

**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.*

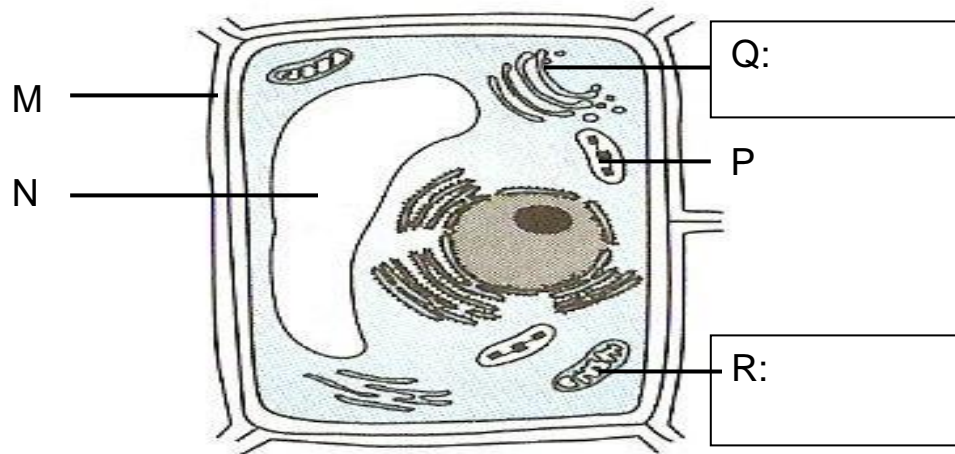


Diagram 1  
*Rajah 1*

- (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 |
|---|

(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.

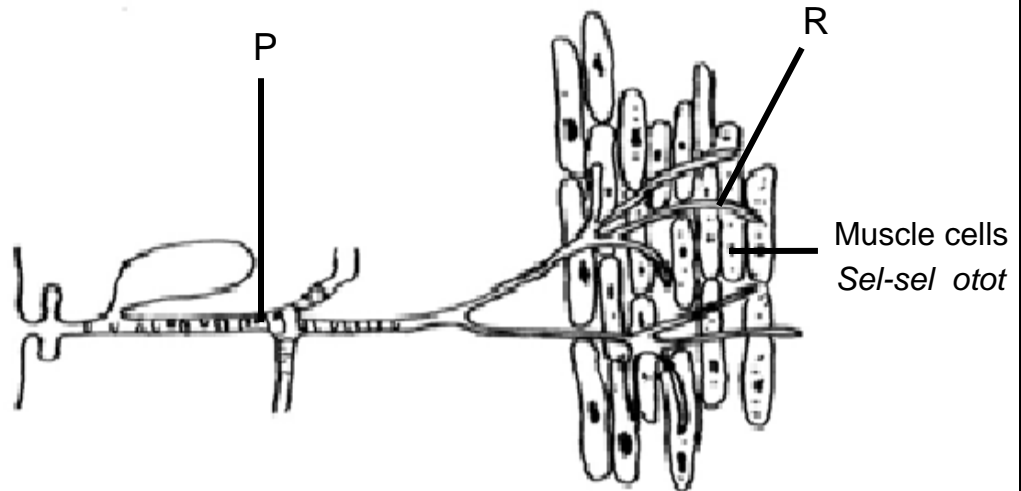


Diagram 2.1  
Rajah 2.1

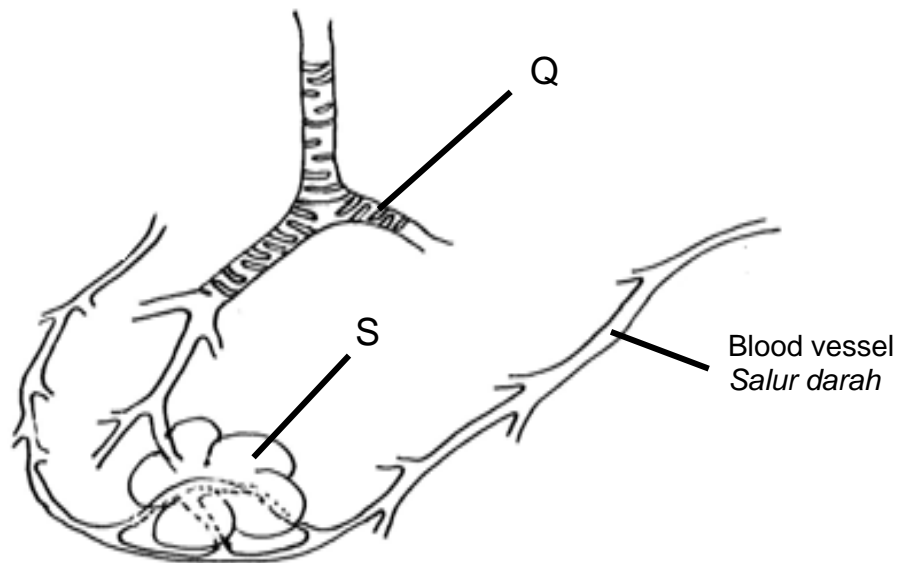


Diagram 2.2  
Rajah 2.2

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

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

2 (a)(i)

|  |   |
|--|---|
|  | 1 |
|--|---|

- (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<br><i>Organisma X</i> | Organism Y<br><i>Organisma Y</i> |
|----------------------------------|----------------------------------|
|                                  |                                  |

[1 mark]  
[ 1 markah ]

2 (a)(ii)

|  |   |
|--|---|
|  | 1 |
|--|---|

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

P : .....

Q : .....

[2 marks]  
[ 2 markah ]

2 (b)(i)

|  |   |
|--|---|
|  | 2 |
|--|---|

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

.....

.....

[1 mark]  
[1 markah]

2 (b)(ii)

|  |   |
|--|---|
|  | 1 |
|--|---|

(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 (d)

|   |
|---|
| 2 |
|---|

[2 marks]  
 [2 markah]

TOTAL A2

|    |
|----|
| 12 |
|----|

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.*

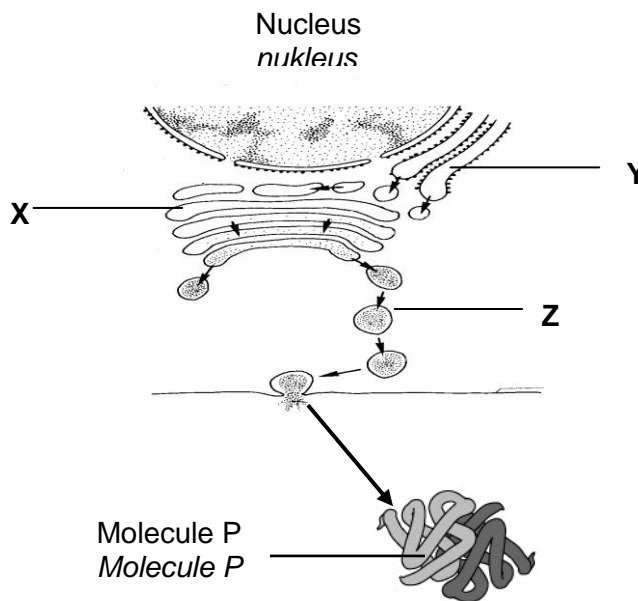


Diagram 3  
*Rajah 3*

(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 |
|---|

(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 |
|---|

TOTAL  
A3  

|    |
|----|
| 12 |
|----|

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.*

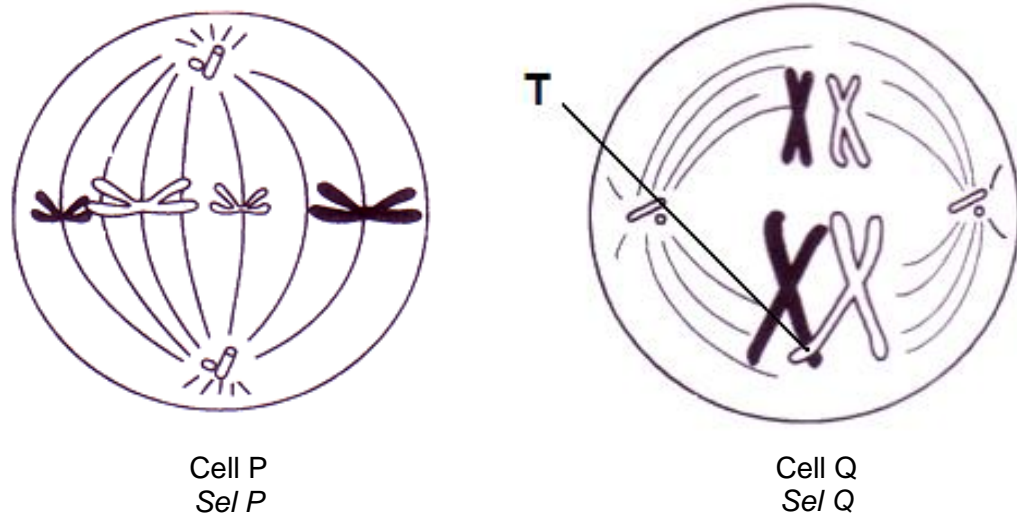


Diagram 4.1  
*Rajah 4.1*

- (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 |
|---|

- 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<br><i>Peringkat sel P</i> | Stage in cell Q<br><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 ]

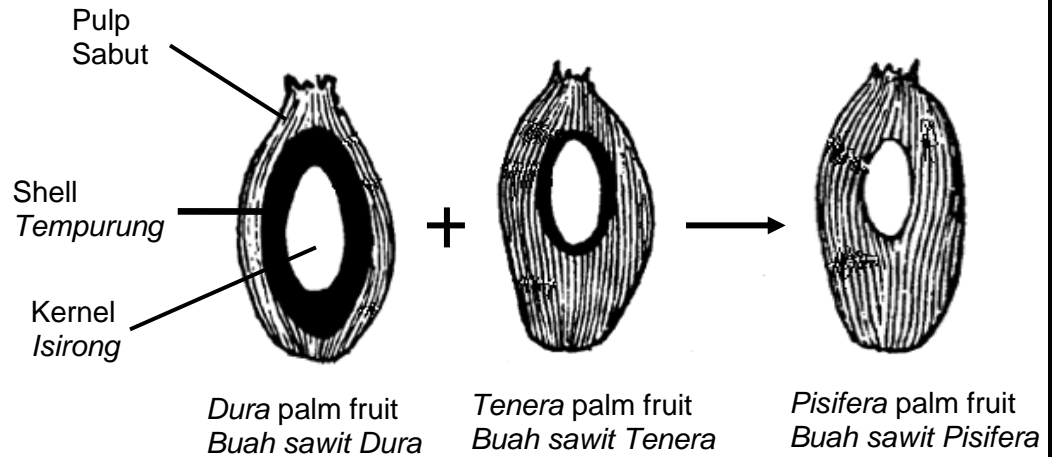
4 (b)(ii)

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

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.*

4 (c)(i)

|   |
|---|
| 1 |
|---|

[1 mark]  
[1 markah]

- (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 |
|---|

TOTAL  
A4

|    |
|----|
| 12 |
|----|

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.*

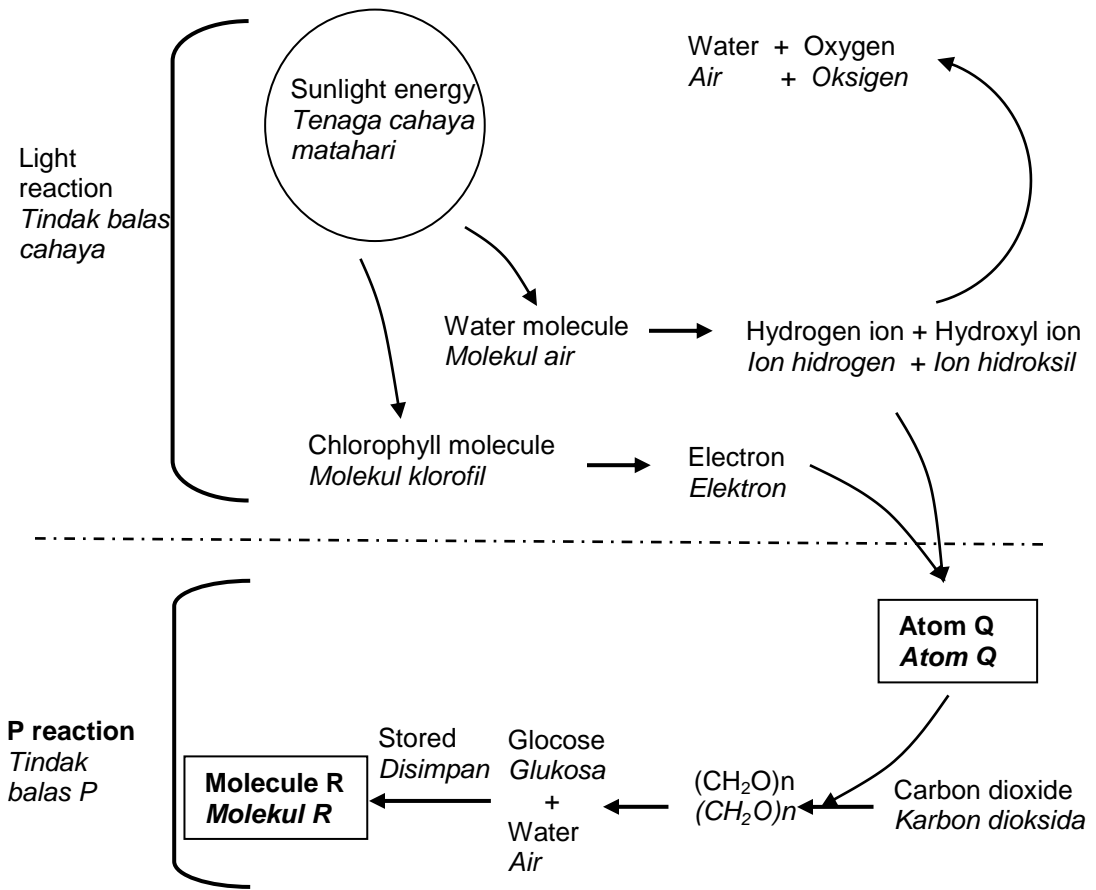


Diagram 5  
Rajah 5

- (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 |
|---|

For  
Examiner's  
Use

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

1. ....

2. ....

[2 marks]  
[2 markah]

5 (a)(ii)

|   |
|---|
| 2 |
|---|

(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 |
|---|

(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 |
|---|

(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 |
|---|

(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 |
|---|

**TOTAL  
A4**

|    |
|----|
| 12 |
|----|



**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.*

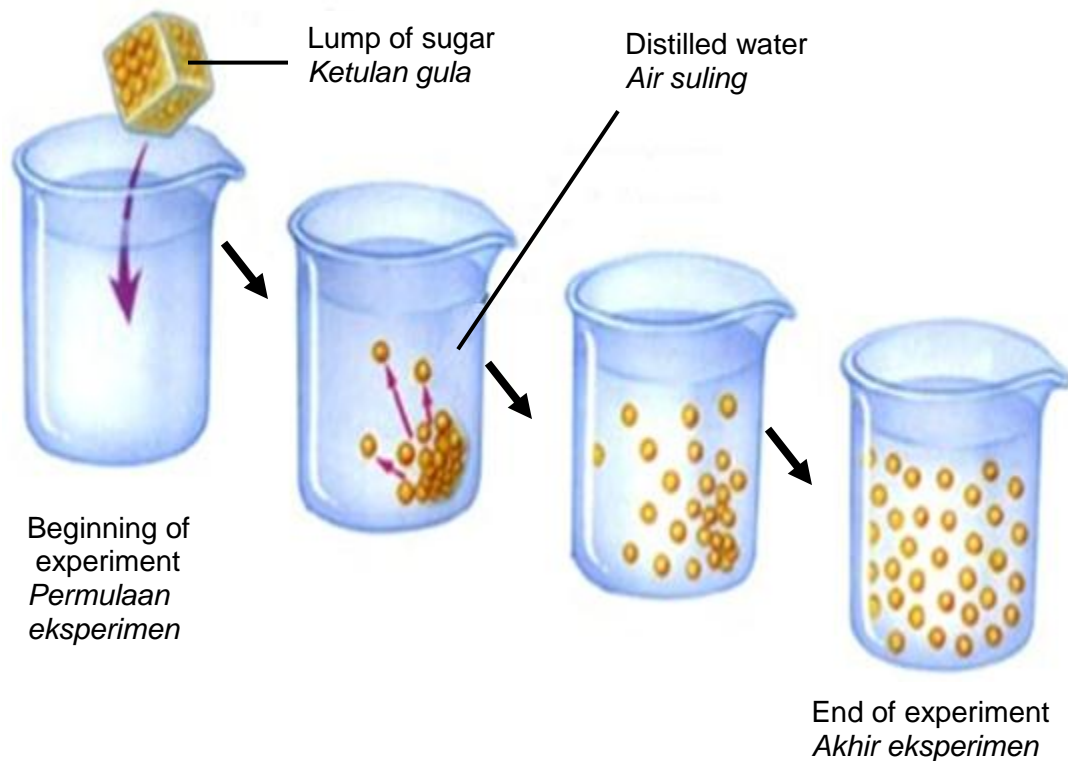


Diagram 6.1  
*Rajah 6.1*

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.*

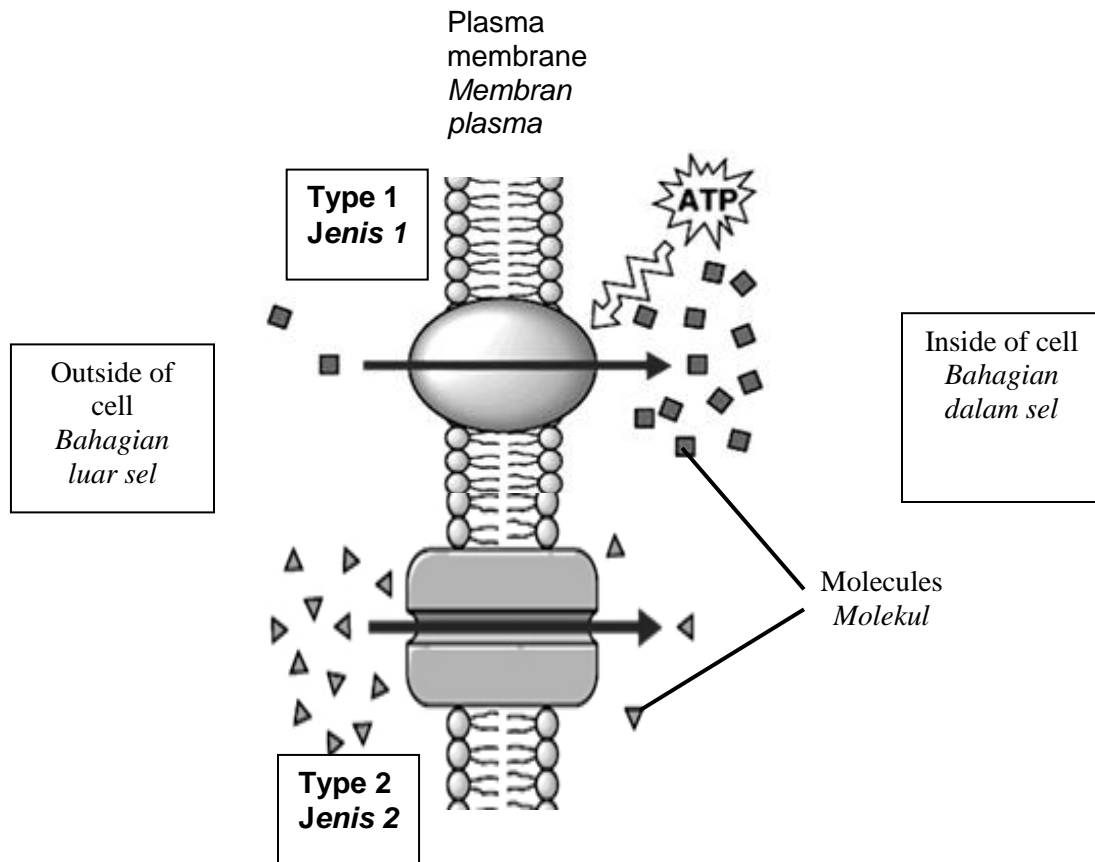


Diagram 6.2  
*Rajah 6.2*

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.*

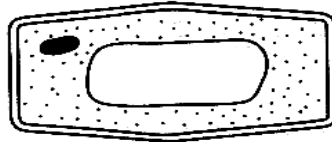
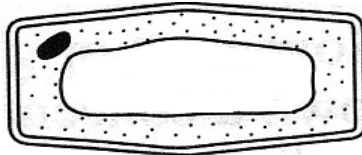
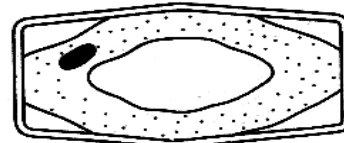


Diagram 6.3  
*Rajah 6.3*



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.

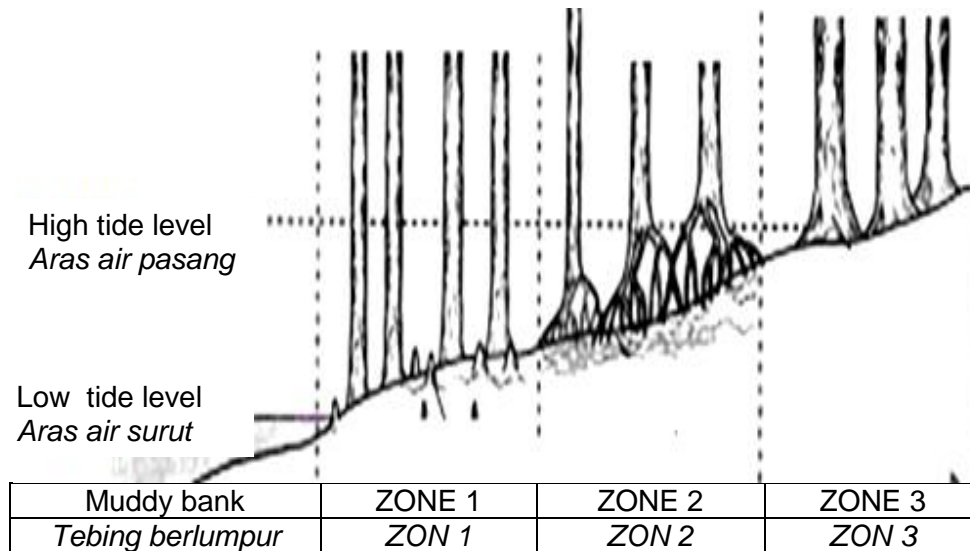


Diagram 7.1  
Rajah 7.1

- (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.

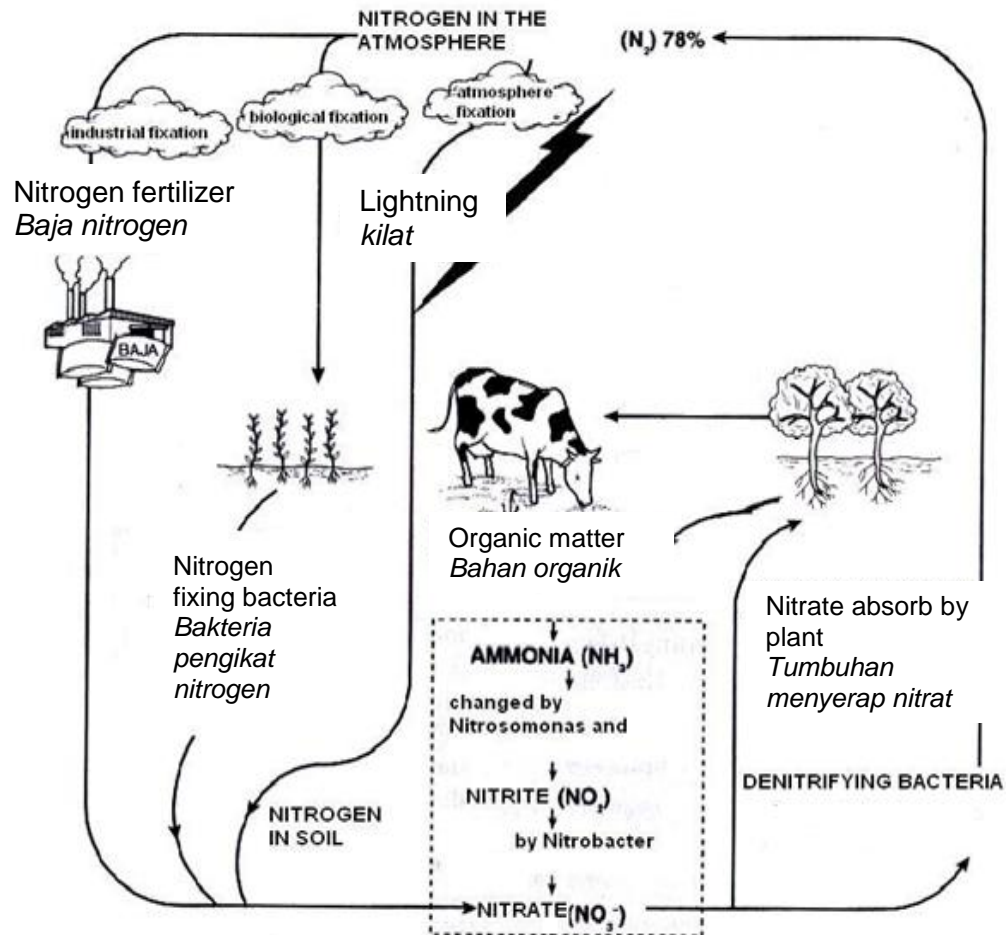


Diagram 7.2  
Rajah 7.2

- (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.*



Dry lake  
*Tasik yang kering*

Goat  
*Kambing*



Polar bear  
*Beruang kutub*

Iceberg  
*Ketulan ais*

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