling tube?

Berdasarkan jawapan di a (i), apakah yang berlaku pada isipadu udara di dalam tabung didih?

[1 mark]

- (iii) Give a reasons for your answer in a (ii)?

Nyatakan satu sebab bagi jawapan anda dalam a (ii)?

[1 mark]

For  
examiner's  
use

4 (a)(i)

1
---

4 (a)(ii)

1
---

4 (a)(iii)

1
---



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- b) Diagram 4.1 shows a frog that dies after being placed for two hours in a container filled with exhaled air

*Rajah 4.1 menunjukkan seekor katak yang mati selepas diletakkan dalam bekas yang berisi udara hembusan selama dua jam.*

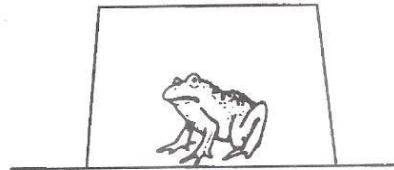


Diagram 4.1  
Rajah 4.1

- i) Based on Diagram 4.1, state one way that can be done to enable the frog to live longer?

*Berdasarkan Rajah 4.1, nyatakan satu cara yang boleh dilakukan untuk membolehkan katak hidup lebih lama?*

.....  
[1 mark]

- ii) Give a reason for your answer in b(i).

*Nyatakan satu sebab bagi jawapan anda dalam d(i).*

.....  
[1 mark]

- iii) What will happen to environment if the gas produced by the frog during respiration is released too much to the atmosphere?

*Apakah yang akan berlaku kepada persekitaran sekiranya gas yang dihasilkan oleh katak semasa respirasi dibebaskan terlalu banyak ke atmosfera?*

.....  
[1 mark]

For  
examiner's  
use

4 (b)(i)

1
---

4 (b)(ii)

1
---

4 (b)(ii)

1
---

Total

6
---

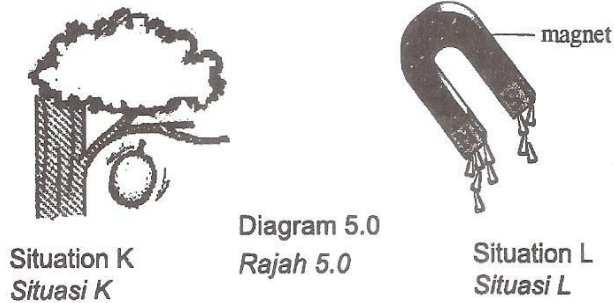




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- 5 Situation K and L in Diagram 5.0 shows the action of two types of force.  
Situasi K dan L dalam Rajah 5.0 menunjukkan tindakan dua jenis daya.

For  
examiner's  
use



- a) Name the type of force involved :  
Namakan jenis daya yang terlibat:

Situation K : .....  
Situasi K

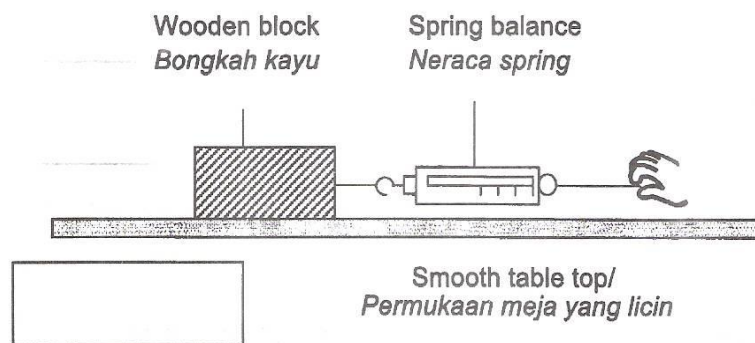
Situation L : .....  
Situasi L

[2 marks]

5 (a)

2
---

- b) Diagram 5.1 shows a wooden block being pulled on a table top.  
Rajah 5.1 menunjukkan satu bongkah ditarik pada permukaan meja.



- (i) By using arrow (→), draw the direction of the frictional force acting on the wooden block in the box provided in Diagram 5.1.

Dengan menggunakan anak panah (→), lukis arah daya geseran yang bertindak ke atas bongkah dalam petak yang disediakan dalam Rajah 5.1.

[1 mark]

5 (b)(i)

1
---



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- c) Diagram 5.3 shows the apparatus set up used to study ways to reduce friction.

Rajah 5.3 menunjukkan susunan radas yang digunakan bagi mengkaji cara untuk mengurangkan geseran.

For  
examiner's  
use

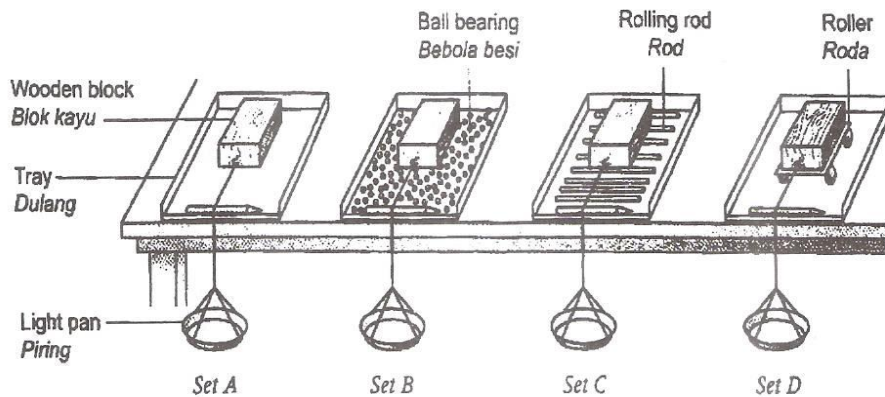


Table 1 shows the results of the experiments.

Jadual 1 menunjukkan keputusan dari eksperimen.

Objects under the wooden block/ Objek di bawah bongkah kayu	Total weights/frictional force (N)/ Jumlah berat/Daya geseran (N)
None / Tiada	0.6
Ball bearings / Bebola besi	0.1
Rods / Rod	0.2
Rollers / Pengguling	0.4

- (i) Based on the result of the experiment, which is the best way to reduce frictional force ?

Berdasarkan keputusan eksperimen, yang manakah cara terbaik untuk mengurangkan daya geseran?

[1 mark]

5 (c)(i)

1
---



- (d) Diagram 5.2 shows a man pushing a box towards the wall.  
*Rajah 5.2 menunjukkan seorang lelaki menolak sebuah kotak ke arah dinding.*

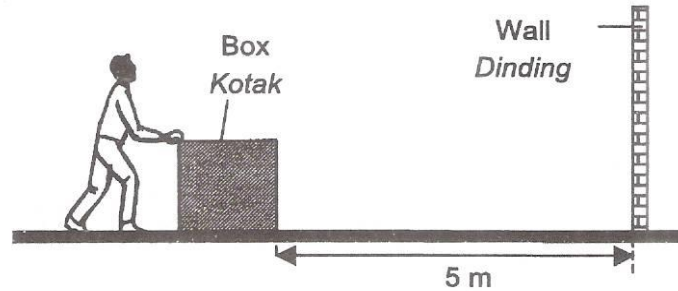


Diagram 5.2 / Rajah 5.2

- (i) Suggest one way on how he can easily push the box to the wall.  
*Cadangkan satu cara bagaimana dia boleh menolak kotak itu ke dinding.*

.....  
 [1 mark]

- (ii) State one reason for the answer in d(i)  
*Nyatakan satu sebab bagi jawapan di d (i)*

.....  
 [1 mark]

- (e) Diagram 5.3 shows an sport activity in wall climbing.  
*Rajah 5.3 menunjukkan satu aktiviti sukan memanjat dinding.*



Suggest one way the man can increase the friction with the wall and help him climbs up faster.

*Cadangkan satu cara lelaki boleh meningkatkan geseran dengan dinding dan menolong dia memanjat dengan lebih cepat.*

.....  
 [1 mark]

- (i) Give one reason for answer in (d)(ii)  
*Beri satu sebab bagi jawapan dalam (d) (ii)*

.....  
 [1 mark]

For  
 examiner's  
 use

3 (d)(i)

1
---

3 (d)(ii)

1
---

3 (e)

1
---

3 (e)(i)

1
---

Total

8
---



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- 6 Diagram 6.0 below shows an experiment to study the reaction between metals and non-metals.  
*Rajah 6.0 di bawah menunjukkan eksperimen bagi mengkaji tindak balas antara logam dan bukan logam.*

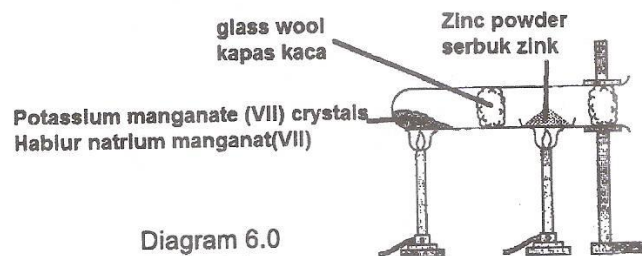
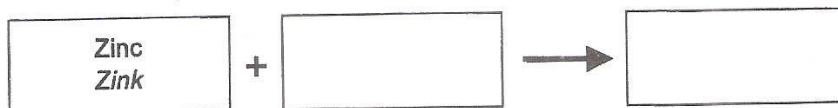


Diagram 6.0  
*Rajah 6.0*

- a) i) What is the function of the potassium manganate (VII) crystals?  
*Apakah fungsi hablur kalium manganate (VII)?*

[ 1 mark]

- ii) Complete the word equation for this reaction.  
*Lengkapkan persamaan perkataan bagi tindak balas ini.*



[ 2 marks]

For  
 examiner's  
 use

6 (a)(i)

	1
--	---

6 (a)(ii)

	2
--	---





- b) Diagram 6.1 below shows the apparatus set-up for an experiment.  
Rajah 6.1 di bawah menunjukkan satu susunan radas bagi satu eksperimen.

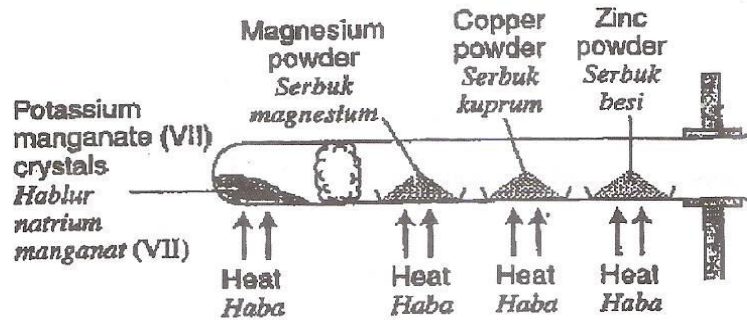


Diagram 6.1 / Rajah 6.1

Metal / Logam	Observation / Pemerhatian
Magnesium powder Serbuk magnesium	Metal burns very brightly Logam terbakar dengan nyalaan sangat terang
Zinc powder Serbuk zink	Metal burns with bright flame Logam terbakar dengan nyalaan terang
Copper powder Serbuk kuprum	Metal glows dimly Logam berbara malap

- i) Arrange the metal powder: magnesium, copper and zinc according to their rate of reaction with oxygen in ascending order.

Susun serbuk logam : magnesium, copper dan zink berdasarkan kadar tindak balas dengan oksigen dalam susunan menaik.

[1 mark]

For  
examiner's  
use

6 (b)(i)

1
---





- c) Diagram 6.2 below shows an experiment to investigate the properties of egg shells.

Rajah 6.2 di bawah menunjukkan satu eksperimen untuk mengkaji ciri-ciri kulit telur.

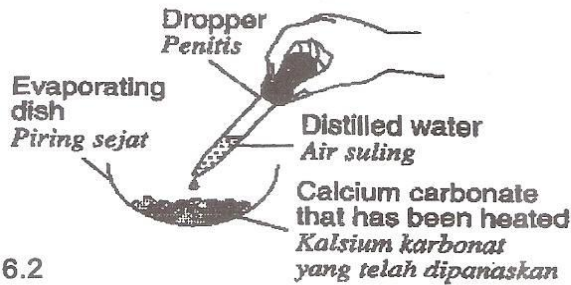


Diagram 6.2  
Rajah 6.2

When a few drops of distilled water is added to the calcium carbonate that has been heated strongly, a new substance is formed.

Apabila beberapa titis air suling ditambahkan pada kalsium karbonat yang telah dipanaskan dengan kuat, bahan baru terbentuk.

- i) What is a new substance formed in the evaporating dish?  
Apakah bahan baru yang terbentuk di dalam piring penyejatan?

[1 mark]

6 (c)(i)

1
---

- ii) A teacher wants to make limewater, what must we do to the new substance formed?

Seorang guru ingin menyediakan air kapur, apakah yang mesti kita buat pada bahan baru yang terbentuk?

[1 mark]

6 (c)(ii)

1
---

For  
examiner's  
use



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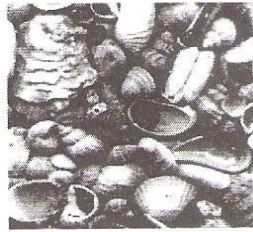


Diagram 6.3

Rajah 6.3

For  
examiner's  
use

- iii) State two elements present in the substances.  
*Nyatakan dua unsur yang wujud dalam bahan tersebut.*

..... and .....

[1 mark]

6 (c)(iii)

1

- iv) A gas is produced when acid is poured onto the substances in Diagram 6.3. How do you test the gas?

*Sejenis gas dihasilkan apabila asid dituangkan ke atas bahan di dalam Rajah 6.3. Bagaimanakah kamu menguji gas tersebut?*

.....

[1 mark]

6 (c)(iv)

1

Total

8



**Section B**  
**Bahagian B**

[20 marks]  
[20 markah]

Answer all questions  
Jawab semua soalan

For  
examiner's  
use

- 7 Diagram 7.0 below shows an experiment to investigate the effect of surface area on the rate of evaporation.

*Rajah 7.0 di bawah menunjukkan satu eksperimen bagi mengkaji kesan luas permukaan terhadap kadar penyejatan.*

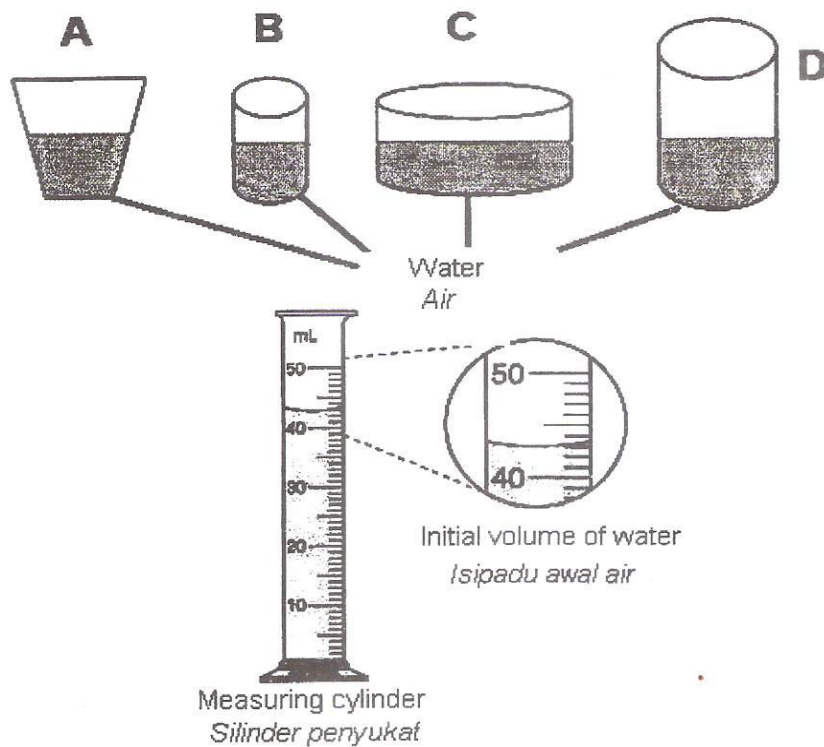


Diagram 7.0  
Rajah 7.0



**Procedure:**

**Prosedur:**

1. The apparatus are set up as shown in the diagram.  
*Susunan radas di susun seperti didalam rajah 7.0*
2. Four containers with different surface areas are used to investigate the rate of evaporation in water.  
*Empat bekas berlainan luas permukaan diguna bagi mengkaji kadar penyejatan air*
3. The volume of water at the beginning of the experiment is measured and recorded .  
*Isipadu air sebelum eksperimen dijalankan disukat dan direkodkan*
4. After 1 hour, the final volume of water of each container is measured and the rate of evaporation is calculated using a formula.  
*Selepas satu jam, bacaan akhir isipadu air disukat dan kadar penyejatan dikira. Dengan menggunakan formula.*

- (a) (i) Initial reading of water: .....ml  
*Bacaan awal isipadu air : ..... ml*

[1 mark]

**Result:**

**Keputusan:**

Container <i>Bekas</i>	Rate of evaporation (ml / min) <i>Kadar penyejatan (ml / min)</i>
A	0.20
B	0.10
C	0.25
D	0.16

Table 7.1 / Jadual 7.1

- a) (ii) State one inference about the rate of evaporation in container C.  
*Nyatakan satu inferens mengenai kadar penyejatan di dalam bekas C .*

[1 mark]

For  
examiner's  
use

7 (a)(i)

1
---

7 (a)(ii)

1
---



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- (iii) State one hypothesis that can be made from this study.  
Nyatakan satu hipotesis yang boleh dibuat berdasarkan dari kajian ini.

[1 mark]

- b) Diagram 7.2 shows containers P,Q,R and S filled with same volume of water. After three hours, the volume of water left in each container is measured.

Rajah 7.2 menunjukkan bekas P,Q,R,S di isi dengan jumlah isipadu air yang sama. Isipadu air yang tertinggal dalam setiap bekas disukat selepas tiga jam.

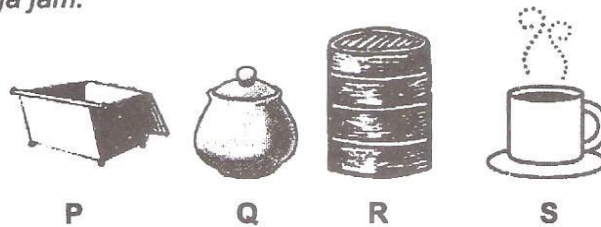


Diagram 7.2 / Rajah 7.2

	Initial volume	Final Volume
P	25 ml	19 ml
Q	25 ml	25 ml
R	25 ml	25 ml
S	25 ml	20 ml

Classify containers P, Q, R and S based on to the ability to evaporate water by writing the alphabets in Table 7.2.

Kelaskan bekas P, Q, R dan S berdasarkan keupayaan bekas untuk menyejat air dengan menulis huruf di dalam Jadual 7.2 ..

Water able to evaporate Air boleh tersejat	Water not able to evaporate Air tidak boleh tersejat

Table 7.2 / Jadual 7.2

[2 marks]

For  
examiner's  
use

7 (a)(iii)

1
---

7 (b)

2
---





- c) Diagram 7.3 shows wet cloths being put out to dry under different conditions.

Rajah 7.3 menunjukkan kain yang basah diletakkan di bawah keadaan berlainan untuk dikeringkan.

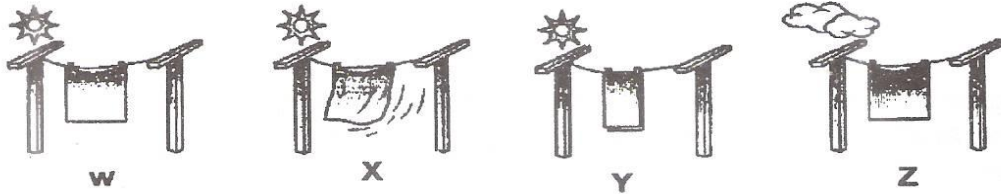


Diagram 7.3 / Rajah 7.3

Conditions Keadaan	Time taken to dry Masa diambil untuk kering
W	20 min
X	12 min
Z	25 min

Based on observations in Diagram 7.3.

Berdasarkan kepada pemerhatian dalam Rajah 7.3

- i) State the difference in time taken for cloth to dry in conditions W and X.

Nyatakan perbezaan masa diambil untuk pakaian kering dalam keadaan W dan X.

.....  
[1 mark]

- ii) State one inference about the time taken to dry in conditions W and X

Nyatakan satu inferen bagi masa diambil untuk kering dalam keadaan W dan X.

.....  
[1 mark]

- iii) State one inference about the rate of evaporation of water in condition Z.

Nyatakan satu inferen mengenai kadar sejatan air bagi keadaan Z.

.....  
[1 mark]

For  
examiner's  
use

7 (c)(i)

1
---

7 (c)(ii)

1
---

7 (c)(iii)

1
---



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- iv) Predict the rate of evaporation of water in condition Y if the cloth is folded .  
*Ramalkan kadar penyejatan di dalam keadaan Y jika kain dilipat.*

.....  
[1 mark]

- d) State the relationship between condition of cloth and the rate of evaporation of water.  
*Nyatakan hubungan antara keadaan kain dan kadar sejatan air.*

.....  
[1 mark]

For  
examiner's  
use

7 (c)(iv)

1
---

7 (d)

1
---

Total

10
----



- 8 (a) Diagram 8.0 shows how the speed of a table fan is controlled by its control knob. The control knob consists of wires of different thickness which changes the resistance in the circuit as shown in Diagram 8.0.

For  
examiner's  
use

*Rajah 8.0 menunjukkan bagaimana kelajuan kipas meja dikawal oleh tombol kawalan. Tombol kawalan terdiri daripada dawai dengan ketebalan berlainan yang akan mengubah rintangan dalam litar seperti yang ditunjukkan dalam Rajah 8.0.*

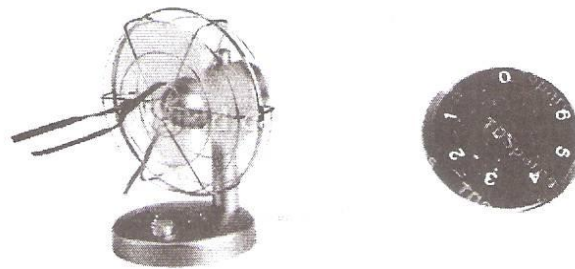


Diagram 8.0  
*Rajah 8.0*

The speed of the fan is observed at various position of the control knob. The observation is then recorded in Table 8.1.

*Kelajuan kipas diperhatikan pada kedudukan tombol kawalan yang berbeza, Pemerhatian direkodkan dalam Jadual 8.1.*

Position of Knob <i>Kedudukan tombol</i>	Speed of fan <i>Kelajuan kipas</i>
1	Very slow / <i>Sangat lambat</i>
2	Slow / <i>Lambat</i>
3	Moderately fast <i>Sederhara cepat</i>
4	Fast / <i>Cepat</i>
5	Very fast / <i>Sangat cepat</i>

Table 8.0  
*Jadual 8.0*



55/2

- (i) Based on the observation recorded in Table 8.0, state the difference between the speed of fan when the position of the control knob is at 1 and at 5.

*Berdasarkan pemerhatian yang direkodkan dalam jadual 8.0, nyatakan perbezaan antara kelajuan kipas dengan kedudukan tombol kawalan di 1 dan di 5.*

[1 mark]

For  
examiner's  
use

8 (a)(i)

1

- (b) A student carried out an experiment to study the relationship between resistance and electric current. Diagram 8.1 shows the arrangement of apparatus for the experiment.

*Seorang pelajar menjalankan satu eksperimen untuk mengkaji hubungan antara rintangan dan arus elektrik. Rajah 8.1 menunjukkan susunan radas eksperimen tersebut.*

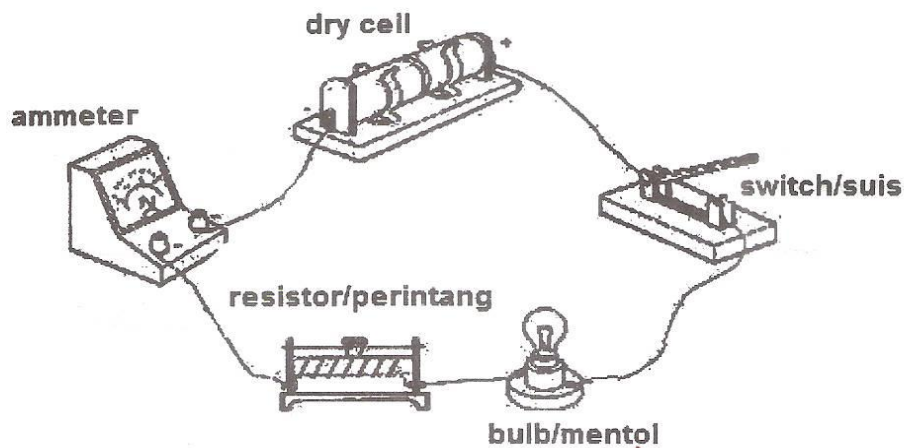


Diagram 8.1  
Rajah 8.1



55/2

The procedure of experiment is as follows:

*Prosedur eksperimen adalah seperti berikut:*

Step 1 : Set up the circuit using 1 ohm resistor

*Langkah 1: Pasangkan litar dengan menggunakan perintang 1 ohm*

Step 2 : Close the switch and observe the brightness of the bulb and record the ammeter reading

*Langkah 2 : Tutup suis dan perhatikan kecerahan mentol dan rekod bacaan ammeter*

Step 3 : Repeat step 2 with resistors of values 2 ohm, 5 ohm, 10 ohm and 12 ohm

*Langkah 3: Ulangi langkah 2 dengan perintang 2 ohm 5 ohm, 10 ohm dan 12 ohm*

(i) State the variables involved in this experiment.

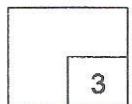
*Nyatakan pembolehubah yang terlibat dalam eksperimen ini*

Manipulated variable <i>Pembolehubah dimanipulasi</i>	
Responding variables <i>Pembolehubah bergerakbalas</i>	
Constant variable <i>Pembolehubah dimalarkan</i>	

[3 marks]

For  
examiner's  
use

8 (b)(i)





- (ii) Diagram 8.2 shows the ammeter pointer when different resistors are connected to the electric circuit.

For  
examiner's  
use

*Rajah 8.2 menunjukkan penunjuk ammeter apabila perintang yang berlainan di sambungkan dalam litar elektrik.*

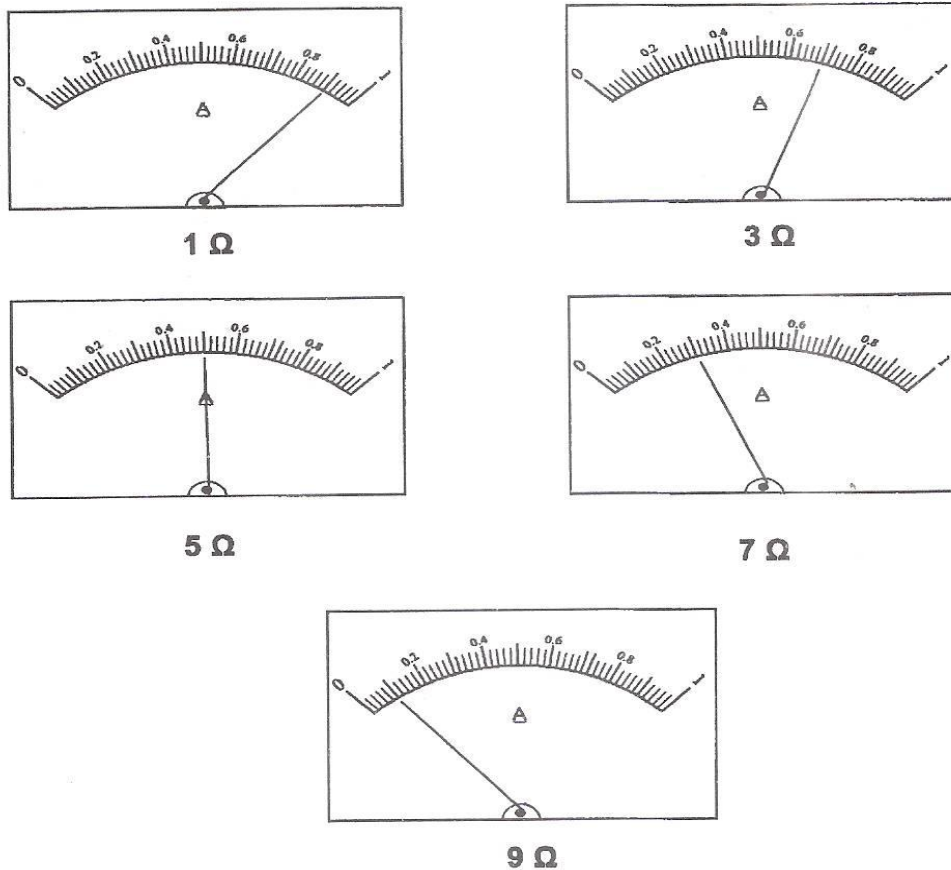


Diagram 8.2

*Rajah 8.2*



55/2

Complete Table 8.2 by recording the reading of the ammeter as shown in Diagram 8.2.

Lengkapkan Jadual 8.2 dengan merekodkan bacaan ammeter seperti yang ditunjukkan dalam Rajah 8.2.

Resistance(ohm) <i>Rintangan (ohm)</i>	1	3	5	7	9
Ammeter reading A) <i>Bacaan ammeter(A)</i>	0.9	0.7	0.5		
Brightness of bulb <i>Kecerahan lampu</i>	Very bright <i>Sangat cerah</i>	Bright <i>Cerah</i>	Dim <i>Malap</i>	Slightly dim <i>Sedikit malap</i>	Very dim <i>Sangat malap</i>

Table 8.2  
Jadual 8.2

[ 2 marks]

For  
examiner's  
use

8 (b)(ii)

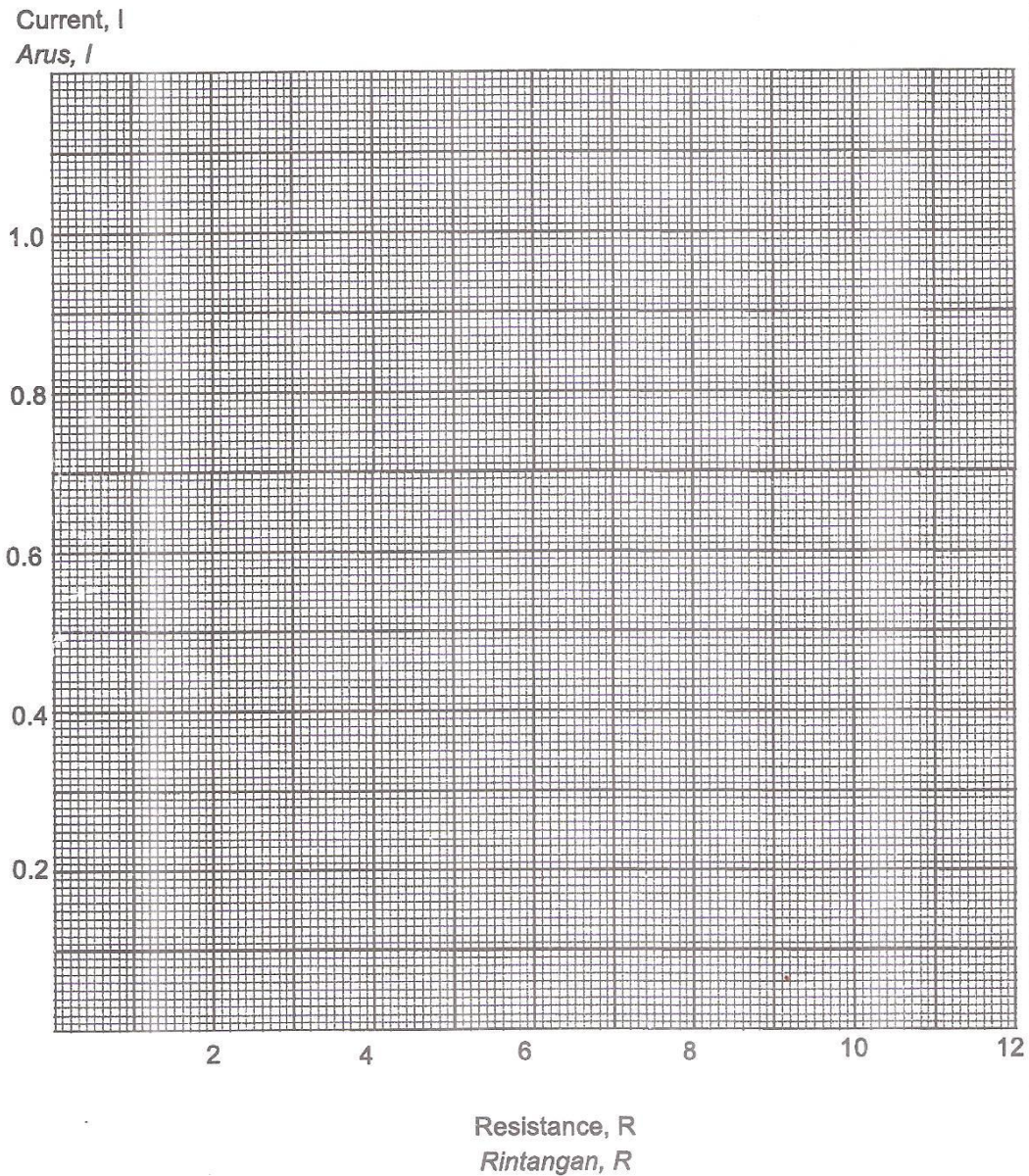
	2
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55/2

- (iii) Based on the reading in Table 8.2, draw a line graph of current,  $I$  against resistance,  $R$ .  
*Berdasarkan bacaan pada Jadual 8.2, lukiskan graf garisan bagi arus,  $I$  melawan rintangan,  $R$ .*

For  
examiner's  
use



[2 marks]

8 (b)(iii)

2
---



55/2

- (iv) State the relationships between the resistance and the current.  
*Nyatakan hubungan antara rintangan dan arus.*

.....  
[1 mark]

- (v) Define operationally current.  
*Nyatakan definisi arus secara operasi.*

.....  
[1 mark]

For  
examiner's  
use

8 (b)(iv)

	1
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8 (b)(v)

	1
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**END OF QUESTION PAPER**  
**KERTAS SOALAN TAMAT**

**Total**

	10
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