

**Section A**  
**Bahagian A**  
[60 marks]  
[60 markah]

Answer **all** questions in this section.  
*Jawab semua soalan dalam bahagian ini.*

1

Diagram 1 shows the structure of an animal cell.  
*Rajah 1 menunjukkan struktur satu sel haiwan.*

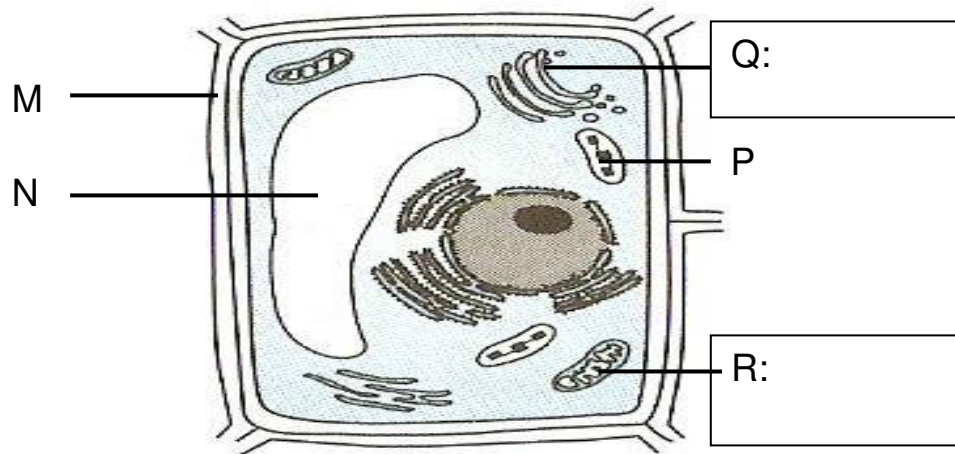


Diagram 1  
*Rajah 1*

- (a) (i) On Diagram 1, name structure labeled R and Q.  
*Pada Rajah 1, namakan struktur berlabel R dan Q.*

[2 marks]  
[2 markah]

1 (a)(i)	
	2

- (ii) State the function of structure R and P.  
*Nyatakan fungsi struktur R dan P.*

R : .....

P : .....

[2marks]  
[2 markah]

1 (a)(ii)	
	2

(b) (i) State the main component of M.  
*Nyatakan komponen utama M.*

.....

[1 mark]  
[1 markah]

1 (b)(i)

1
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(ii) Explain **one** characteristic of M.  
*Terangkan satu ciri M.*

.....

.....

.....

[2 marks]  
[2 markah]

1 (b)(ii)

2
---

(c) The plant cell is immersed in distilled water for certain period of time.  
*Sel tumbuhan ini direndam di dalam air suling untuk tempoh masa tertentu.*

(i) Explain the condition of structure N  
*Terangkan keadaan struktur N.*

.....

.....

.....

.....

[3 marks]  
[3 markah]

1 (c)(i)

3
---

- (ii) Draw a labeled diagram to show the condition of the cell in (c)(i)  
*Lukis rajah berlabel untuk menunjukkan keadaan sel di (c)(i)*

1 (c)(i)

	3

[2 marks]  
[2 markah]

TOTAL  
A1

	12

- 2 Diagram 2.1 shows respiratory system of organism X. Diagram 2.2 shows respiratory system of organism Y.  
*Rajah 2.1 menunjukkan sistem respirasi organism X. Rajah 2.2 menunjukkan sistem respirasi organism Y.*

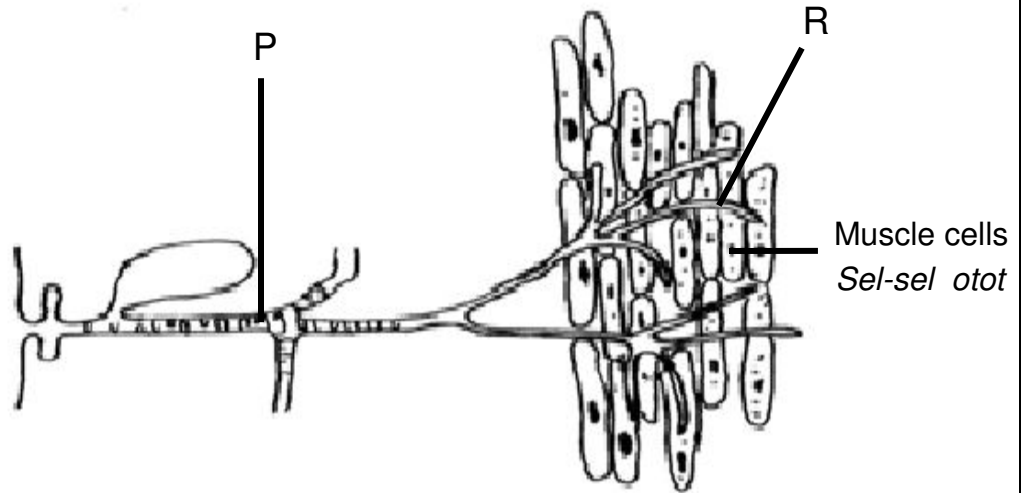


Diagram 2.1  
*Rajah 2.1*

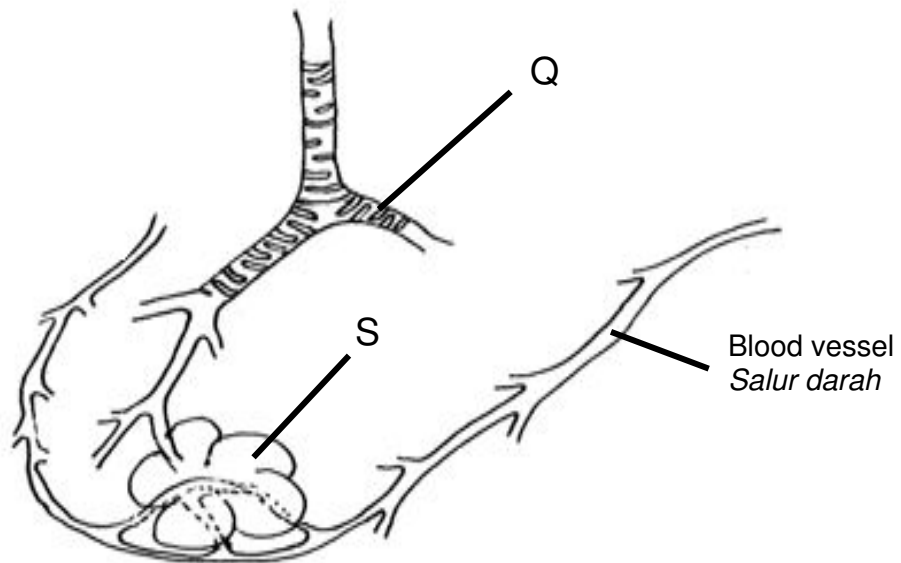


Diagram 2.2  
*Rajah 2.2*

- (a) (i) Name the respiratory system of organism in Diagram 2.1  
*Namakan sistem respirasi bagi organisma dalam Rajah 2.1.*

2 (a)(i)

1
---

[1 mark]  
[ 1 markah ]

- (ii) State a difference between the respiratory system of organism X and organism Y.  
*Nyatakan satu perbezaan diantara sistem respirasi organisma X dan organisma Y.*

Organism X <i>Organisma X</i>	Organism Y <i>Organisma Y</i>

2 (a)(ii)

1
---

[1 mark]  
[ 1 markah ]

- (b) (i) Name structure P and Q  
*Namakan struktur P dan Q*

P : .....

Q : .....

2 (b)(i)

2
---

[2 marks]  
[ 2 markah ]

- (ii) State **one** common characteristic of P and Q.  
*Nyatakan **satu** ciri yang sama pada P dan Q.*

.....

.....

2 (b)(ii)

1
---

[1 mark]  
[1 markah]

(iii) Explain why the characteristic stated in (b)(i) is important for both organisms.  
*Terangkan mengapa ciri yang dinyatakan di (b)(i) adalah penting bagi kedua-dua organisma.*

.....  
.....  
.....

2 (b)(iii)  

2
---

[2 marks]  
[ 2markah]

(c) (i) Structure R and S are importance for gases exchange.  
State a characteristic that they have in common to increase the efficiency of gases exchange.  
*Struktur R dan S adalah penting untuk pertukaran gas.  
Nyatakan satu ciri yang terdapat pada kedua-dua organisma untuk meningkatkan kecekapan pertukaran gas.*

.....  
.....

2 (c)( i)  

1
---

[1 mark]  
[ 1markah]

(ii) Explain the importance of gas exchange in both organisms.  
*Terangkan kepentingan pertukaran gas dalam kedua-dua organisma.*

.....  
.....  
.....

2 (c)(ii)  

2
---

[2 marks]  
[2 markah]

- (d) Explain how smoking habit affect the intake of oxygen intake of oksigen efficiency in human.  
*Terangkan bagaimana tabiat merokok mempengaruhi kecekapan pengambilan oksigen pada manusia.*

.....  
.....  
.....

[2 marks]  
[2 markah]

2 (d)

2
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TOTAL  
A2

12
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- 3 Diagram 3 show the organelles involved during the synthesis and secretion of protein in animal cell.  
*Rajah 3 menunjukkan organel-organel yang terlibat semasa sintesis dan rembesan protein dalam sel haiwan.*

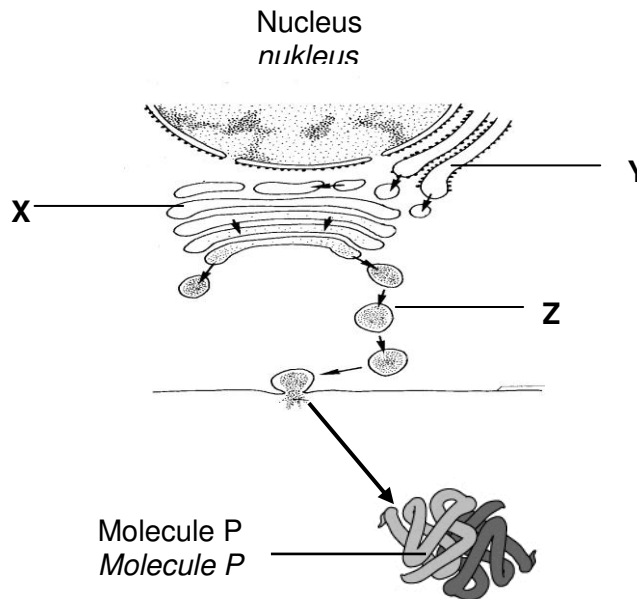


Diagram 3  
Rajah 3

(a) Name the organelles X, Y and Z.  
*Namakan organel X, Y dan Z.*

X : .....

Y : .....

Z : .....

[3 marks]  
[3 markah]

3 (a)

3
---

(b) State **two** types of nucleic acid inside the nucleus that provide the information to synthesize the protein.  
*Nyatakan **dua** jenis asid nukleik di dalam nucleus yang membekalkan maklumat untuk mensintesis protein.*

1. ....

2. ....

[2 marks]  
[2 markah]

3 (b)

2
---

(c) Molecule P is produced from the protein secreted by the cell.  
*Molekul P dihasilkan daripada protein yang dirembes oleh sel.*

(i) State the type of protein structure shown by molecule P.  
*Nyatakan jenis struktur protein yang ditunjukkan oleh molekul P*

.....

[1 mark]  
[1 markah]

3 (c)(i)

1
---

(ii) Describe the structure of molecule P.  
*Huraikan struktur molekul P.*

.....

.....

.....

[2 marks]  
[2 markah]

3 (c)(ii)

2
---



(iii) Name **one** example of the molecule P that has the structure shown in Diagram 3.

*Namakan **satu** contoh molekul P yang mempunyai struktur seperti yang ditunjukkan pada Rajah 3.*

.....  
[1 mark]  
[1 markah]

3 (c)(iii)

	1
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(d) Radioactive rays can damage the structure of chromosome. Explain how damaged chromosome disrupts the synthesis of the extracellular enzyme.

*Sinaran radioaktif boleh merosakkan struktur kromosom. Terangkan bagaimana kerosakkan struktur kromosom mengganggu sintesis enzim luar sel.*

.....  
.....  
.....  
.....  
.....  
[3 marks]  
[3 markah]

3 (d)

	3
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TOTAL  
A3

	12
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4

Diagram 4.1 shows cell P and cell Q in a stage of different type of cell division  
*Rajah 4.1 menunjukkan sel P dan sel Q dalam suatu peringkat dari jenis pembahagian sel yang berlainan.*

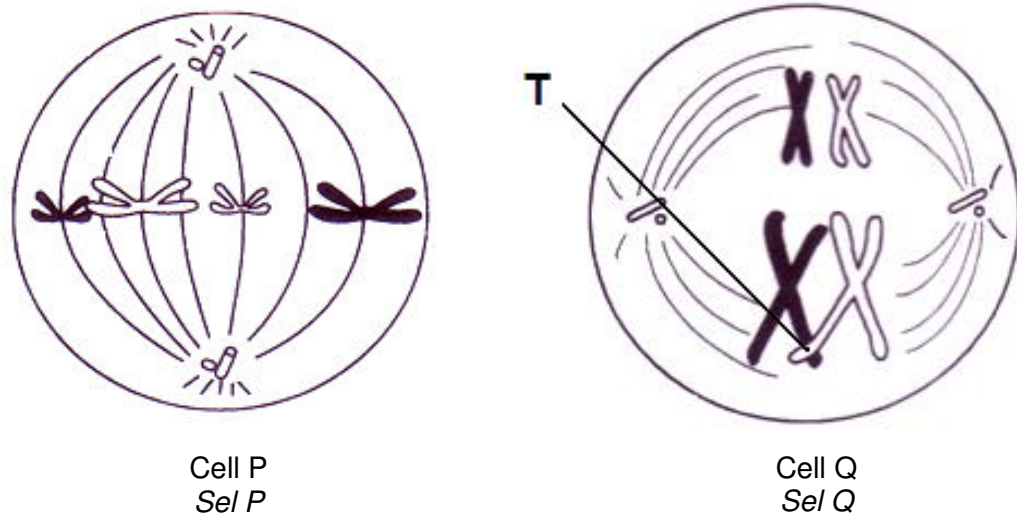


Diagram 4.1  
*Rajah 4.1*

- (a) (i) State type of cell division in cell P and cell Q.  
*Nyatakan jenis pembahagian sel pada sel P dan sel Q.*

Cell P/*Sel P* : .....

Cell Q/*Sel Q* : .....

[2 marks]  
 [2 markah]

4 (a)(i)

	2
--	---

- (ii) State **one** importance of the cell division in cell P and cell Q.  
*Nyatakan **satu** kepentingan bagi pembahagian sel bagi sel P dan sel Q.*

Cell P / *Sel P* : .....

Cell Q / *Sel Q* : .....

[ 2 marks ]  
 [ 2 markah ]

4 (a)(ii)

	2
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- b (i) State **one** difference between chromosomal behavior at the stage in cell P and cell Q .  
*Nyatakan **satu** perbezaan perlakuan kromosom di peringkat sel P dan sel Q.*

Stage in cell P <i>Peringkat sel P</i>	Stage in cell Q <i>Peringkat sel Q</i>

[1 mark]

[1 markah]

4 (b)(i)

1

- (ii) Explain **one** importance of the chromosomal behaviour in cell P.  
*Terangkan **satu** kepentingan perlakuan kromosom di dalam sel P.*

.....

.....

.....

[ 2 marks ]

[ 2 markah ]

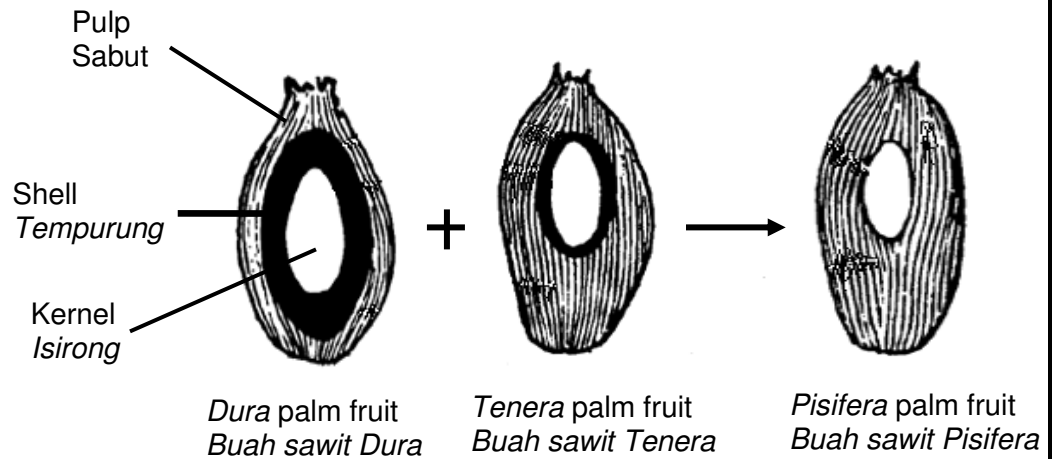
4 (b)(ii)

2

c

Diagram 4.2 show a cross between *Dura* palm fruit with *Tenera* palm fruit to produce *Pisifera* palm fruit.

Rajah 4.2 menunjukkan kacukan di antara buah sawit *Dura* dengan buah sawit *Tenera* untuk menghasilkan buah sawit *Pisifera*



	Thin pulp <i>Sabut nipis</i>	Thick pulp <i>Sabut tebal</i>	
Characteristic <i>Ciri</i>	<i>Thick kernel</i> <i>Isirong tebal</i>	<i>Thin kernel</i> <i>Isirong nipis</i>	_____ _____

Diagram 4.2  
Rajah 4.2

- (i) Fill in the space provided in Diagram 4.2 to show the characteristic of *Pisifera*.  
*Isikan ruang yang disediakan dalam Rajah 4.2 untuk menunjukkan ciri Pisifera.*

[1 mark]  
[1 markah]

4 (c)(i)

1
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- (ii) As an oil planter you want to produce a large number of *Pisifera* palm fruit in short period of time.  
Describe how the technique is carried out.  
*Sebagai seorang pengusaha kelapa sawit, anda ingin menghasilkan buah sawit Pisifera dalam bilangan yang banyak dalam jangkamasa singkat.*  
*Huraikan bagaimana teknik ini dijalankan.*

.....

.....

.....

.....

.....

.....

[ 3 marks ]  
[ 3 markah ]

4 (c)(ii)

3
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TOTAL  
A4

12
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5

Green plant synthesize their food through the process of photosynthesis. The biochemical process of photosynthesis can be summarized as in the schematic diagram in Diagram 5.

*Tumbuhan hijau mensintesis makanannya melalui proses fotosintesis. Proses biokimia fotosintesis boleh diringkaskan seperti dalam rajah skema pada Rajah 5.*

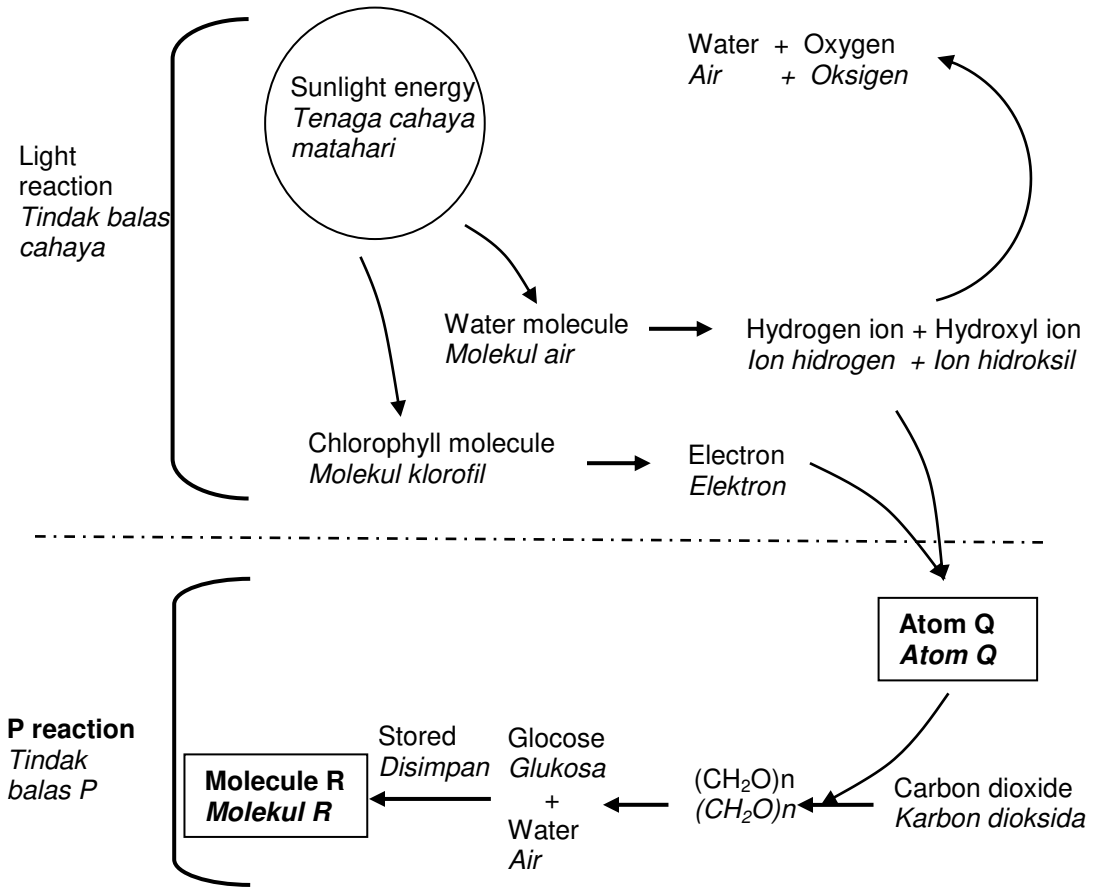


Diagram 5  
Rajah 5

- (a) (i) Name P reaction and molecule R.  
*Namakan tindak balas P dan molekul R.*

P reaction / *tindak balas P* : .....

Molecule R/ *molekul R* : .....

[2 marks]  
[2 markah]

- (ii) Name two raw materials for photosynthesis as shown in Diagram 5.

5 (a)(i)

2

Namakan dua bahan mentah untuk fotosintesis seperti yang ditunjukkan dalam Rajah 5.

1. ....

2. ....

[2 marks]  
[2 markah]

5 (a)(ii)

2
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(b) (i) Based on Diagram 5 , explain the importance of sunlight energy during light reaction.  
*Berdasarkan Rajah 5, terangkan kepentingan tenaga matahari semasa tindak balas cahaya.*

.....  
.....  
.....

[2 marks]  
[2 markah]

5 (b)(i)

2
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(ii) Describe how oxygen and water are produced during photosynthesis.  
*Huraikan bagaimana oksigen dan air dihasilkan semasa photosynthesis.*

.....  
.....  
.....  
.....

[2 marks]  
[2 markah]

5 (b)(ii)

2
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(c) Explain the role of atom Q during P reaction.  
*Terangkan peranan atom Q semasa tindak balas P*

.....  
.....  
.....  
.....

[2 marks]  
[2 markah]

For  
Examiner's  
Use

5 (c)

2
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(d) Explain how air pollution have an effect on rate of photosynthesis.  
*Terangkan bagaimana pencemaran udara mempunyai kesan terhadap kadar fotosintesis.*

.....  
.....  
.....

[2 marks]  
[2 markah]

5 (d)

2
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TOTAL  
A4

12
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**Section B**  
**Bahagian B**

[ 40 marks ]  
[ 40 markah ]

Answer any **two** questions from this section  
*Jawab mana-mana **dua** soalan daripada bahagian ini.*

- 6 Diagram 6.1 shows the beginning and the end of an experiment to illustrate a physical process.  
*Rajah 6.1 menunjukkan permulaan dan akhir satu eksperimen untuk menggambarkan satu proses fizikal.*

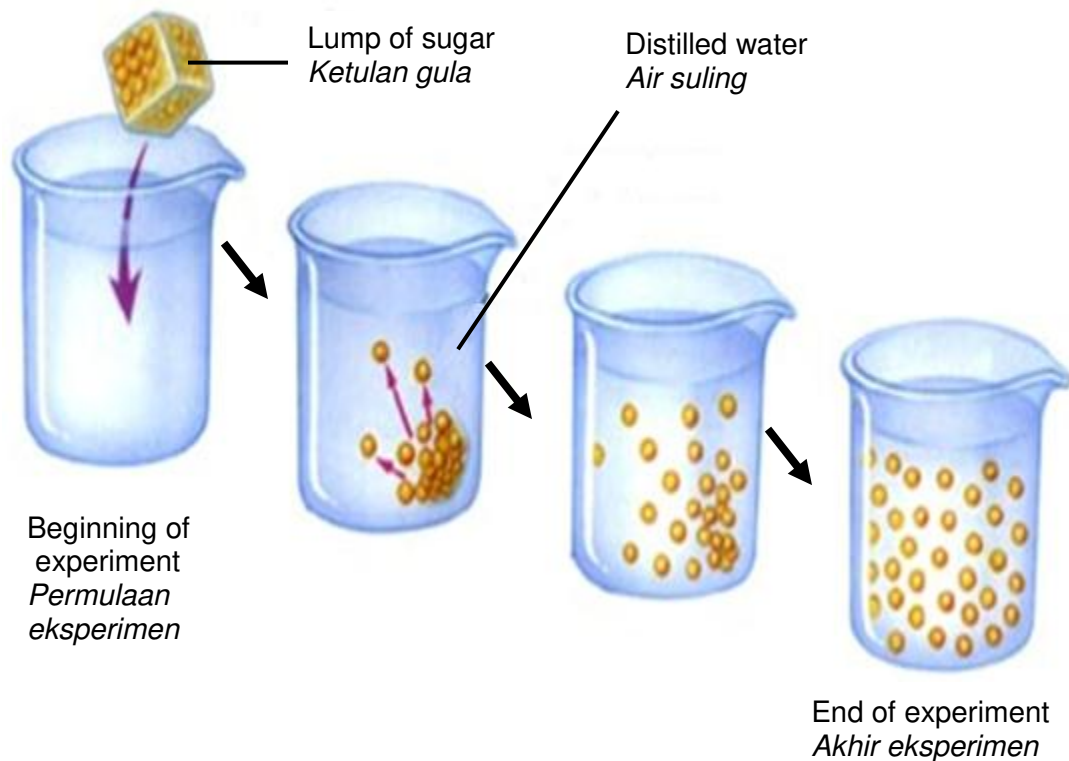


Diagram 6.1  
*Rajah 6.1*

Explain the process shown in Diagram 6.1  
*Terangkan proses yang ditunjukkan pada Rajah 6.1*

[4 marks]

[ 4 markah]

- (b) Diagram 6.2 shows two type of transport in the movement of molecule across the plasma membrane.

*Rajah 6.2 menunjukkan dua jenis pengangkutan dalam pergerakan molekul merentasi membran plasma.*

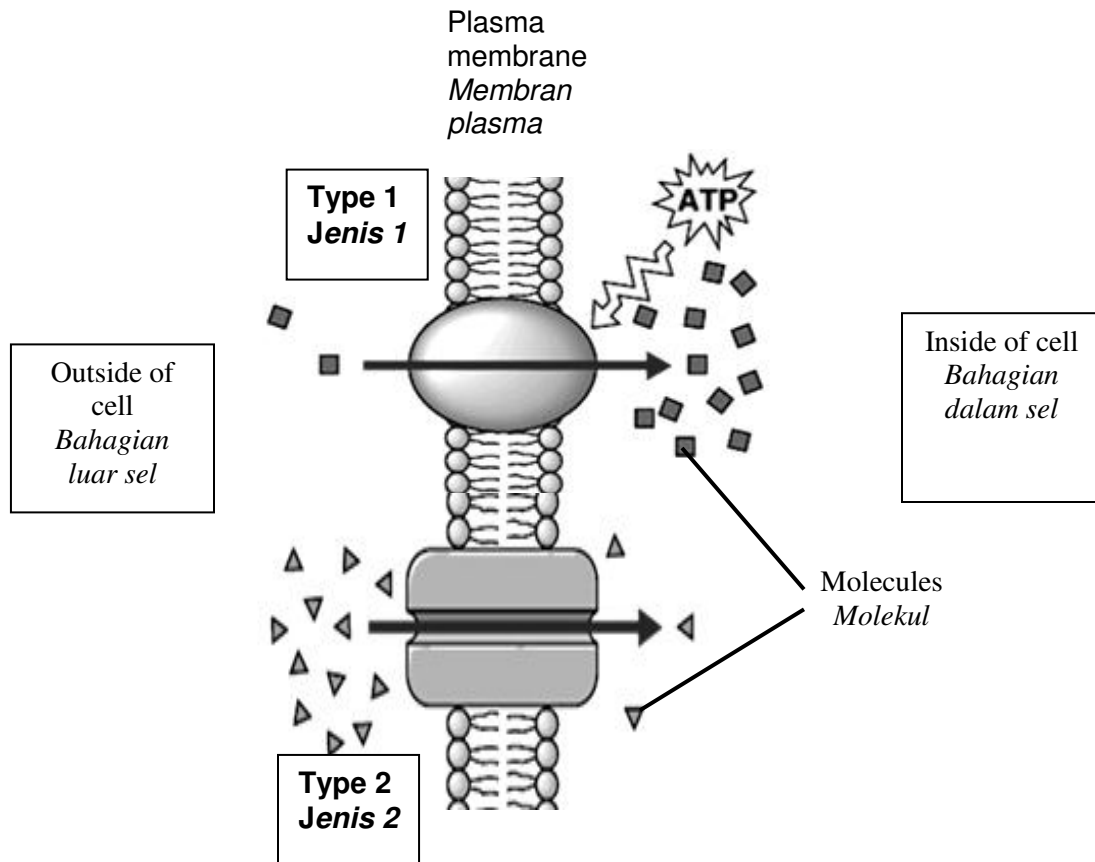


Diagram 6.2  
*Rajah 6.2*

Explain the similarities and differences between the movement of molecule across plasma membrane in type 1 and type 2.

*Terangkan persamaan dan perbezaan pergerakan molekul merentasi plasma membrane dalam jenis 1 dan jenis 2.*

[8 marks]

[8 markah]

- (c) Diagram 6.3 shows the condition of a plant cell before treatment. Diagram 6.3(a) and Diagram 6.3(b) show the condition of the plant cell after it has been immersed in solutions X and Y.

*Rajah 6.3 menunjukkan keadaan satu sel tumbuhan sebelum dirawat. Rajah 6.3(a) dan Rajah 6.3 (b) menunjukkan keadaan sel tumbuhan tersebut selepas direndam dalam larutan X dan Y.*

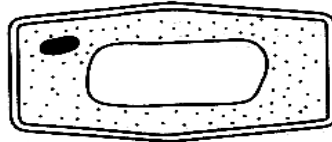
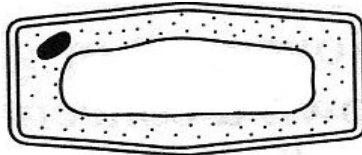
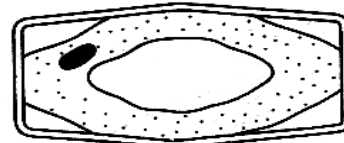


Diagram 6.3  
*Rajah 6.3*



Solution X  
*Larutan X*

Diagram 6.3(a)  
*Rajah 6.3(a)*



Solution Y  
*Larutan Y*

Diagram 6.3(b)  
*Rajah 6.3(b)*

Explain what happens to the cell in each diagram.  
*Explains yang berlaku kepada sel dalam setiap rajah.*

[10 marks]  
[ 10 markah]

- 7 Diagram 7.1 shows the profile of a mangrove swamp.  
Rajah 7.1 menunjukkan satu profil paya bakau.

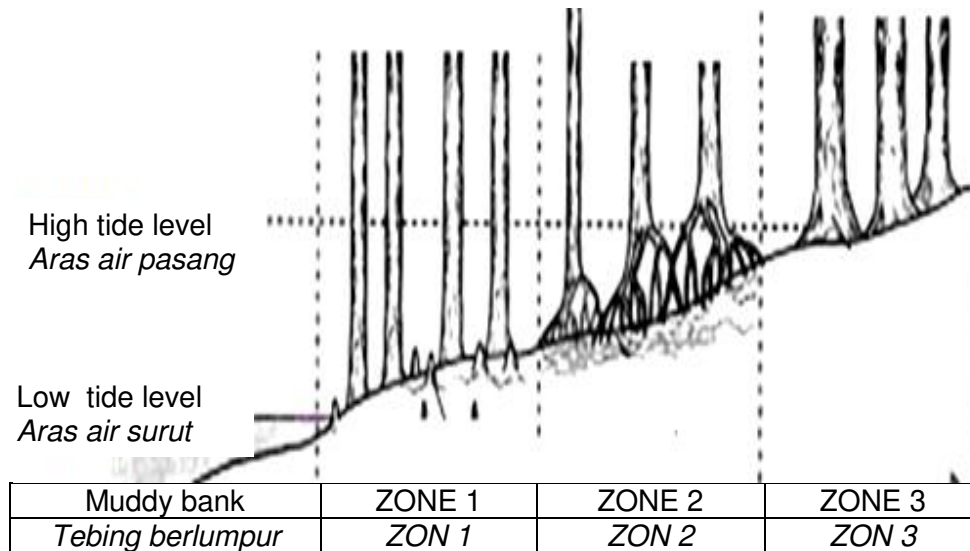


Diagram 7.1  
Rajah 7.1

- (a) (i) Describe the succession processes in zone 1 and zone 2.  
Huraikan proses sesaran dalam zon 1 dan zon 2.

[4 marks]  
[4markah]

(ii)

Mangrove trees are found along muddy coastal areas which are sheltered from wind, strong waves and water currents.

*Tumbuhan paya bakau boleh didapati sepanjang pesisiran pantai yang berlumpur yang terlindung daripada angin, ombak kuat dan aras air.*

Explain the problems faced by mangrove trees and how they overcome these problems.

*Terangkan masalah – masalah yang dihadapi oleh pokok paya bakau dan bagaimana ia mengatasi masalah tersebut.*

[6 marks]  
[6 markah]

- (b) Diagram 7.2 shows a nitrogen cycle.  
Rajah 7.2 menunjukkan Kitar nitrogen.

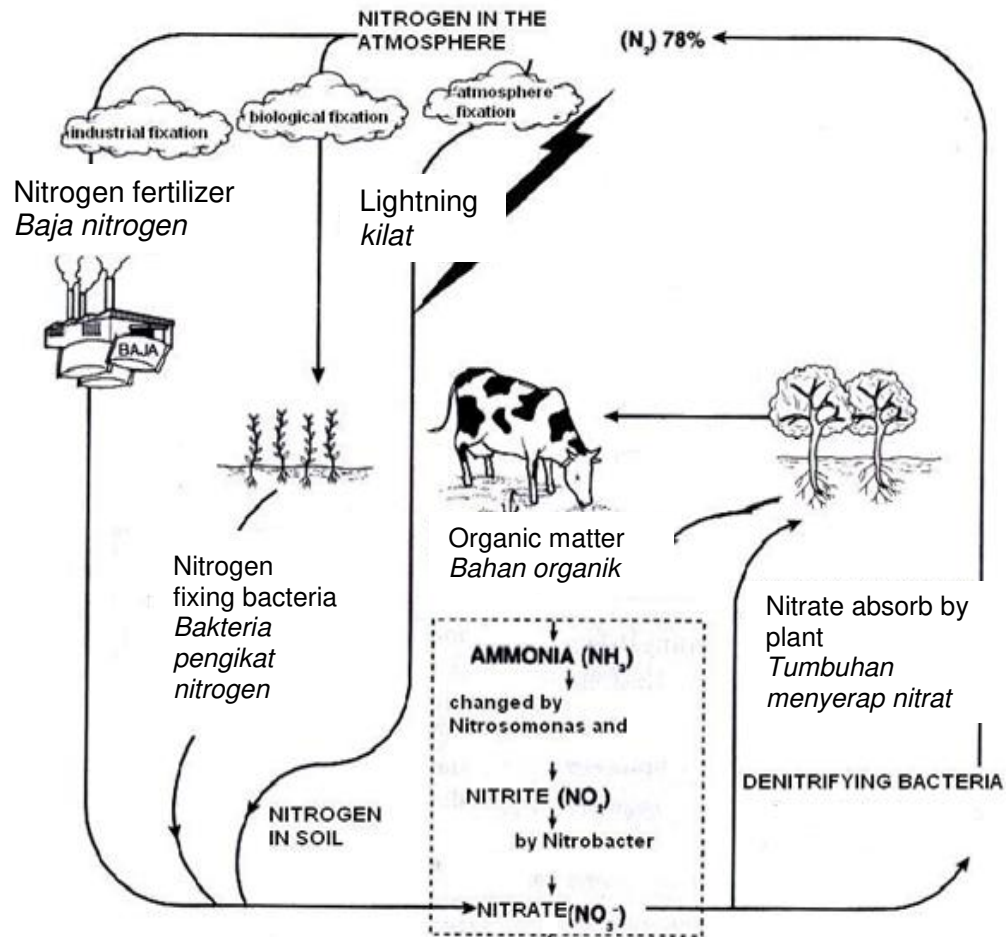


Diagram 7.2  
Rajah 7.2

- (i) Based on Diagram 7.2, explain the importance of microorganisms in farming.  
Berdasarkan Rajah 7.2, terangkan kepentingan mikroorganisma dalam pertanian.  
[10 marks]  
[10 markah]

- 8 (a) Diagram 8.1 shows the products that have been used in daily life.  
*Rajah 8.1 menunjukkan produk-produk yang digunakan dalam kehidupan seharian.*



Diagram 8.1  
*Rajah 8.1*

Based on your biology knowledge, explain how the production of these products can endanger ecosystem and suggest measures to be taken to reduce this problem.

*Berdasarkan pengetahuan biologi anda, terangkan bagaimana penghasilan produk-produk ini boleh mengancam ekosistem serta cadangkan langkah-langkah yang boleh diambil untuk mengurangkan masalah ini.*

[10 marks]  
[10 markah]

- 8 (b) Diagram 8.2 shows the environmental phenomenon's that occurs nowadays.  
*Rajah 8.2 menunjukkan fenomena-fenomena alam sekitar yang berlaku dewasa ini.*

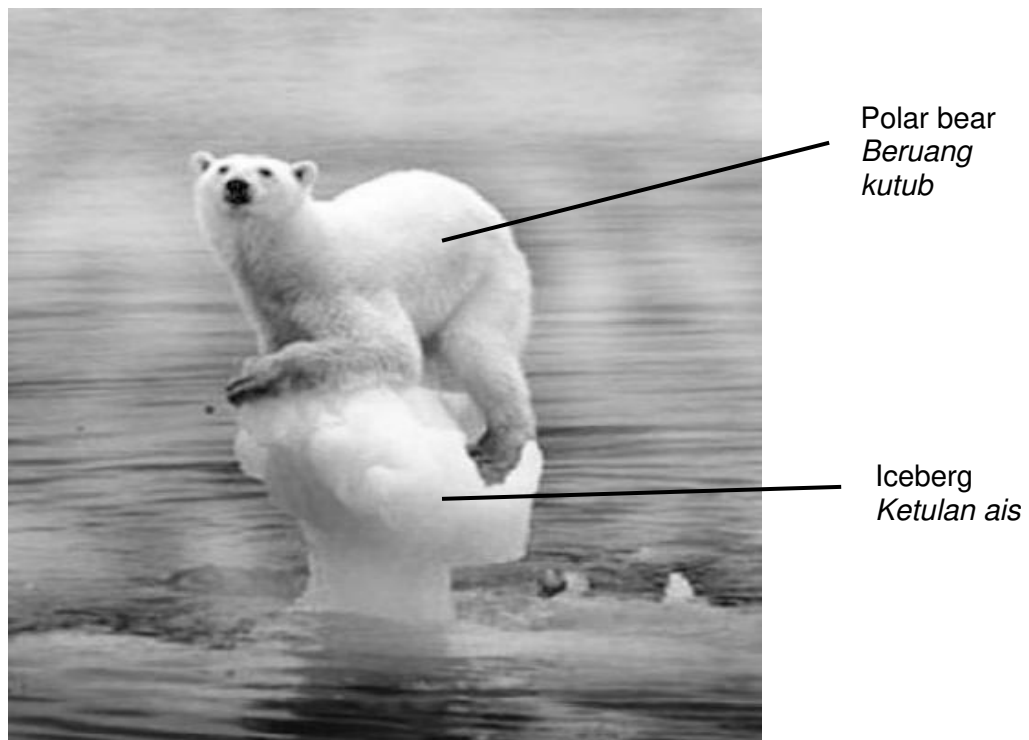
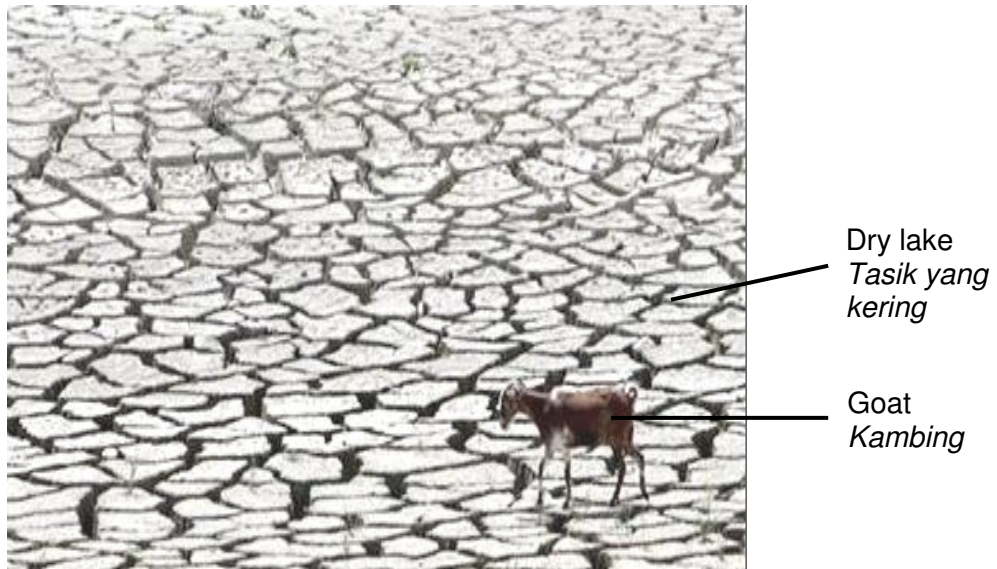


Diagram 8.2  
*Rajah 8.2*

Based on your biology knowledge, explain the occurrence of these phenomenon and measures to be taken to reduce this problem.

*Berdasarkan pengetahuan biologi anda, terangkan kejadian fenomena-fenomena ini serta langkah-langkah yang boleh diambil untuk mengurangkan masalah ini.*

[10 marks]  
[10 markah]

9

Food preservation involves methods of preparing food to extend the lifespan and to avoid wastage of food.

*Pengawetan makanan melibatkan kaedah peyediaan untuk memanjangkan tempoh hayat dan mengelakkan pembaziran makanan.*

- (a) Based on the above statement, explain the necessity for food processing.  
*Berdasarkan pernyataan di atas, terangkan keperluan pemprosesan makanan.*

[8 marks]  
[8 markah]



- (b) Table 1 shows several methods of food preservation that being used in food processing.  
Describe how the method can preserve food for a long period of time.  
*Jadual 1 menunjukkan beberapa kaedah pengawetan yang digunakan dalam pemprosesan makanan. Jelaskan bagaimana kaedah itu boleh mengawet makanan untuk satu jangka masa yang panjang.*

Type of food <i>Jenis makanan</i>	Food preservation method <i>Kaedah pengawetan makanan</i>
Milk <i>Susu</i>	Pasteurisation <i>Pempasteuran</i>
Fruits <i>Buah-buahan</i>	Canning <i>Pengetinan</i>
Meat and fish <i>Daging dan ikan</i>	Refrigeration <i>Penyejukbekuan</i>

Table 1  
*Jadual 1*

[8 marks]  
[8 markah]

- (c) Aeroponic is the method to improve the quality and quantity of food.  
Describe how the method is carried out.  
*Aerofonik ialah satu kaedah untuk meningkatkan kualiti dan kuantiti makanan. Huraikan bagaimana kaedah ini dijalankan.*

[4marks]  
[4markah]

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