

STUDENTS'S COPY
KNOWLEDGE LEVEL

1. Diagram 1 shows the structure of a cell as seen under an electron microscope.
Rajah 1 menunjukkan struktur satu sel yang diperhatikan di bawah mikroskop elektron.

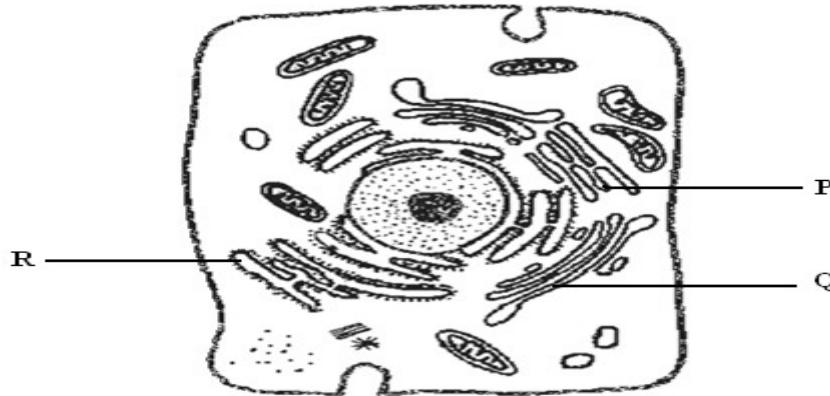


Diagram 1

- (a) (i) Name the type of the cell.
Namakan jenis sel tersebut.

.....

[1 mark]

- (ii) State one reason for your answer in a (i)
Nyatakan satu sebab bagi jawapan yang dinyatakan dalam (a) (i).

.....

.....

[1 mark]

- b (i) Name the structures labeled P, Q and R.
Namakan struktur berlabel P, Q dan R.

P :

Q :

R :

[3 marks]

2. Diagram 1 shows the different stages which take place during cell division.

Rajah 1 menunjukkan peringkat berlainan yang berlaku semasa pembahagian sel.

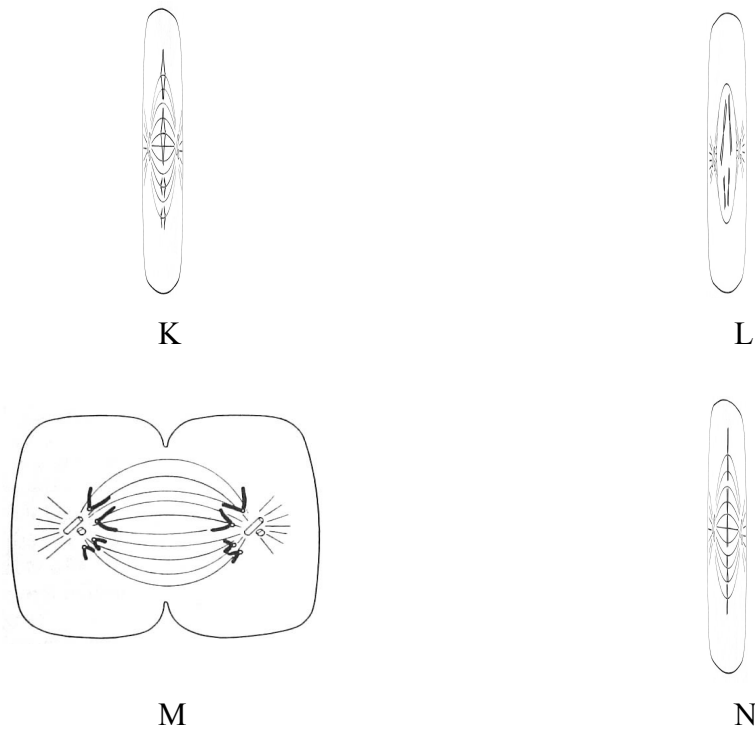


DIAGRAM 1

Rajah 1

a (i) Name the cell division shown in Diagram 1.

Namakan pembahagian sel yang ditunjukkan dalam Rajah 1.

.....

[1 mark]

(ii) Name the stages labelled K and N?

Namakan peringkat yang dilabelkan sebagai K dan N?

K :

N :

[2 marks]

3. Diagram 2(a) shows a plant cell. Diagram 2(b) shows the same plant cell that has been placed in solution X for 10 minutes.

Rajah 2(a) menunjukkan satu sel tumbuhan. Rajah 2(b) menunjukkan sel tumbuhan yang sama selepas diletakkan dalam larutan X selama 10 minit.

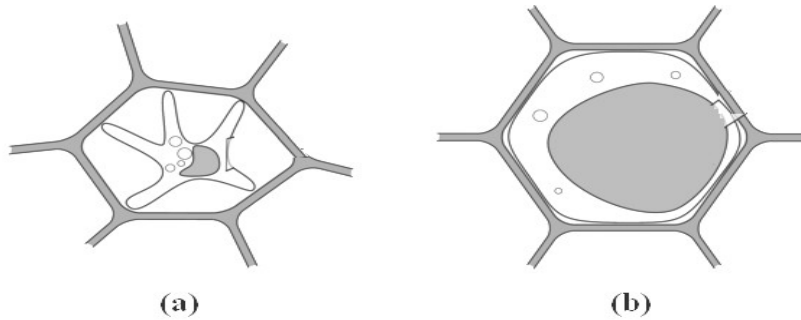


Diagram 2
Rajah 2

(a) Name the process that caused the changes in (a).
Namakan proses yang menyebabkan perubahan di (a).

..... [1 mark]

4. Diagram 2 shows a nitrogen cycle.
Rajah 2 menunjukkan satu kitar nitrogen.

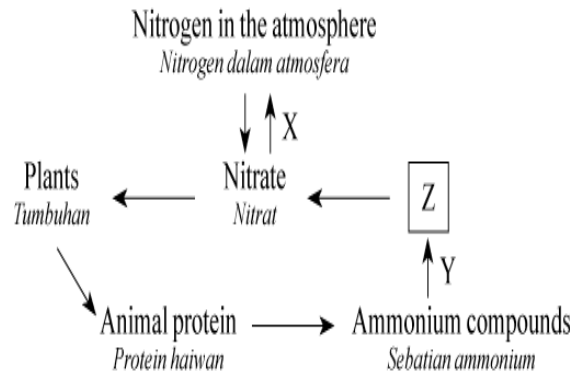


Diagram 2
Rajah 2

(a) (i) Name the process X and Y.
Namakan proses X dan Y.

X :
Y :

[2 marks]

(ii) Name the compound Z.
Namakan sebatian Z.

[1 mark]

- (iii) Name the microorganisms involved in process Y.
Namakan microorganisma yang terlibat dalam proses Y.

[1 mark]

5. Diagram 4 shows a longitudinal section of a human heart.
Rajah 4 menunjukkan keratan bujur jantung manusia.



Diagram 4
Rajah 4

- a (i) On Diagram 4, label the following parts :
Pada Rajah 4, labelkan bahagian-bahagian yang berikut :
- Left ventricle / *Ventrikel kiri*
 - Bicuspid valve / *Injap bikuspid*
 - Pulmonary artery / *Arteri pulmonary*
- (ii) Draw a series of arrows to show the flow of oxygenated blood into the heart and out of the heart.
Lukiskan satu siri anak panah untuk menunjukkan aliran darah beroksigen masuk dan keluar dari jantung.

UNDERSTANDING LEVEL

1. Diagram 3.1 shows a section through human alveolus .
Diagram 3.1 menunjukkan suatu bahagian alveolus manusia .

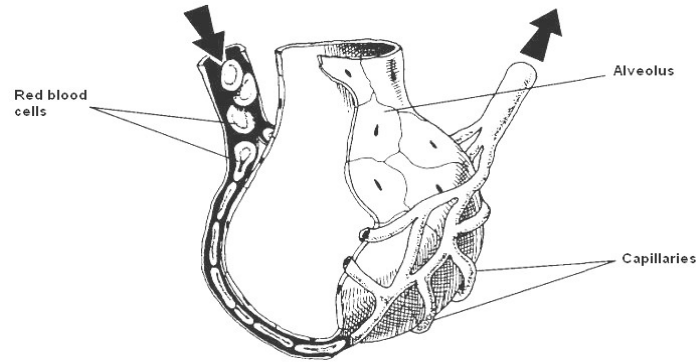


Diagram 3.1
Rajah 3.1

- (a) Based on the Diagram 3.1, explain **two** adaptations of the alveolus to increase its effectiveness in respiratory gaseous exchange.

*Berdasarkan pada Rajah 3.1, terangkan **dua** penyesuaian alveolus untuk meningkatkan kecekapannya dalam pertukaran gas respirasi.*

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[2 marks]

- (b) Diagram 3.2 shows the flow chart in the regulation of the carbon dioxide concentration in the body fluid.

Rajah 3.2 menunjukkan carta alir dalam pengawalaturan kepekatan karbon dioksida dalam bendalir badan.

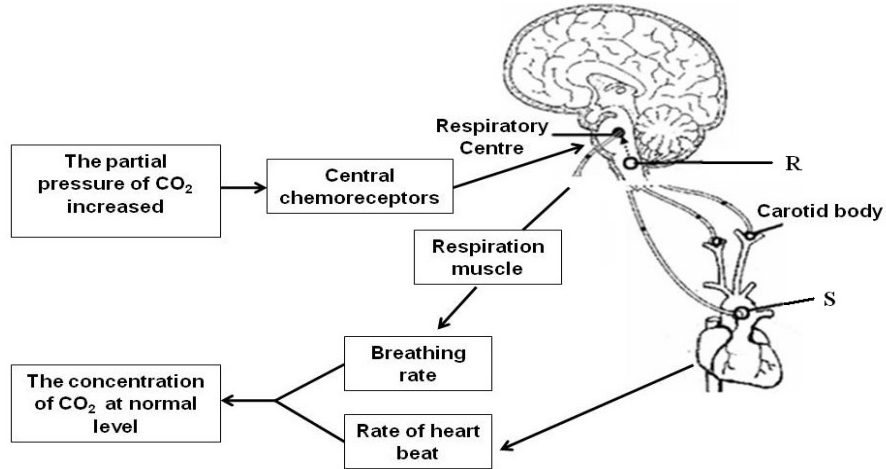


Diagram 3.2
Rajah 3.2

Name the structures R and S. Describe the function of structure below :
 Namakan struktur R dan S. Huraikan fungsi struktur tersebut :

- (i) R :
 Description:

 [2 marks]
- (ii) S :
 Description:

 [2 marks]

2. Diagram 4.1 shows a human digestive system.
 Rajah 4.1 menunjukkan sistem pencernaan manusia.

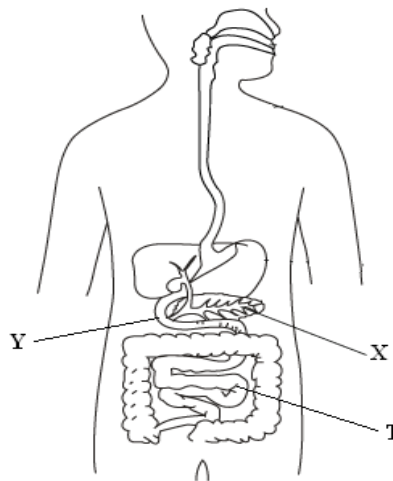


Diagram 4.1
Rajah 4.1

- (a) Explain what happen to a food with high protein content at Y if organ X is damaged.
Terangkan apa yang terjadi kepada pencernaan makanan yang tinggi kandungan protein di Y jika organ X rosak.

.....

[2 marks]

- (b) Diagram 4.2 shows the fine projection structure which can be observed from cross section of T .
Rajah 4.2 menunjukkan struktur unjuran halus yang dapat diperhatikan daripada keratan rentas .

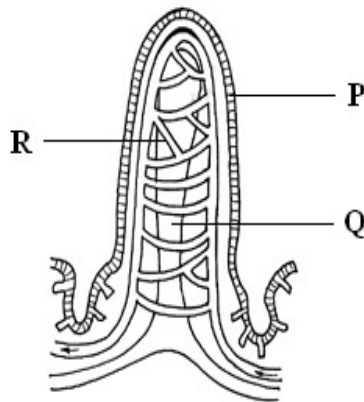


Diagram 4.2
Rajah 4.2

- (i) Explain how the structure in Diagram 4.2 is adapted to carry it's function .
Terangkan bagaimana struktur pada Rajah 4.2 disesuaikan untuk menjalankan fungsinya .

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[2 marks]

3. Diagram shows a human foetus in his mother's uterus.
Rajah menunjukkan fetus manusia di dalam uterus ibu.

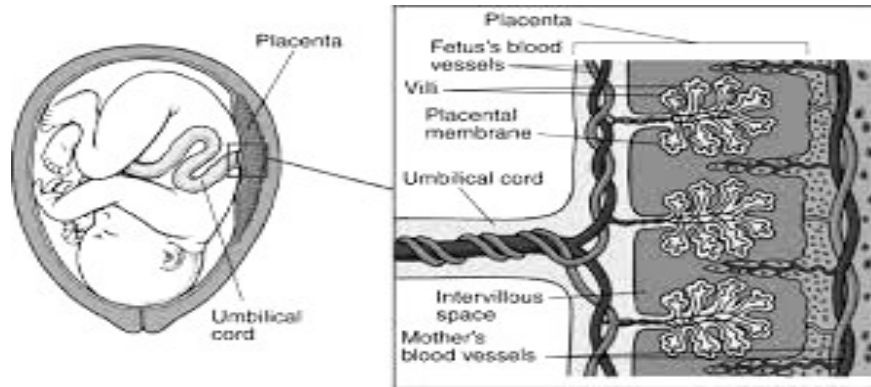


Diagram
Rajah

Explain why the foetus has a separate blood circulatory system from his mother.

.....

[2 marks]

4. Diagram 4.1 shows the release of gas X from *Elodea* sp. through photosynthesis.
Rajah 4.1 menunjukkan pembebasan gas X dari Elodea sp. melalui fotosintesis.

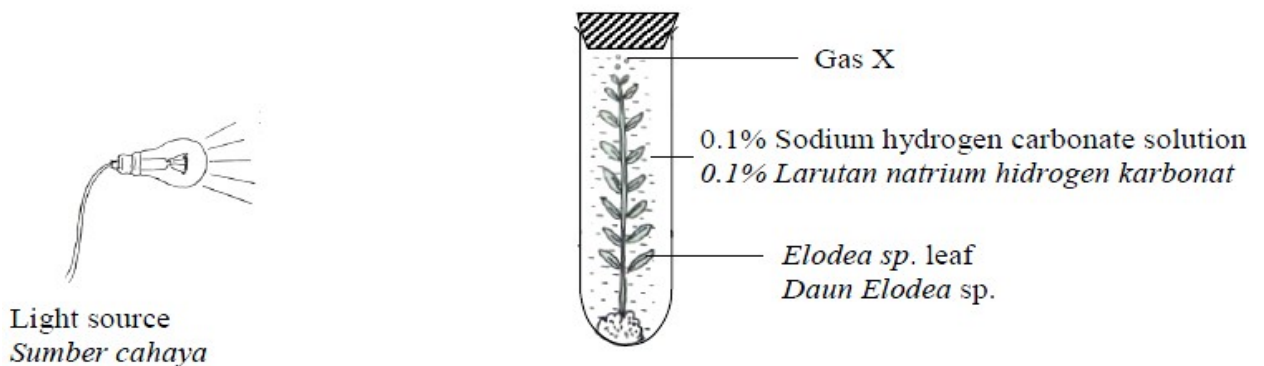


Diagram 4.1
Rajah 4.1

- (a) (i) Name gas X. *Namakan gas X.*

.....

[1 mark]

(b) Explain briefly how gas X in (a)(i) is produced.

Terangkan dengan ringkas bagaimana gas X di (a)(i) dihasilkan.

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[2 marks]

5. Diagram 2.1 shows the changing process in an abandoned mining pond.

Rajah 2.1 menunjukkan proses perubahan yang berlaku dalam sebuah kolam terbiar.

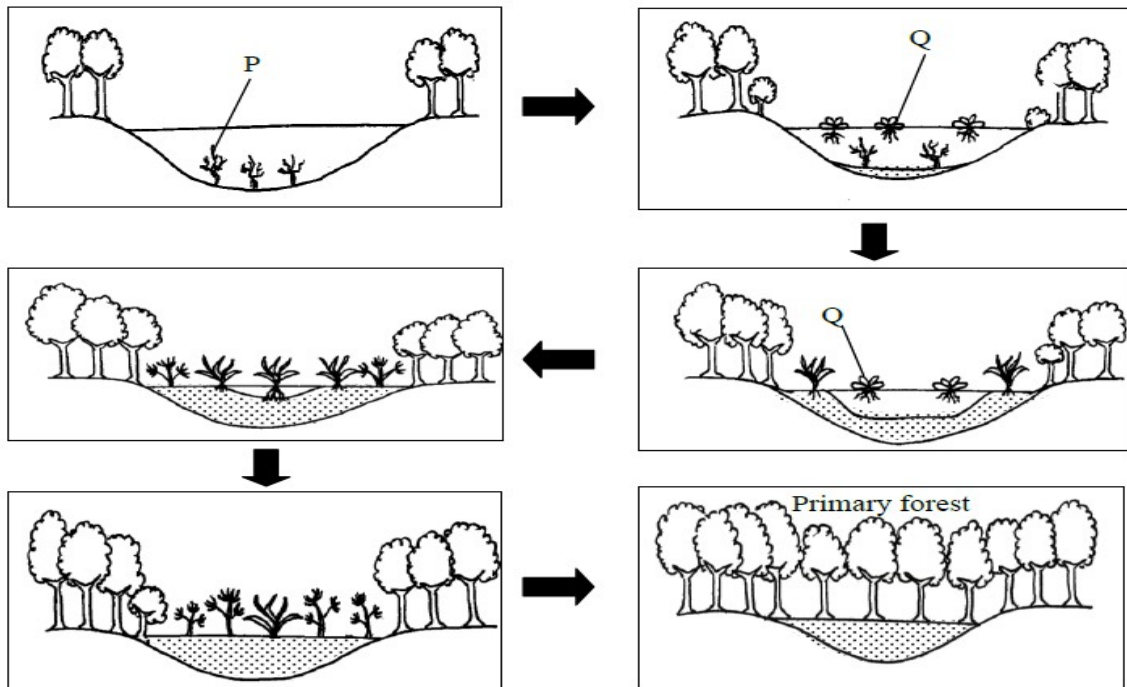


Diagram 2.1 / Rajah 2.1

(b) Q is a successor to P plants. Describe the role of Q as a successor plant.

Q adalah penyesar pada tumbuhan P. Terangkan bagaimana Q berperanan sebagai tumbuhan

penyesar.

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.....

.....

[3 marks]

APPLICATION LEVEL

- Diagram 2.2 and 2.3 show the condition of two plants which are added with fertilizer. The plant in Diagram 2.3 is added with excess fertilizer. Explain the condition of the plant in Diagram 2.3.

Rajah 2.2 dan 2.3 menunjukkan keadaa dua batang pokok yang disiram dengan baja. Pokok dalam Rajah 2.3 disiram dengan baja yang berlebihan. Terangkan keadaan pokok dalam Rajah 2.3.



Diagram 2.2



Diagram 2.3

.....

[3 marks]

- | |
|---|
| <p>A dog suddenly barks and chases you. Your heartbeat increases and your palms become sweaty. You feel so scared and run away.
 <i>Seekor anjing tiba-tiba menyalak dan mengejar anda. Degupan jantung anda meningkat dan tapak tangan anda berpeluh. Anda merasa amat takut dan terus melarikan diri.</i></p> |
|---|

Based on the above statement describe how endocrine system is involved in the ‘fight and flight’ situation.

Berdasarkan pernyataan di atas, huraikan bagaimana sistem endokrin terlibat dalam situasi ‘lawan dan lari’.

.....

.....[4 marks]

3. Diagram 3 shows an experiment to determine the energy values of a peanut and a dried prawn.

Rajah 3 menunjukkan satu eksperimen untuk menentukan nilai tenaga satu biji kacang tanah dan seekor udang kering

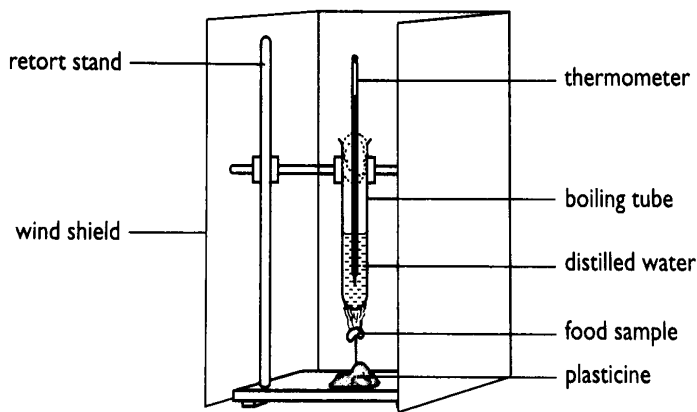


Diagram 3
Rajah 3

In this experiment, 20 cm³ of distilled water is used and 2.0 g of peanut and 1.8 g of dried prawn is burnt. The initial and final temperature of water is shown in Table 1 below.

Dalam eksperimen ini ,20 cm³ air suling digunakan dan 2.0 g kacang tanah dan 1.8 g udang kering dibakar. Suhu awal dan suhu akhir air ditunjukkan dalam Jadual 1 di bawah.

Food sample <i>Sampel makanan</i>	Mass <i>Jisim (g)</i>	Initial temperature of water <i>Suhu awal air (°C)</i>	Final temperature of water <i>Suhu akhir air (°C)</i>	Rise in temperature of the water <i>Kenaikan suhu air (°C)</i>
Peanut <i>Kacang tanah</i>	2.0	29	45	
Dried prawn <i>Udang kering</i>	1.8	30	34	

(b) Record the rise in temperature of the water in the spaces provided in Table 1.
Rekod kenaikan suhu air dalam ruang yang disediakan pada Jadual 1. [1 mark]

(c) The specific heat capacity of water is $4.2 \text{ Jg}^{-1} \text{ } ^\circ\text{C}^{-1}$. Use the following formula to calculate the energy values of the peanut and the dried prawn.
Muatan haba tentu air ialah $4.2 \text{ Jg}^{-1} \text{ } ^\circ\text{C}^{-1}$. Gunakan rumusan berikut untuk mengira nilai tenaga untuk kacang tanah dan udang kering

$$\text{Energy value} = \frac{(\text{mass of water} \times 4.2 \times \text{rise in temperature of water})}{\text{mass of food}} \text{ Jg}^{-1}$$

$$\text{Nilai tenaga} = \frac{(\text{jisim air} \times 4.2 \times \text{kenaikan suhu air})}{\text{jisim makanan}} \text{ Jg}^{-1}$$

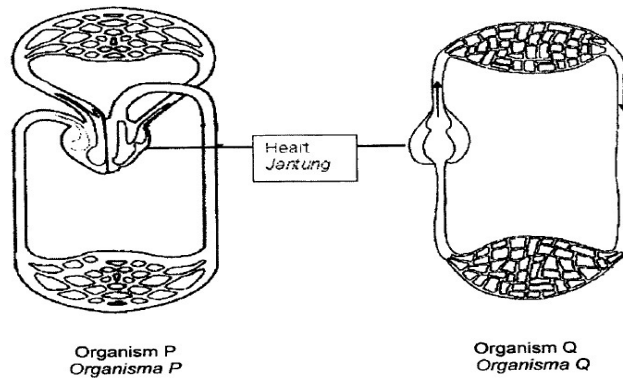
[4 marks]

4. A mango farmer picked ten baskets of immature mangoes for sale. Give one _____ suggestion to make all the mangoes ripen on the same time.
Seorang pekebun mangga telah memetik sepuluh bakul buah mangga untuk dijual. Berikan satu cadangan untuk membolehkan semua buah mangga tersebut masak serentak.

[1 mark]

ANALYSIS LEVEL

1. Diagram 4.1 shows the blood circulatory system in organism P and Q.
Rajah 4.1 menunjukkan sistem peredaran darah bagi organism P dan organism Q.



- (c) Explain one difference in the structure of the heart between organism P and organism.
Terangkan satu perbezaan antara struktur jantung organisma P dan organisma Q.

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[2 marks]

2. Diagram 5.1 shows the formation of two pairs of twins.
Rajah 5.1 menunjukkan pembentukan dua pasang anak kembar .

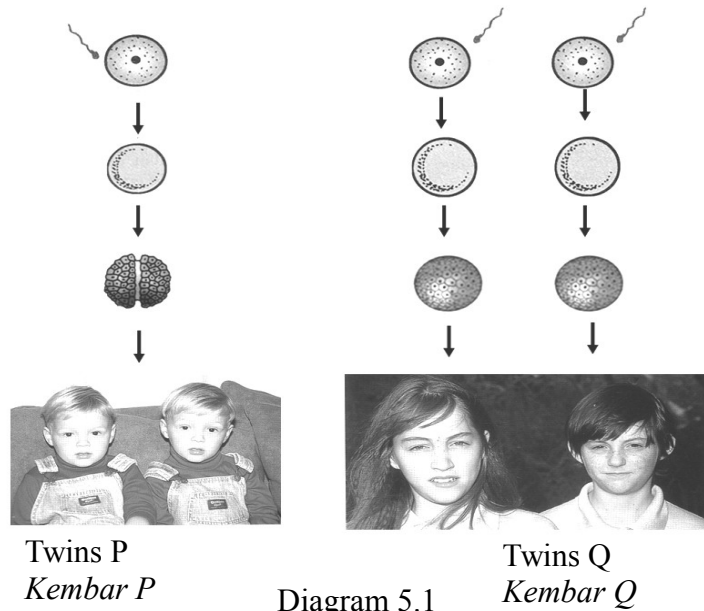


Diagram 5.1
Rajah 5.1

- (a) Based on Diagram 5.1, describe the differences in the formation of the two pairs of twins.
Berdasarkan Rajah 5.1, huraikan perbezaan dalam pembentukan kedua-dua pasang kembar itu.

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[3 marks]

3. Diagram 6 shows the alimentary canal of two organisms R and S.
Rajah 6 menunjukkan salur pencernaan bagi dua organisma R dan S.

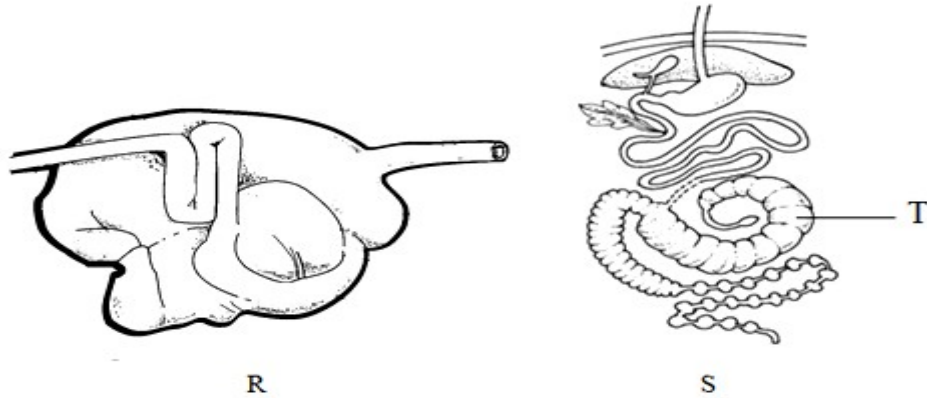


Diagram 6
Rajah 6

(ii) Explain one similarity and four differences between alimentary canal R and S.

Terangkan satu persamaan dan empat perbezaan antara salur pencernaan R dan S.

[10 marks]

4. (c) Diagram 7.3 shows two activities of movement in an earthworm and a grasshopper.
Rajah 7.3 menunjukkan dua aktiviti pergerakan bagi seekor cacing tanah dan belalang.

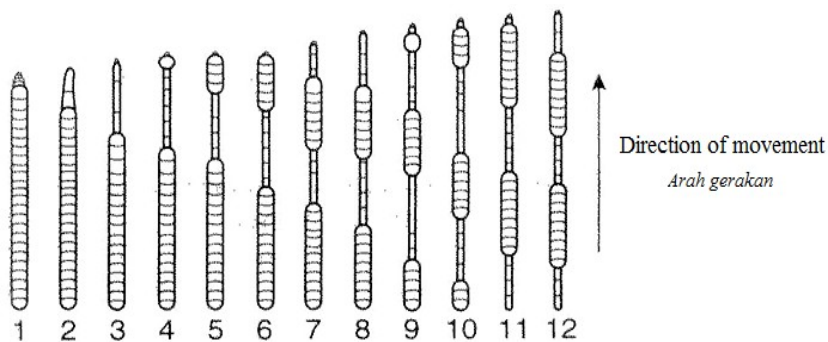


Diagram 7.3 (i)
Rajah 7.3(i)



Diagram 7.3 (ii)
Rajah 7.3(ii)

Explain one similarity and four differences between skeletal systems in both organisms.
Terangkan satu persamaan dan empat perbezaan antara sistem rangka bagi kedua-dua organisma.

[10 marks]

SYNTHESIS LEVEL

1. Farmers add chemical fertilisers and spray insecticides on their crops. Discuss the good and bad effects of both activities and their impact on agriculture and the environment.

Para petani menambahkan baja kimia dan menyembur racun serangga kepada tanaman. Bincangkan kesan baik dan buruk kedua-dua aktiviti tersebut terhadap pertanian dan persekitaran.

[10 marks]

2. Diagram 9.2 and 9.3 show a few examples of fresh food and processed food.
Rajah 9.2 dan 9.3 menunjukkan beberapa contoh makanan segar dan makanan diproses.



Diagram 9.2
Rajah 9.2



Diagram 9.3
Rajah 9.3

Discuss the good effects and bad effects of processed food in our daily life.

Bincangkan kesan-kesan baik dan buruk makanan diproses dalam kehidupan harian kita.

[10 marks]

TEACHER'S COPY

KNOWLEDGE LEVEL

1. Diagram 1 shows the structure of a cell as seen under an electron microscope.

Rajah 1 menunjukkan struktur satu sel yang diperhatikan di bawah mikroskop elektron.

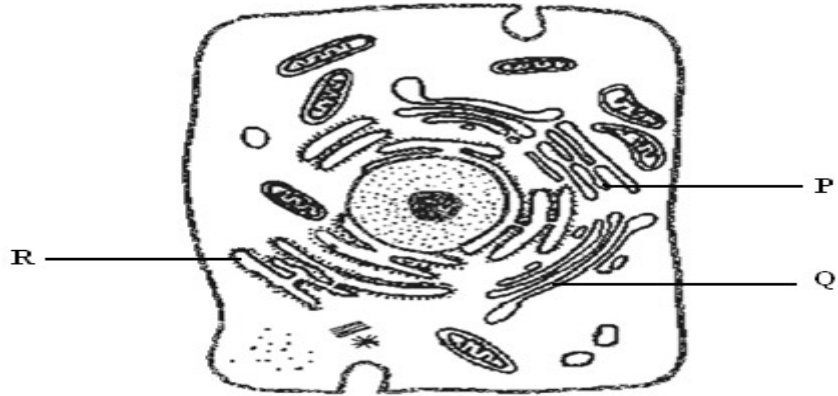


Diagram 1

- (a) (i) Name the type of the cell.
Namakan jenis sel tersebut.

Animal cell

[1 mark]

- (ii) State one reason for your answer in a (i)
Nyatakan satu sebab bagi jawapan yang dinyatakan dalam (a) (i).

The cell does not has cell wall // Presence of centrioles

[1 mark]

- b (i) Name the structures labeled P, Q and R.
Namakan struktur berlabel P, Q dan R.

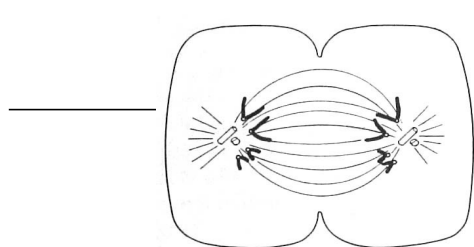
P : Smooth endoplasmic reticulum

S : Golgi apparatus

T : Rough endoplasmic reticulum

[3 marks]

2. Diagram 1 shows three different stages which take place during cell division.
Rajah 1 menunjukkan tiga peringkat berlainan yang berlaku semasa pembahagian sel.



K

L

M

N

DIAGRAM 1

*Rajah 1*a (i) Name the cell division shown in Diagram 1.*Namakan pembahagian sel yang ditunjukkan dalam Rajah 1.***Mitosis**

[1 mark]

(ii) Name the stages labelled K and N?*Namakan peringkat yang dilabelkan sebagai K dan N?*K : **Anaphase**N : **Telophase**

[2 marks]

3. Diagram 2(a) shows a plant cell. Diagram 2(b) shows the same plant cell that has been placed in solution X for 10 minutes.

Rajah 2(a) menunjukkan satu sel tumbuhan. Rajah 2(b) menunjukkan sel tumbuhan yang sama selepas diletakkan dalam larutan X selama 10 minit.

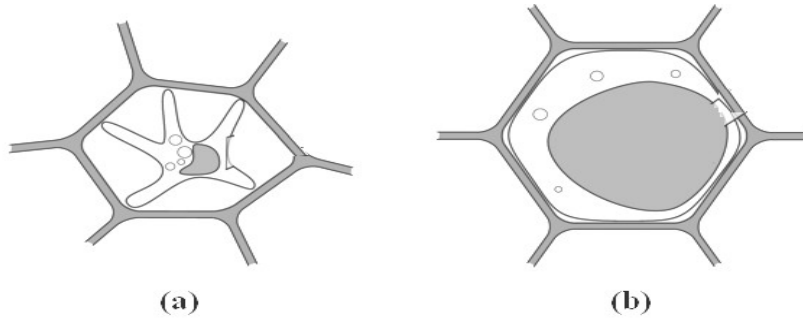


Diagram 2

Rajah 2

- (b) Name the process that caused the changes in (a).
Namakan proses yang menyebabkan perubahan di (a).

Osmosis

[1 mark]

4. Diagram 2 shows a nitrogen cycle.
Rajah 2 menunjukkan satu kitar nitrogen.

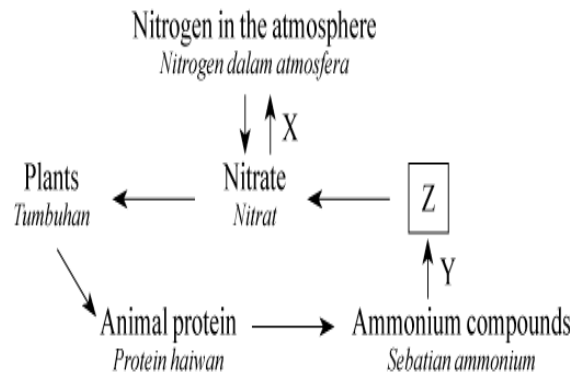


Diagram 2

Rajah 2

- (a) (i) Name the process X and Y.
Namakan proses X dan Y.

X : **Denitrification**

Y : **Nitrification**

[2 marks]

- (ii) Name the compound Z.
Namakan sebatian Z.

Nitrites

[1 mark]

- (iii) Name the microorganisms involved in process Y.
Namakan mikroorganisma yang terlibat dalam proses Y.

Denitrifying bacteria.

[1 mark]

5. Diagram 4 shows a longitudinal section of a human heart.
Rajah 4 menunjukkan keratan bujur jantung manusia.

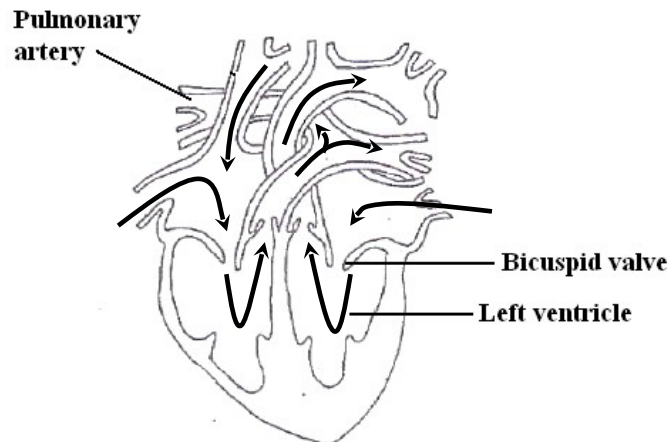


Diagram 4
Rajah 4

- a (i) On Diagram 4, label the following parts :
Pada Rajah 4, labelkan bahagian-bahagian yang berikut :
- Left ventricle / *Ventrikel kiri*
 - Bicuspid valve / *Injap bikuspid*
 - Pulmonary artery / *Arteri pulmonary*
- (ii) Draw a series of arrows to show the flow of oxygenated blood into the heart and out of the heart.
Lukiskan satu siri anak panah untuk menunjukkan aliran darah beroksigen masuk dan keluar dari jantung.

UNDERSTANDING LEVEL

1. Diagram 3.1 shows a section through human alveolus .
Diagram 3.1 menunjukkan suatu bahagian alveolus manusia .



Diagram 3.1

Rajah 3.1

- (a) Based on the Diagram 3.1, explain two adaptations of the alveolus to increase its effectiveness in respiratory gaseous exchange.

Berdasarkan pada Rajah 3.1, terangkan dua penyesuaian alveolus untuk meningkatkan kecekapannya dalam pertukaran gas respirasi.

P1 - The wall of the alveolus is thin /one-cell in thickness for easier / faster gas diffusion.

P2 - The surface is covered with blood capillaries for faster gas transportation.

[2 marks]

- (b) Diagram 3.2 shows the flow chart in the regulation of the carbon dioxide concentration in the body fluid.

Rajah 3.2 menunjukkan carta alir dalam pengawalaturan kepekatan karbon dioksida dalam bendalir badan.

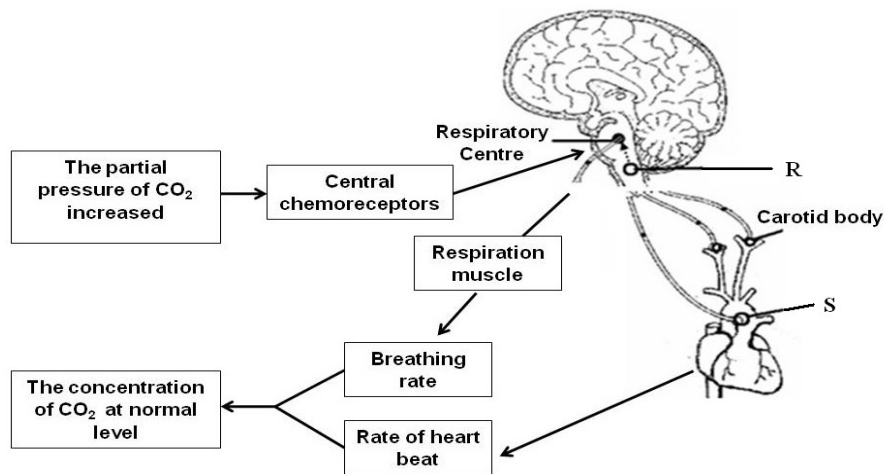


Diagram 3.2

Rajah 3.2

Name the structures R and S. Describe the function of structure below :

Namakan struktur R dan S. Huraikan fungsi struktur tersebut :

- (i) R: Central Chemoreceptor (in medulla oblongata)

Description: Detect the increase of carbon dioxide in blood through the formation of hydrogen ions/ blood pH. // Send the impulse to the respiratory centre in medulla oblongata.....

[2 marks]

(ii) S: Aortic bodies

Description: Together with carotid bodies acts as Peripheral chemoreceptors. // They could detect the changes of oxygen and carbon dioxide levels in the blood

[2 marks]

2. Diagram 4.1 shows a human digestive system.

Rajah 4.1 menunjukkan sistem pencernaan manusia.

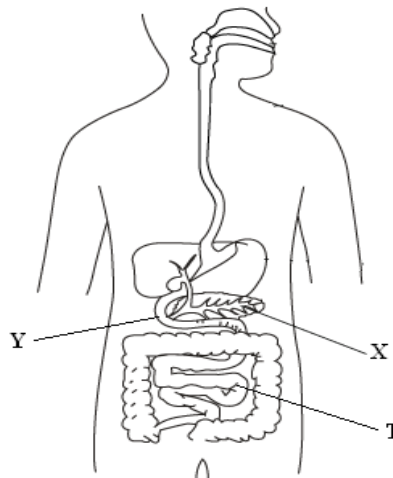


Diagram 4.1

Rajah 4.1

(a) Explain what happens to a food with high protein content at Y if organ X is damaged.

Terangkan apa yang terjadi kepada pencernaan makanan yang tinggi kandungan protein di Y jika organ X rosak.

F : Trypsin is not/ less being secreted / produced

P : Polypeptide / protein is not/ less digested

[2 marks]

(b) Diagram 4.2 shows the fine projection structure which can be observed from cross section of T .

Rajah 4.2 menunjukkan struktur unjuran halus yang dapat diperhatikan daripada keratan rentas .

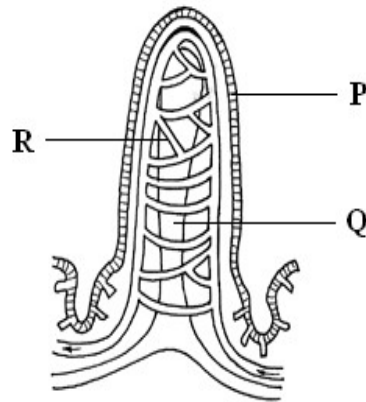


Diagram 4.2

Rajah 4.2

- (i) Explain how the structure in Diagram 4.2 is adapted to carry its function .
Terangkan bagaimana struktur pada Rajah 4.2 disesuaikan untuk menjalankan fungsinya .

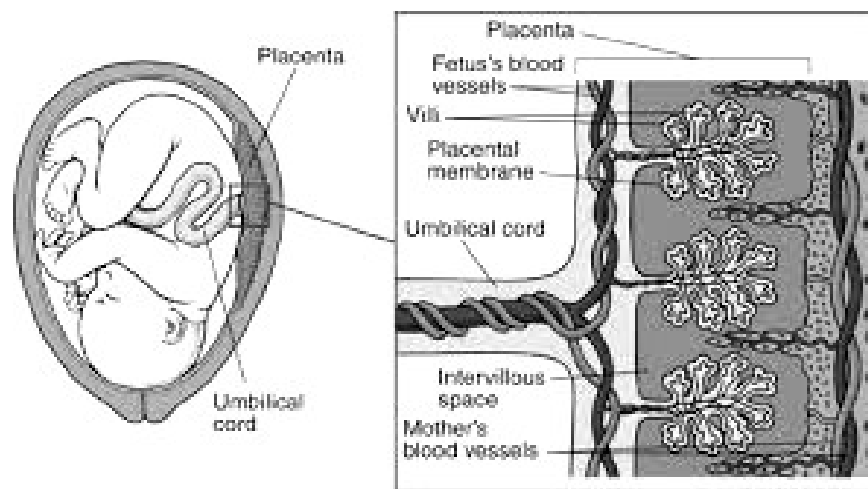
P1 – The epithelial cells lining the vilus is very thin to facilitate diffusion of digested food.

P2 – Many microvilli to increase the surface area for absorption

P3 – Has a network of blood capillaries to transport the digested food.

[2 marks]

3. Diagram shows a human foetus in his mother's uterus.
Rajah menunjukkan fetus manusia di dalam uterus ibu.



Diagram

Rajah

Explain why the foetus has a separate blood circulatory system from his mother.

E1 – To prevent certain harmful bacteria and toxins from entering the foetus.

E2 – To prevent the mixing of blood groups of the mother and the foetus which can cause the death of the foetus.

[2 marks]

4. Diagram 4.1 shows the release of gas X from *Elodea* sp. through photosynthesis.
Rajah 4.1 menunjukkan pembebasan gas X dari Elodea sp. melalui fotosintesis.

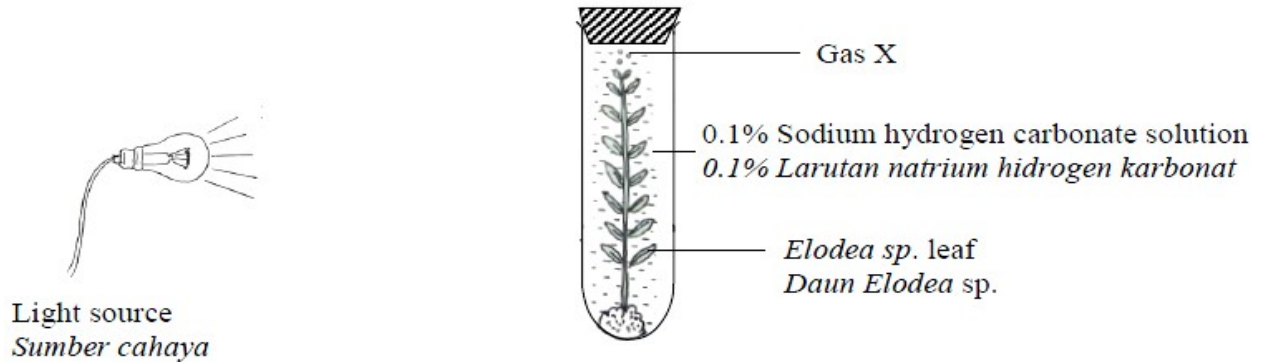


Diagram 4.1
Rajah 4.1

- (d) (i) Name gas X. *Namakan gas X.*
Oxygen

[1 mark]

- (e) Explain briefly how gas X in (a)(i) is produced.

Terangkan dengan ringkas bagaimana gas X di (a)(i) dihasilkan. .

The light absorbed by the chlorophyll is used split water molecules into hydrogen ions and hydroxyl ions.

The hydroxyl group combined to form water and gas X is produced.

[2 marks]

5. Diagram 2.1 shows the changing process in an abandoned mining pond.
Rajah 2.1 menunjukkan proses perubahan yang berlaku dalam sebuah kolam terbiar.

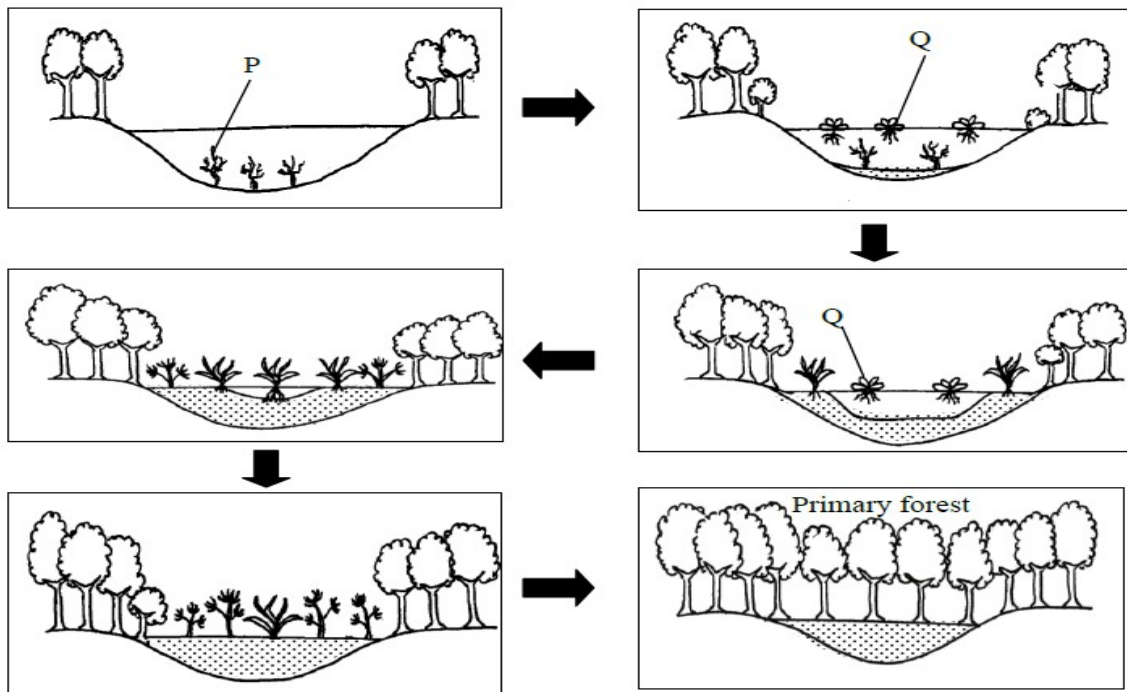


Diagram 2.1 / Rajah 2.1

- (b) Q is a successor to P plants. Describe the role of Q as a successor plant.
Q adalah penyesar pada tumbuhan P. Terangkan bagaimana Q berperanan sebagai tumbuhan penyesar.

When P die and decomposed, the condition is more suitable for Q.
Q reduce light intensity by preventing sunlight from reaching the P in the pond.
As a result, P die because they cannot photosynthesise.

[3 marks]

APPLICATION LEVEL

1. Diagram 2.2 and 2.3 show the condition of two plants which are added with fertilizer. The plant in Diagram 2.3 is added with excess fertilizer. Explain the condition of the plant in Diagram 2.3.

Rajah 2.2 dan 2.3 menunjukkan keadaan dua batang pokok yang disiram dengan baja. Pokok dalam Rajah 2.3 disiram dengan baja yang berlebihan. Terangkan keadaan pokok dalam Rajah 2.3.



Diagram 2.2



Diagram 2.3

Excess fertilizer dissolves in the soil water is hypertonic to the cell sap of plant roots.

Water diffuses from the cell sap into soil by osmosis.

The cells are plasmolysed and the plant wilts.

[3 marks]

2.

A dog suddenly barks and chases you. Your heartbeat increases and your palms become sweaty. You feel so scared and run away.

Seekor anjing tiba-tiba menyalak dan mengejar anda. Degupan jantung anda meningkat dan tapak tangan anda berpeluh. Anda merasa amat takut dan terus melarikan diri.

Based on the above statement describe how endocrine system is involved in the ‘fight and flight’ situation.

Berdasarkan pernyataan di atas, huraikan bagaimana sistem endokrin terlibat dalam situasi ‘lawan dan lari’.

F – adrenaline is secreted by adrenal gland

P1 – (adrenaline) cause the heartbeat / breathing rate increase

P2 – more oxygen and glucose are sent/ transported to the tissues

P3 – metabolic rate / cellular respiration increases

P4 - more energy is produced (to run away)

[4 marks]

3. Diagram 3 shows an experiment to determine the energy values of a peanut and a dried prawn.
Rajah 3 menunjukkan satu eksperimen untuk menentukan nilai tenaga satu biji kacang tanah dan seekor udang kering

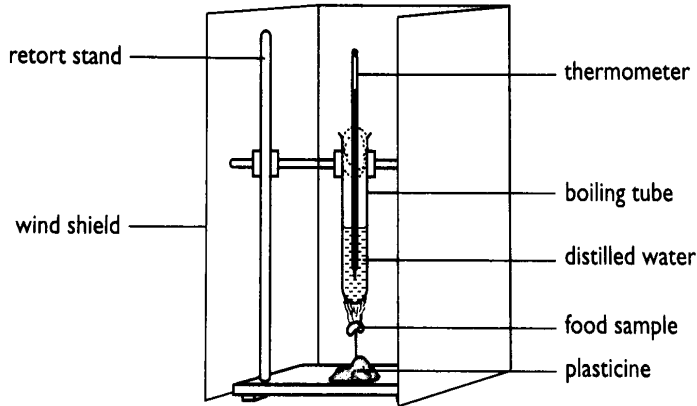


Diagram 3
Rajah 3

In this experiment, 20 cm³ of distilled water is used and 2.0 g of peanut and 1.8 g of dried prawn is burnt. The initial and final temperature of water is shown in Table 1 below.

Dalam eksperimen ini ,20 cm³ air suling digunakan dan 2.0 g kacang tanah dan 1.8 g udang kering dibakar. Suhu awal dan suhu akhir air ditunjukkan dalam Jadual 1 di bawah.

Food sample <i>Sampel makanan</i>	Mass <i>Jisim (g)</i>	Initial temperature of water <i>Suhu awal air (°C)</i>	Final temperature of water <i>Suhu akhir air (°C)</i>	Rise in temperature of the water <i>Kenaikan suhu air (°C)</i>
Peanut <i>Kacang tanah</i>	2.0	29	45	16
Dried prawn <i>Udang kering</i>	1.8	30	34	4

- (b) Record the rise in temperature of the water in the spaces provided in Table 1.
Rekod kenaikan suhu air dalam ruang yang disediakan pada Jadual 1.

[1 mark]

- (c) The specific heat capacity of water is $4.2 \text{ Jg}^{-1} \text{ } ^\circ\text{C}^{-1}$. Use the following formula to calculate the energy values of the peanut and the dried prawn.
Muatan haba tentu air ialah $4.2 \text{ Jg}^{-1} \text{ } ^\circ\text{C}^{-1}$. Gunakan rumusan berikut untuk mengira nilai tenaga untuk kacang tanah dan udang kering

$$\text{Energy value} = \frac{(\text{mass of water} \times 4.2 \times \text{rise in temperature of water})}{\text{mass of food}} \text{ Jg}^{-1}$$

$$\text{Nilai tenaga} = \frac{(\text{jisim air} \times 4.2 \times \text{kenaikan suhu air})}{\text{jisim makanan}} \text{ Jg}^{-1}$$

$$\begin{aligned} \text{Energy value of the peanut} &= \frac{20 \times 4.2 \times 16}{2.0} \text{ Jg}^{-1} \\ &= 672.0 \text{ Jg}^{-1} \end{aligned}$$

$$\begin{aligned} \text{Energy value of the dried prawn} &= \frac{20 \times 4.2 \times 4}{1.8} \text{ Jg}^{-1} \\ &= 186.7 \text{ Jg}^{-1} \end{aligned}$$

[4 marks]

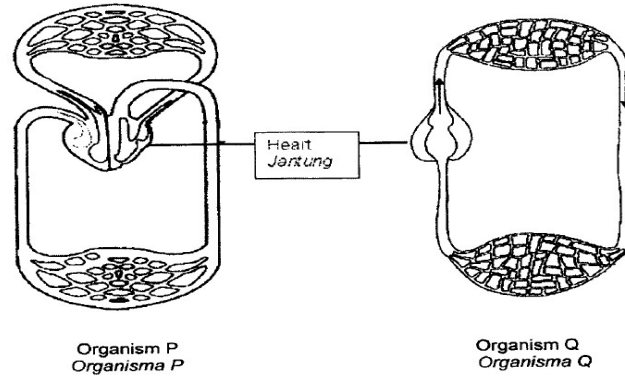
4. A mango farmer picked ten baskets of immature mangoes for sale. Give one suggestion to make all the mangoes ripen on the same time.
Seorang pekebun mangga telah memetik sepuluh bakul buah mangga untuk dijual. Berikan satu cadangan untuk membolehkan semua buah mangga tersebut masak serentak.

The farmer can use ethylene.

[1 mark]

ANALYSIS LEVEL

1. Diagram 4.1 shows the blood circulatory system in organism P and Q.
Rajah 4.1 menunjukkan sistem peredaran darah bagi organism P dan organism Q.



- (f) Explain one difference in the structure of the heart between organism P and organism.
Terangkan satu perbezaan antara struktur jantung organisma P dan organisma Q.

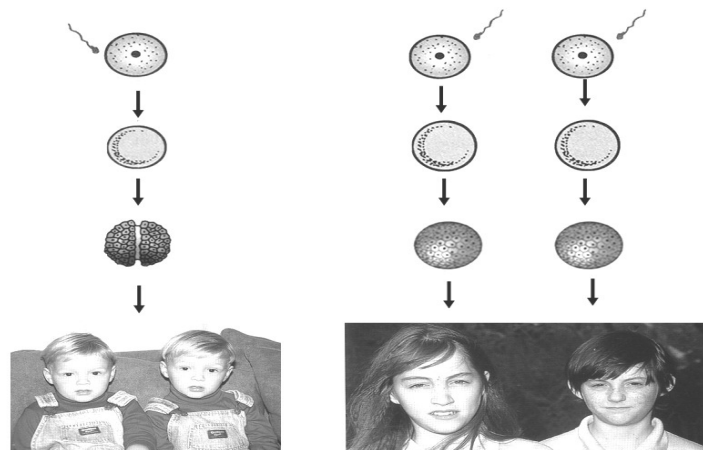
F : heart of organism P has 4 chamber but organism Q has two chamber

P1: organism P has right atrium, left atrium, right ventricle and left ventricle but organism Q has ventricle and an atrium // organism P has two atriums and two ventricles but organism Q has one ventricle and one atrium

P2: in organism P, the heart receives both oxygenated blood and deoxygenated blood while in organism Q, the heart only receives deoxygenated blood.

F + Any P
 [2 marks]

2. Diagram 5.1 shows the formation of two pairs of twins.
Rajah 5.1 menunjukkan pembentukan dua pasang anak kembar .



Twins P
 Kembar P

Twins Q
 Kembar Q

Diagram 5.1
 Rajah 5.1

- (a) Based on Diagram 5.1, describe the differences in the formation of the two pairs of twins.
Berdasarkan Rajah 5.1, huraikan perbezaan dalam pembentukan kedua-dua pasang kembar itu.

E1 - Twins P are formed from one zygote
E2- produced from the fertilization of one ovum and one sperm
E3 - splits into two separate embryos
E4 - grow into two separate individuals compare to twins Q //

Any 3

E1 - Twins Q are formed from two zygotes
E2- produced from the fertilization of two ova and two sperms
E3- forming two separate embryos
E4- grow into two different individuals compare to twins P.

Any 3
[3 marks]

3. Diagram 6 shows the alimentary canal of two organisms R and S.
Rajah 6 menunjukkan salur pencernaan bagi dua organisma R dan S.

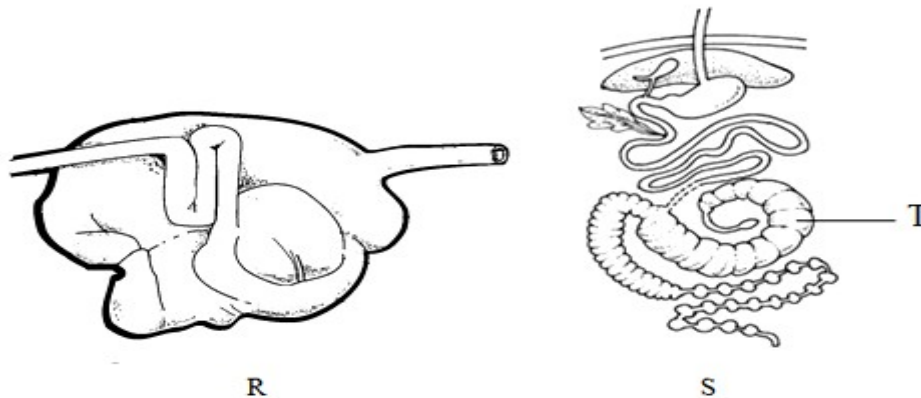


Diagram 6
Rajah 6

- (ii) Explain one similarity and four differences between alimentary canal R and S.
Terangkan satu persamaan dan empat perbezaan antara salur pencernaan R dan S. [10 marks]

Similarity :

F1 : The alimentary canals of both R and S have bacteria / protozoa to hydrolyse cellulose

E1 : Both R and S do not produce cellulase to digest cellulose in their food

Differences :

F2 : R has 4 stomach chambers but S has one stomach chamber

E2 : The stomach of S is not involved in cellulose digestion

F3 : The size of caecum for R is small but S has a large caecum

E3 : Caecum for S is involved cellulose digestion

F4 : The bacteria and protozoa in R are found in the rumen and reticulum while in S they are found in the caecum

E4 : to produce enzyme cellulase

F5 : Food passes only once in R but twice in S // Regurgitation take place in R but does not take place in S

E5 : R – to increase efficiency of cellulose action

S – to complete food absorption

4. (c) Diagram 7.3 shows two activities of movement in an earthworm and a grasshopper.
Rajah 7.3 menunjukkan dua aktiviti pergerakan bagi seekor cacing tanah dan belalang.

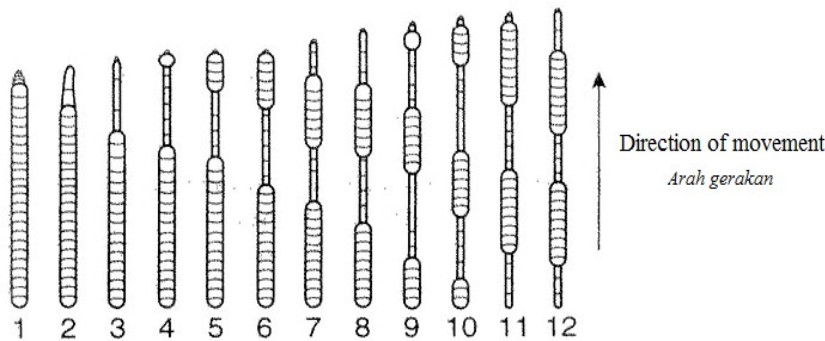


Diagram 7.3 (i)
Rajah 7.3(i)



Diagram 7.3 (ii)
Rajah 7.3(ii)

Explain one similarity and four differences between skeletal systems in both organisms.
Terangkan satu persamaan dan empat perbezaan antara sistem rangka bagi kedua-dua organisma.

[10 marks]

Similarity:

F1 : Both organism has antagonistic muscles

E1 : to allow coordinate movements of the body

Differences :

F2 : Earthworm has hydrostatic skeleton but grasshopper has exoskeleton

E2 : Earthworm – the force of contraction is applied to a fluid-filled cavity (coelom)//

Grasshopper – muscles attached to the interior surface of exoskeleton

F3 : Earthworm has longitudinal and muscular muscle but grasshopper has flexor and extensor muscles

E3 : for muscle contraction and relaxation

F4 : Earthworm muscle produce peristaltic waves along the body but for grasshopper this will cause bending and straightening of the legs

E4 : in order to produce locomotion

F5 : Earthworm has bristles (chaetae) but grasshopper has a pair of long and strong hind legs.

E5 : Chaetae is used to anchor the ground for earthworm but hind legs are adapted for hopping for grasshopper.

SYNTHESIS LEVEL

1. Farmers add chemical fertilisers and spray insecticides on their crops. Discuss the good and bad effects of both activities and their impact on agriculture and the environment.
Para petani menambahkan baja kimia dan menyembur racun serangga kepada tanaman. Bincangkan kesan baik dan buruk kedua-dua aktiviti tersebut terhadap pertanian dan persekitaran.

[10 marks]

Add chemical fertilisers***Good Effects*****G1 : Supplying required minerals/ions/nitrates/ammonia****G2 : Increase yield of crop****Any 1*****Bad Effects*****B1 : Excess fertilizers may be washed away****B2 : causing enrichment of water****B3 : Results in rapid growth of algae / algae bloom****B4 : Increased in BOD of water // decrease of oxygen content in river****B5 : Causes death of fish/aquatic animals in the river****Any 4****Spray chemical insecticides*****Good Effects*****G3 : An effective way to kill/destroy/ insects /weeds****G4 : Population of insects / weeds reduce****Any 1*****Bad Effects*****B6 : Hazardous to farmers if inhaled****B7 : Contaminate the underground water / rivers****B8 : Causes the death of aquatic animals****B9 : In the long term, the insects / weeds may develops into mutant strain which is resistance to the chemicals****B10 : Chemical insecticide no longer effective for the pest/weeds control****Any 4**

2. Diagram 9.2 and 9.3 show a few examples of fresh food and processed food.
Rajah 9.2 dan 9.3 menunjukkan beberapa contoh makanan segar dan makanan diproses.



Diagram 9.2
Rajah 9.2



Diagram 9.3
Rajah 9.3

Discuss the good effects and bad effects of processed food in our daily life.
Bincangkan kesan-kesan baik dan buruk makanan diproses dalam kehidupan harian kita.
 [10 marks]

Good Effect : By producing processed food

- G1 : Food can be preserved / kept longer.
- G2 : to prevent food poisoning / wasting of food.
- G3 : Crops can be planted / livestock / poultry can be reared in big scale.
- G4 : to prevent food shortage.
- G5 : (food are packaged) to increase the commercial value / easier to be transported.
- G6 : more types / varieties of food can be produced.

Bad Effect : By regular consuming of processed food

- B1 : Loss a lot of nutrition value (under high temperature during the process).
- B2 : (Contain) preservative / colouring / dye / flavour which is carcinogenic.
- B3 : lead to mutation / cancer / health problem / suitable example.
- B4 : Contain excessive salt / sugar.
- B5 : lead to high blood pressure / diabetes / obesity.

Any 10