

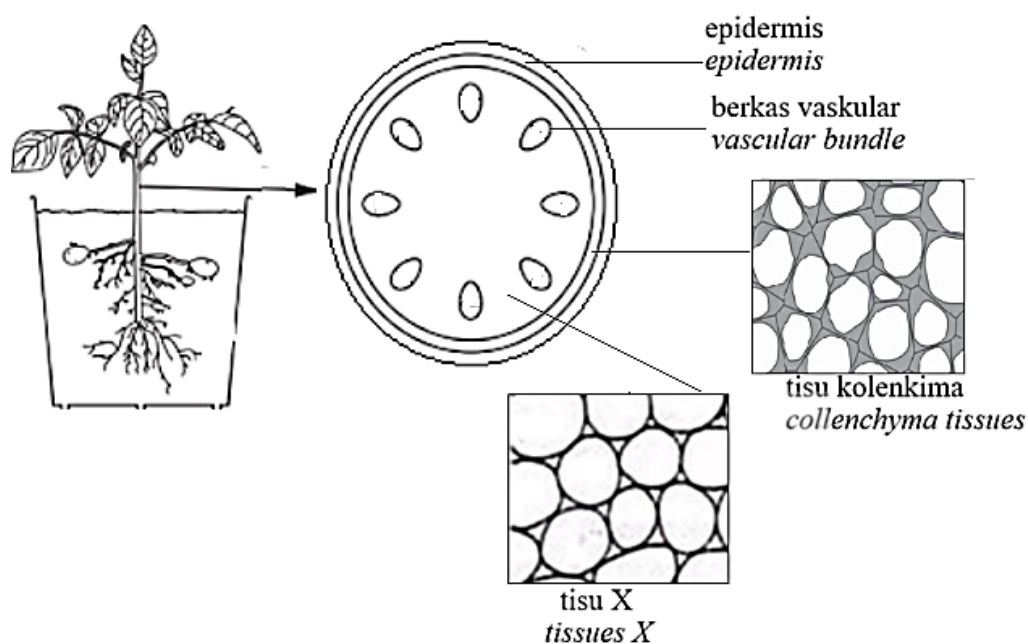
Bahagian A

[60 markah]

Jawab **semua** soalan.

1. Rajah 1.1 menunjukkan keratan rentas batang tumbuhan eudikot yang terdiri daripada tisu-tisu kekal dan tisu meristem.

Diagram 1.1 shows a cross section of a eudicot plant stem which consist of permanent tissues and meristem tissues.



Rajah 1.1
Diagram 1.1

- (a) Epidermis, tisu X dan tisu kolenkima merupakan contoh tisu kekal.
Epidermis, tissue X and collenchyma tissues are the examples of permanent tissues.

Nyatakan maksud tisu kekal.
State the meaning of permanent tissues.

.....

[1 markah]

[1 mark]

- (b) Berdasarkan rajah 1.1,
Based on Diagram 1.1,

- (i) Nyatakan nama tisu X.
State the name of tissue X.

.....

[1 markah]

[1 mark]

- (ii) Tisu kolenkima terdiri daripada sel-sel yang hidup dan menjadi fleksibel apabila matang.
Nyatakan satu ciri dinding sel kolenkima yang membolehkan ia menjadi fleksibel.
Collenchyma tissues consist of living cells and will become flexible when matured.
State one characteristic of the collenchyma cell wall that allows it to be flexible.

.....

[1 markah]

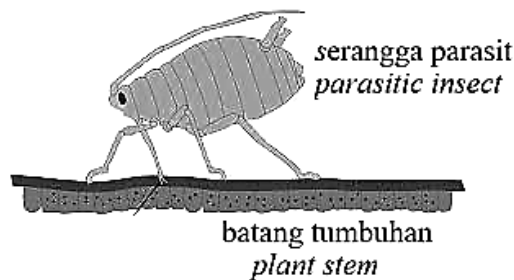
[1 mark]

- (c) Pada Rajah 1.1, lukis dan labelkan kedudukan tisu meristem dalam berkas vaskular.
In Diagram 1.1, draw and label the position of the meristem tissue in the vascular bundle.

[2 markah]

[2 marks]

- (d) Rajah 1.2 menunjukkan satu serangga parasit yang menyerang tisu floem pada batang tumbuhan.
Diagram 1.2 shows a parasitic insect that attacks the phloem tissue of a plant stem.



Rajah 1.2

Diagram 1.2

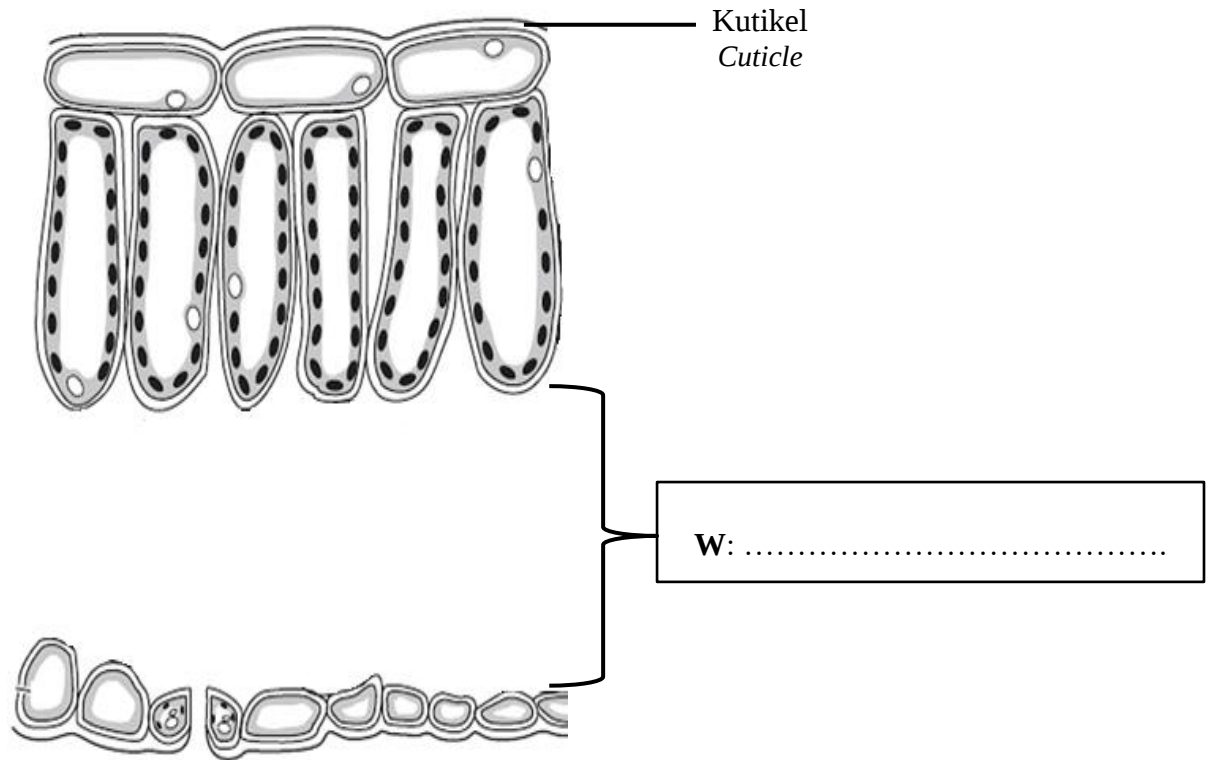
Nyatakan kesan serangan serangga ini ke atas pertumbuhan tumbuhan tersebut.
State the effect of this insect attack on the growth of the plant.

.....

[1 markah]

[1 mark]

2. Rajah 2 menunjukkan sebahagian daripada keratan rentas daun.
Diagram 2 shows a part of the cross-section of a leaf.



Rajah 2
 Diagram 2

- (a) Lengkapkan Rajah 2 dengan melukis dan melabel bahagian **W**.
*Complete Diagram 2 by drawing and labelling part **W**.*

[2 markah]
 [2 marks]

- (b) Terangkan **satu** ciri kutikel untuk menjalankan fungsinya dengan cekap.
*Explain **one** characteristic of the cuticle to carry out its function efficiently.*

Ciri :
 Characteristic

Penerangan :
 Explanation

[2 markah]
 [2 marks]

- (c) Sekumpulan murid menjalankan suatu eksperimen untuk mengkaji taburan stoma pada sampel daun Pudina. Jadual 1 menunjukkan keputusan eksperimen tersebut. *A group of students carry out an experiment to investigate the distribution of stomata on the Mint leaf samples. Table 1 shows the results of the experiment.*

Sampel daun <i>Leaf sample</i>	Anggaran kehilangan jisim (%) <i>Estimated mass loss (%)</i>
Sampel A – Epidermis atas disapu dengan gris <i>Sample A – Upper epidermis is applied with grease</i>	38
Sampel B – Epidermis bawah disapu dengan gris <i>Sample B – Lower epidermis is applied with grease</i>	9

Jadual 1
Table 1

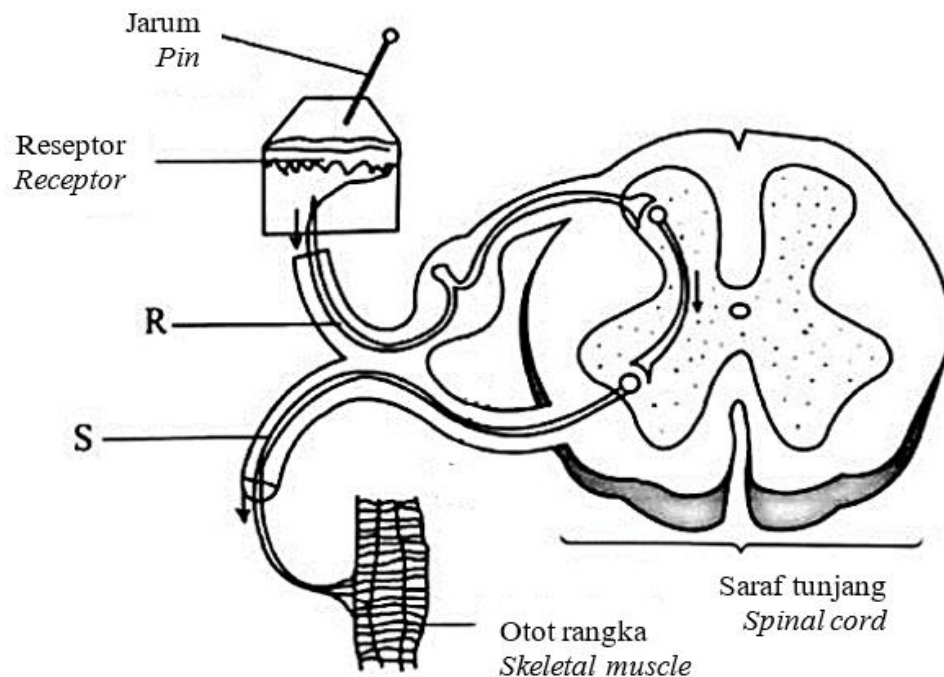
- (i) Cadangkan **satu** bahan lain yang boleh digunakan untuk menggantikan gris. *Suggest **one** other substance that can be used to replace grease.*

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

- (ii) Nyatakan kelebihan bahan yang dicadangkan di (c)(i). *State the advantage of the substance suggested in (c)(i).*

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

3. Rajah 3.1 menunjukkan arka refleks pada manusia.
Diagram 3.1 shows a reflex arc in humans.



Rajah 3.1
Diagram 3.1

- (a) (i) Padankan R dan S kepada sel saraf yang **betul**.
Match R and S to its **correct** nerve cell.

R	•
S	•

•	Neuron motor
•	Motor neurone
•	Neuron geganti
•	Relay neurone
•	Neuron deria
•	Sensory neurone

[2 markah]
[2 marks]

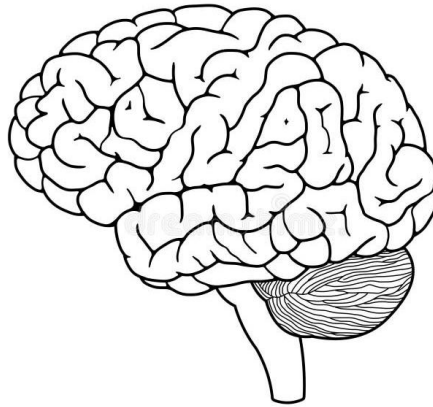
- (ii) Berdasarkan Rajah 3.1, nyatakan **satu** fungsi neuron geganti.
Based on Diagram 3.1, state **one** function of relay neurone.

.....

.....

[1 markah]
[1 mark]

- (b) (i) Rajah 3.2 menunjukkan struktur anatomi otak manusia.
Diagram 3.2 shows the anatomical structure of a human brain.



Rajah 3.2
Diagram 3.2

Pada rajah 3.2, labelkan **X** untuk bahagian otak yang mengawal kedipan mata.
*In diagram 3.2, label **X** for the part of the brain that controls eye blinking.*

[1 markah]
[1 mark]

- (ii) Nyatakan **satu** kebaikan kedipan mata terhadap manusia.
*State **one** benefit of eyes blinking to the human.*

.....
.....

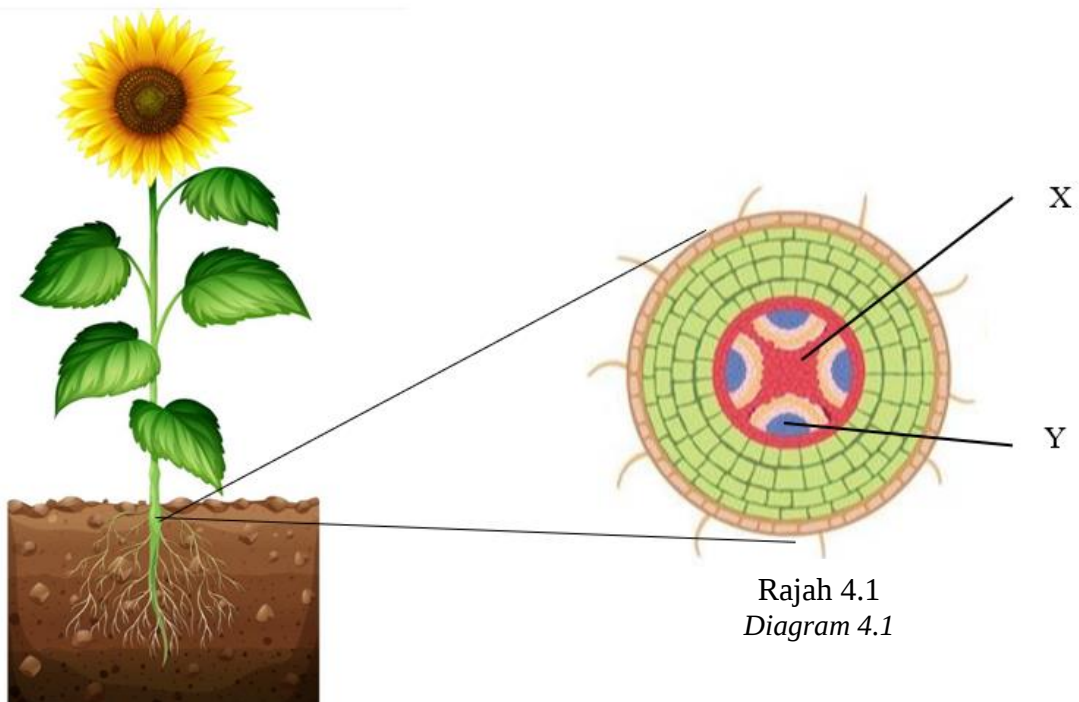
[1 markah]
[1 mark]

- (c) Terangkan perbezaan di antara gerak balas yang melibatkan pertuturan dan kadar degupan jantung.
Explain the difference between responses involving speech and heartbeat rate.

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

[2 markah]
[2 marks]

4. Rajah 4.1 menunjukkan keratan rentas akar tumbuhan P.
Diagram 4.1 shows a cross-section of the roots of P.



Tumbuhan P
Plant P

Rajah 4.1
Diagram 4.1

- (a) (i) Berdasarkan Rajah 4.1, namakan tisu X dan tisu Y?
Based on Diagram 4.1, name tissue X and tissue Y?

X :

Y :

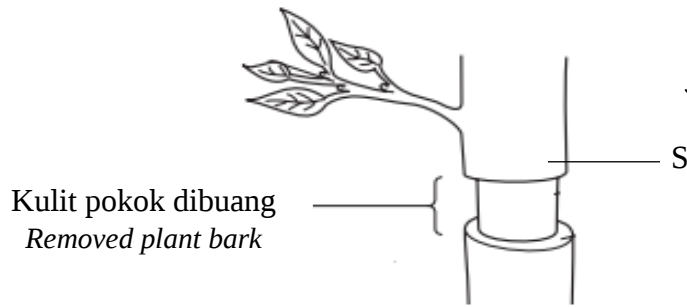
[2 markah]
 [2 marks]

- (ii) Banding bezakan antara tisu X dan tisu Y?
Compare and contrast between tissue X and tissue Y?

.....

[2 markah]
 [2 marks]

- (b) Rajah 4.2 menunjukkan bahagian batang pokok yang telah dibuang kulitnya.
Diagram 4.2 shows part of a stem of the tree where the bark has been removed.



Rajah 4.2
 Diagram 4.2

- (i) Selepas 1 bulan didapati bahagian S membengkak. Terangkan mengapa ini berlaku.
After 1 month it was found that the S part was swollen. Explain why this is happened.

.....

[2 markah]

[2 marks]

- (ii) Nyatakan fungsi tisu yang terlibat dalam rajah 4.2 di atas.
State the function of the tissues involved in figure 4.2 above.

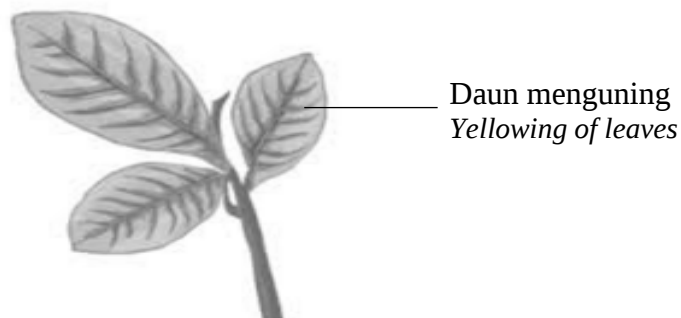
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[1 markah]

[1 mark]

5. Rajah 5.1 menunjukkan daun sejenis tumbuhan yang mengalami klorosis akibat kekurangan beberapa jenis nutrien.

Diagram 5.1 shows the leaves of a plant that undergo chlorosis due to deficiency of some nutrients.



Rajah 5.1
 Diagram 5.1

- (a) (i) Berikan dua jenis nutrien yang menyebabkan klorosis pada tumbuhan jika tidak dibekalkan kepada tumbuhan dalam kuantiti yang mencukupi.

Give two types of nutrients that cause chlorosis in plants if they were not supplied to plants in sufficient quantities.

.....

[2 markah]

[2 marks]

- (ii) Nutrien yang diperlukan oleh tumbuhan boleh dikelaskan kepada makronutrien dan mikronutrien. Nyatakan maksud makronutrien.

Nutrients needed by plants can be classified into macronutrients and micronutrients. State the meaning of macronutrients.

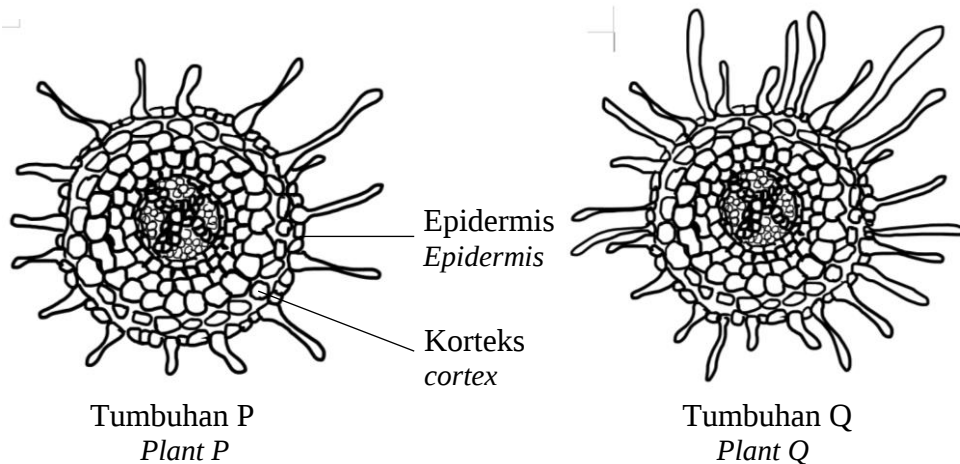
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[1 markah]

[1 mark]

- (b) Rajah 5.2 menunjukkan struktur di dalam akar tumbuhan P dan tumbuhan Q.

Diagram 5.2 shows the internal structure in the roots of plant P and plant Q.



Rajah 5.2
 Diagram 5.2

- (i) Berdasarkan rajah di atas, tumbuhan yang mana boleh menyerap air dan garam mineral dengan lebih berkesan? Terangkan.

Based on the diagram above, which plant can absorb water and mineral salt more effectively? Explain.

Tumbuhan :

Plant

[1 markah]

[1 mark]

Penerangan:

Explanation

.....

[2 markah]

[2 marks]

- (ii) Banding bezakan antara sel epidermis dengan sel yang membentuk korteks di dalam akar tumbuhan P tersebut.
Compare and contrast between epidermal cells with the cells that form cortex in the root of plant P.

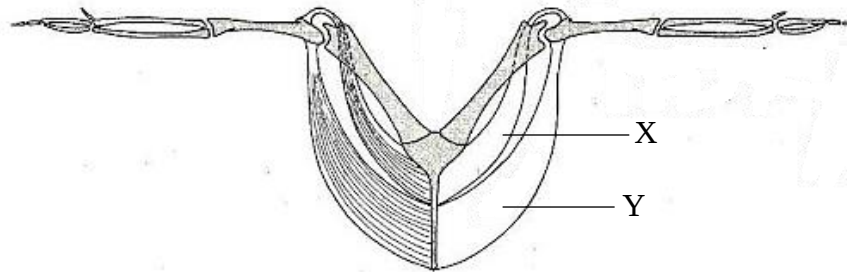
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.....

[2 markah]
 [2 marks]

6. Rajah 6.1 menunjukkan susunan rangka dan otot penerbangan pada seekor burung.
Diagram 6.1 shows the arrangement of skeleton and flight muscles in a bird.



Rajah 6.1
 Diagram 6.1

- (a) Nyatakan nama otot X dan otot Y.
State the name of muscle X and muscle Y.

X :

Y :

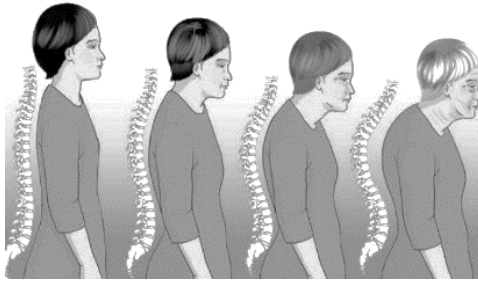
[2 markah]
 [2 marks]

- (b) Apakah ciri tulang burung yang membolehkannya terbang di udara?
What is the characteristic of the bird's bone which facilitates it to fly in the air?

.....

[1 markah]
 [1 mark]

- (c) Rajah 6.2(a) dan Rajah 6.2(b) menunjukkan penyakit yang boleh menjejaskan fungsi otot rangka.
Diagram 6.2(a) and Diagram 6.2(b) show diseases that can affect skeletal muscle function.



Rajah 6.2(a)
Diagram 6.2(a)



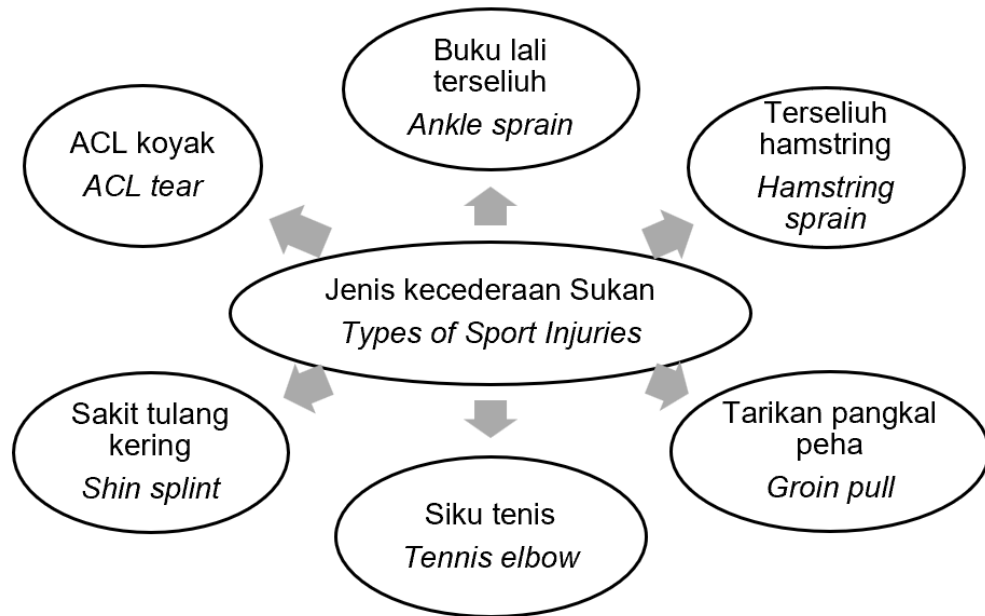
Rajah 6.2(b)
Diagram 6.2(b)

Bezakan penyakit dalam Rajah 6.2(a) dan Rajah 6.2(b)
Differentiate the disease in Diagram 6.2(a) and Diagram 6.2(b).

Rajah 6.2 (a) <i>Diagram 6.2 (a)</i>	Rajah 6.2 (b) <i>Diagram 6.2 (b)</i>

[2 markah]
 [2 marks]

- (d) Rajah 6.3 menunjukkan beberapa jenis kecederaan dalam sukan yang kerap berlaku dalam kalangan atlet dan mereka yang terlibat dalam senaman cergas. *Diagram 6.3 shows several injuries in sport that frequently occur among athletes and who engage in vigorous exercise.*



Rajah 6.3
Diagram 6.3

Terangkan langkah berjaga-jaga yang perlu diambil untuk mengelakkan kecederaan yang dinyatakan pada Rajah 6.3.

Explain the precautions that should be taken to prevent injuries stated in Diagram 6.3.

.....

.....

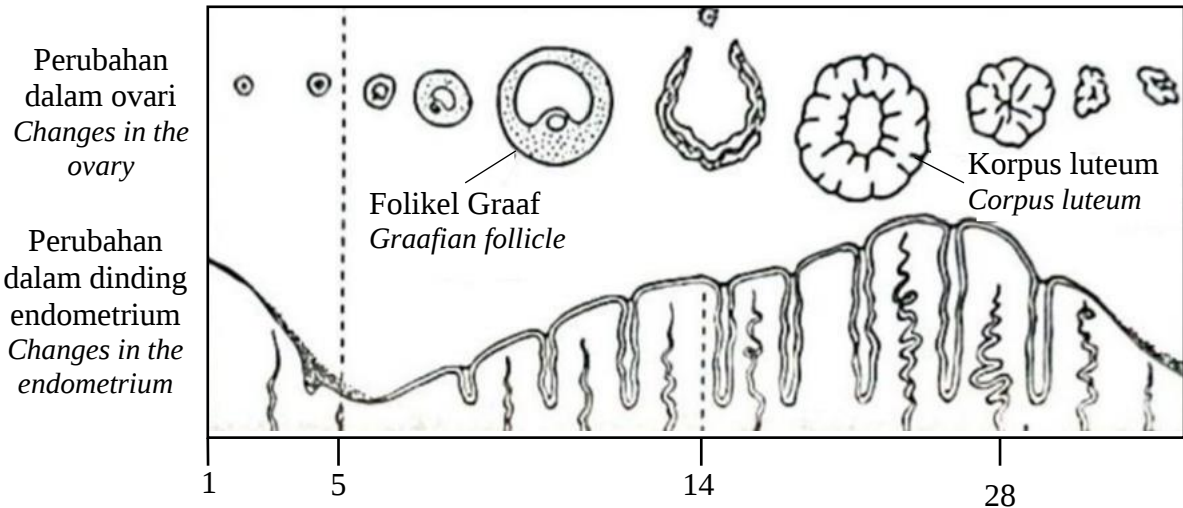
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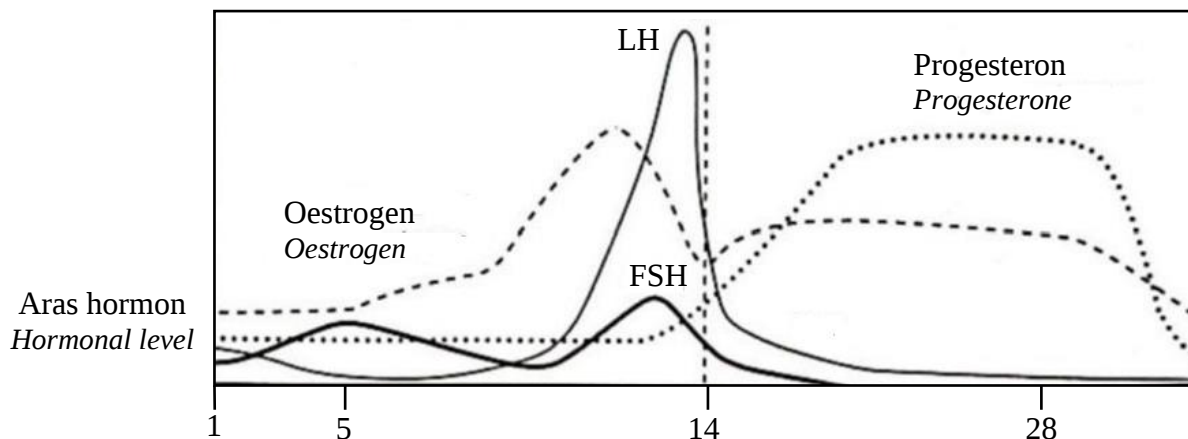
[3 markah]
[3 marks]

7. Rajah 7.1 menunjukkan perubahan struktur dalam ovari dan perubahan ketebalan dinding endometrium dan Rajah 7.2 menunjukkan perubahan aras hormon semasa satu kitaran haid.

Diagram 7.1 shows the changes of the structure in the ovary and changes in the thickness of the endometrial wall and Diagram 7.2 shows the changes in hormones level during one menstrual cycle.



Rajah 7.1
Diagram 7.1



Rajah 7.2
Diagram 7.2

- (a) (i) Pada Rajah 7.1, tandakan **X** ketika wanita sedang mengalami haid.

*In Diagram 7.1, mark **X** when the woman is menstruating.*

[1 markah]

[1 mark]

- (ii) Terangkan perhubungan di antara Rajah 7.1 dan 7.2 yang menyebabkan haid berlaku.

Explain the relationship between Figures 7.1 and 7.2 that causes menstruation to occur.

.....

.....

.....

[2 markah]

[2 marks]

- (b) Seorang ibu telah mengalami pendarahan melalui alat kelamin ketika awal kehamilannya. Pemeriksaan mendapati beliau mengalami masalah kekurangan hormon.

A mother had suffered from genital bleeding during her early pregnancy. Inspection showed that she had hormonal deficiency.

- (i) Namakan hormon yang terlibat.

Name the hormone involved.

..... [1 markah]

[1 mark]

- (ii) Terangkan rawatan yang boleh dilakukan oleh doktor.

Explain the treatment that can be done by a doctor.

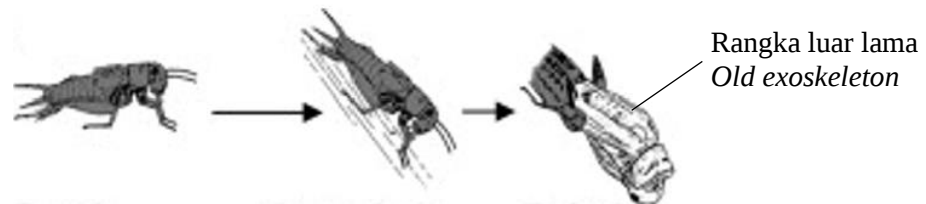
.....

[2 markah]

[2 marks]

- (c) Rajah 7.3 menunjukkan proses ekdisis yang berlaku kepada seekor belalang.

Diagram 7.3 shows the process of ecdysis that happens to a grasshopper.



Rajah 7.3
Diagram 7.3

Serangga seperti belalang mempunyai rangka luar keras yang dibina daripada kitin.

Terangkan kebaikan haiwan berangka luar menjalani proses ekdisis.

Insects like grasshoppers have a hard exoskeleton made of chitin.

Explain the benefits of exoskeletal animals undergoing the process of ecdysis.

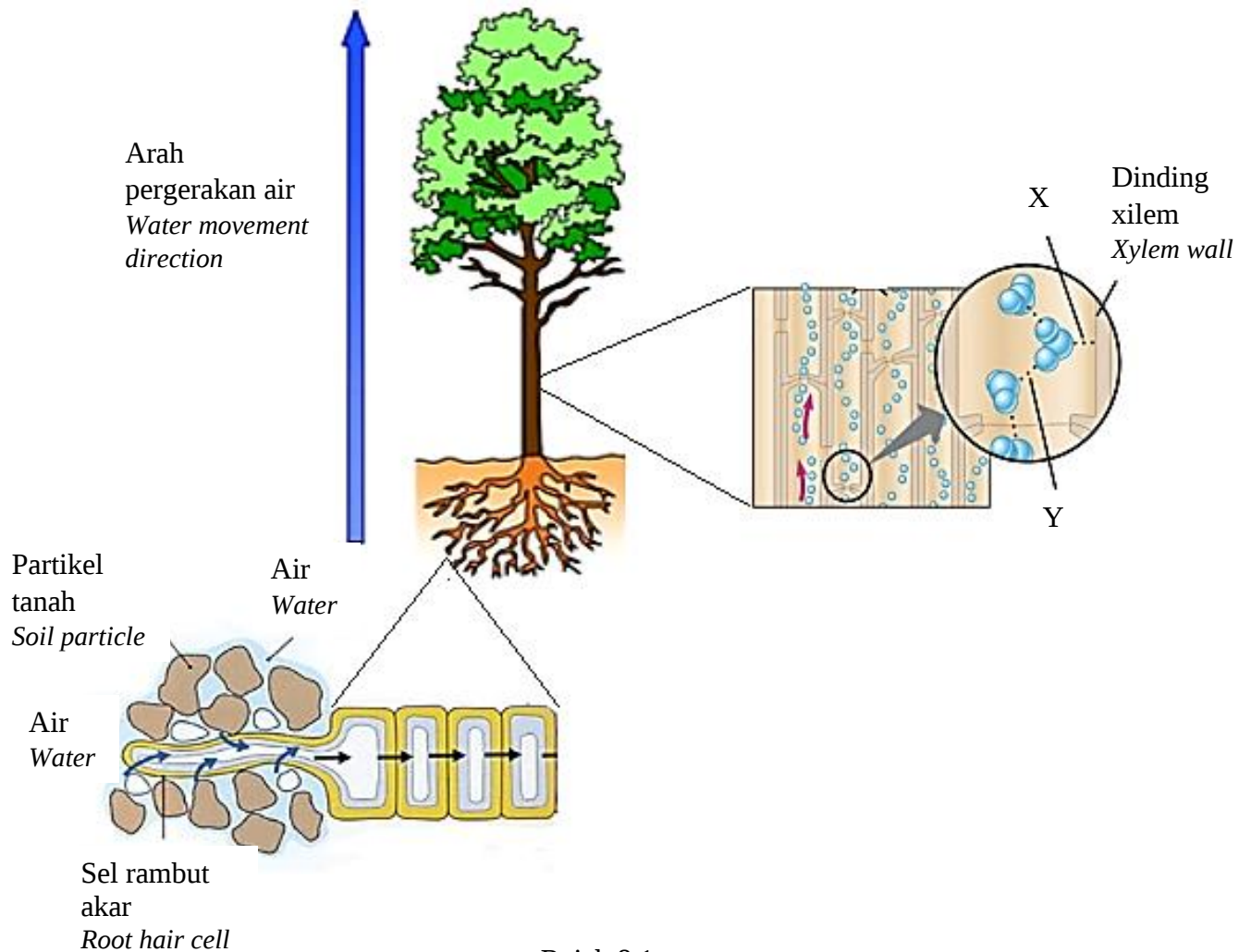
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[3 markah]

[3 marks]

8. Rajah 8.1 menunjukkan dua proses yang berlaku semasa pengangkutan air dalam satu tumbuhan.

Diagram 8.1 shows two processes that occur during water transport in a plant.



Rajah 8.1
Diagram 8.1

- (a) (i) Berikan **dua** perbezaan yang terdapat pada X dan Y.
*Give **two** differences that are found at X and Y.*

X	Y

[2 markah]
[2 marks]

- (ii) Berdasarkan Rajah 8.1, terangkan apa yang berlaku sekiranya ion mineral dari partikel tanah tidak dapat dipam ke dalam vakuol sel rambut tumbuhan?
Based on Diagram 8.1, explain what would happen if mineral ions from soil particle could not be actively pumped into the vacuoles of the plant root hair cells?

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.....

.....

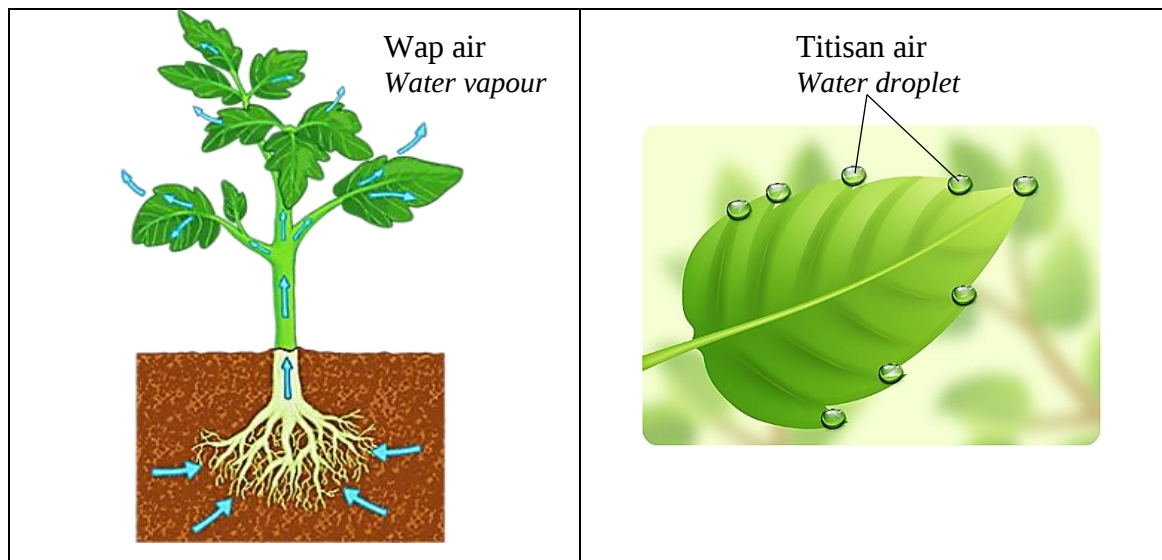
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[3 markah]

[3 marks]

- (b) Rajah 8.2(a) dan Rajah 8.2(b) menunjukkan dua proses yang berlaku pada bahagian daun tumbuhan.

Diagram 8.2(a) and Diagram 8.2(b) show two processes that occur in the leaf part of a plant.



Rajah 8.2(a)
 Diagram 8.2(a)

Rajah 8.2(b)
 Diagram 8.2(b)

- (c) Berdasarkan Rajah 8.2(a) dan Rajah 8.2(b), bandingkan bahan yang dibebaskan daripada daun tumbuhan bagi kedua-dua proses tersebut.
Based on Diagram 8.2(a) and Diagram 8.2(b), compare the substances released from plant leaves for the two processes.

.....

.....

.....

.....

[2 markah]

[2 marks]

- (d) Pihak Jabatan Alam Sekitar mendapati satu kawasan tasik telah dicemari oleh logam plumbum seperti yang ditunjukkan dalam Rajah 8.3.
The Department of Environment found that a lake area had been contaminated by lead metal as shown in Diagram 8.3.



Rajah 8.3
Diagram 8.3

Cadangkan satu kaedah rawatan yang boleh digunakan tanpa menjejaskan kelestarian alam sekitar.

Suggest a treatment method that can be used without affecting the sustainability of the environment.

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.....

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.....

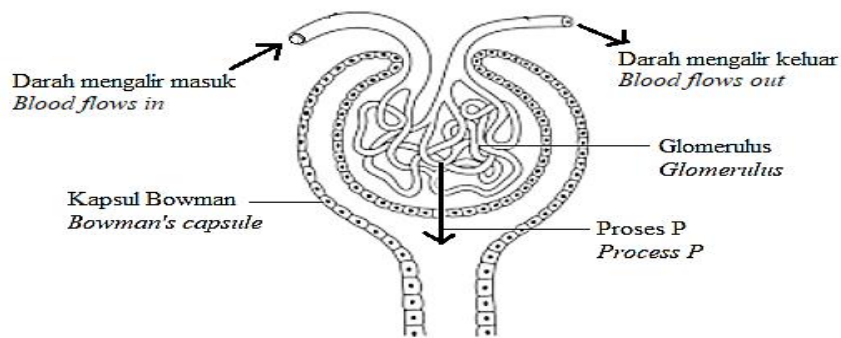
[2 markah]
[2 marks]

Bahagian B

[20 markah]

Jawab **satu** soalan di bahagian ini

9. (a) Rajah 9.1 menunjukkan sebahagian daripada struktur nefron dalam ginjal manusia.
Diagram 9.1 shows part of the nephron structure in the human kidney.

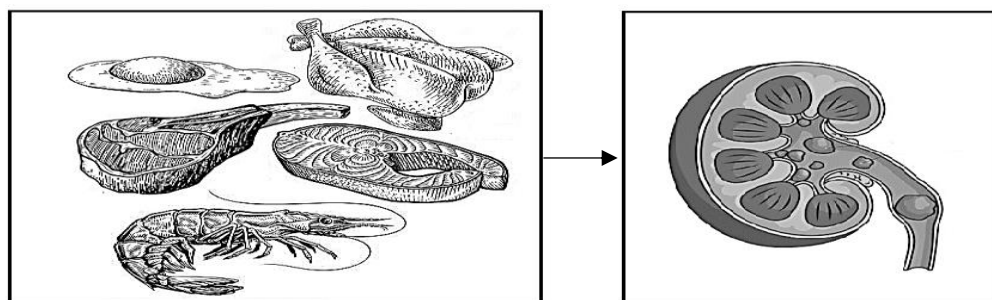


Rajah 9.1
Diagram 9.1

Berdasarkan Rajah 9.1, terangkan proses P
Based on Diagram 9.1, explain process P.

[2 markah]
[2 marks]

- (b) (i) Rajah 9.2(a) menunjukkan jenis makanan yang kerap diambil oleh seorang individu dan Rajah 9.2(b) menunjukkan penyakit yang dialami oleh individu tersebut.
Diagram 9.2(a) shows the type of food frequently consumed by an individual and diagram 9.2(b) shows the disease suffered by the individual.



Rajah 9.2(a)
Diagram 9.2(a)

Rajah 9.2(b)
Diagram 9.2(b)

Huraikan bagaimana pengambilan makanan tersebut menyebabkan penyakit yang dialaminya.
Describe how the intake of the food caused the disease suffered by the individual.

[6 markah]
[6 marks]

(b) (ii) Meminum air yang banyak dapat membantu individu tersebut.

Terangkan.

Drinking a lot of water can help the individual.

Explain.

[2 markah]

[2 marks]

(c) Rajah 9.3 menunjukkan dua individu dalam situasi yang berbeza.

Diagram 9.3 shows two individuals in different situations.



Situasi 1
Situation 1



Situasi 2
Situation 2

Rajah 9.3
Diagram 9.3

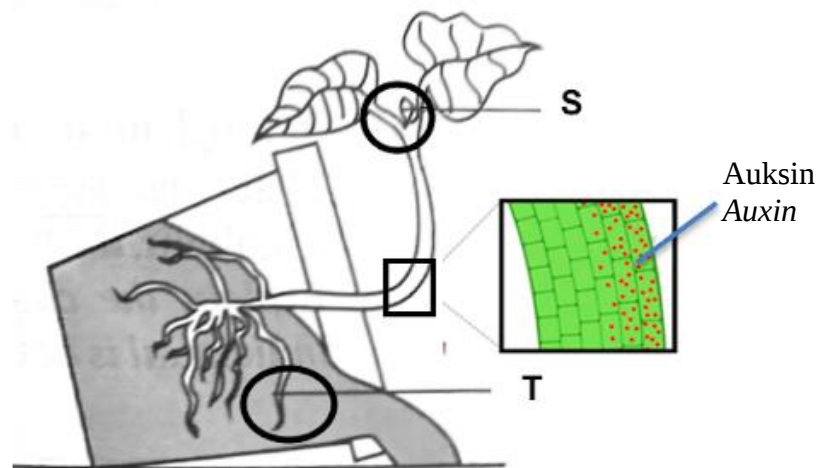
Banding bezakan pengawal aturan suhu badan dalam kedua-dua situasi tersebut.

Compare and contrast the regulation of body temperature in both situations.

[10 markah]

[10 marks]

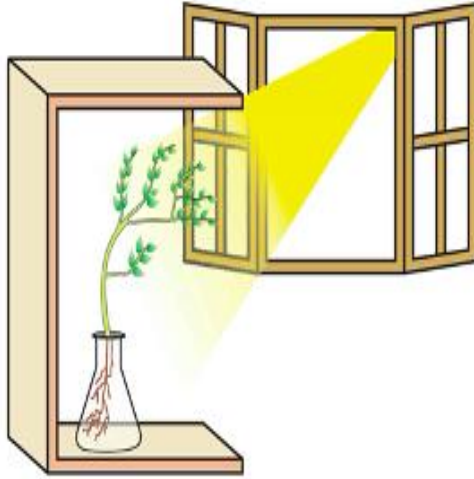
10. (a) Rajah 10.1 menunjukkan keadaan pokok apabila pasu terbalik selepas beberapa hari.
Diagram 10.1 shows the condition of a plant when the pot is fell to the side after a few days.



Rajah 10.1
Diagram 10.1

- (i) Nyatakan nama gerak balas yang ditunjukkan oleh S dan T terhadap graviti.
State the name of response shown by S and T towards the gravity.
[2 markah]
[2 marks]
- (ii) Terangkan bagaimana struktur S dapat bergerak balas seperti yang ditunjukkan dalam Rajah 10.1.
Explain how the structure S responds as shown in Diagram 10.1.
[4 markah]
[4 marks]

- (b) Rajah 10.2(a) dan Rajah 10.2(b) menunjukkan dua jenis gerak balas pada tumbuhan.
Diagram 10.2 (a) and Diagram 10.2 (b) show two types of responses in plant.



Rajah 10.2(a)
Diagram 10.2(a)



Rajah 10.2(b)
Diagram 10.2(b)

- (i) Bandingkan jenis gerak balas yang berlaku pada tumbuhan itu.
Compare the responses that occur to the plant.

[8 markah]
[8 marks]

- (ii) Seorang penjual buah mendapati longgokan buah di gerainya cepat rosak. Dia tidak dapat menjualnya dan mengalami kerugian.
A fruit seller found that a pile of fruit in his stall quickly spoiled. He was unable to sell it and suffered a loss.

Berdasarkan pengetahuan biologi anda, cadang dan terangkan kaedah yang boleh digunakan oleh penjual buah itu untuk mengelakkan buah daripada cepat rosak.

Based on your biology knowledge, suggest and explain the methods that can be used by the fruit seller to prevent the fruit from spoiling quickly

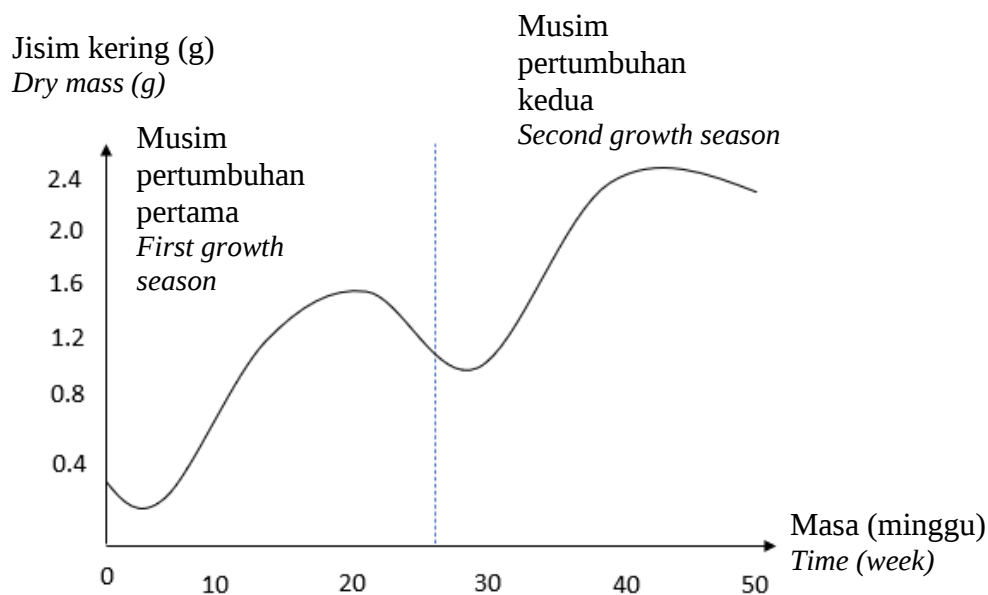
[6 markah]
[6 marks]

Bahagian C

[20 markah]

Jawab **semua** soalan.

- 11 (a) Rajah 11.1 menunjukkan lengkung pertumbuhan bagi pokok lobak.
Diagram 11.1 shows the growth curve of carrot tree.



Rajah 11.1
Diagram 11.1

- (i) Nyatakan jenis tumbuhan bagi pokok lobak berdasarkan kitar hidupnya.
State the type of plant for the carrot tree based on their life cycles.

[1 markah]

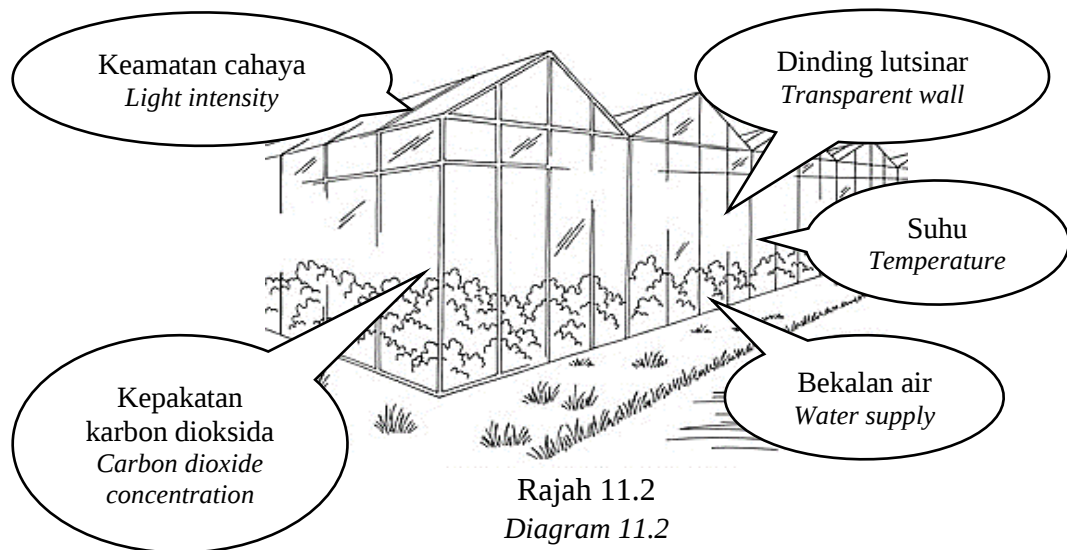
[1 mark]

- (ii) Terangkan lengkung pertumbuhan bagi pokok lobak berdasarkan Rajah 11.1.
Explain the growth curve of the carrot tree based on the Diagram 11.1.

[3 markah]

[3 marks]

- (b) (i) Penggunaan rumah hijau dapat memastikan pengeluaran hasil tanaman berterusan sepanjang tahun bagi negara empat musim.
The use of greenhouse can ensure continuous crop production throughout the year for four seasonal countries.



Berdasarkan Rajah 11.2, cadangkan dan terangkan aspek yang perlu dipertimbangkan dalam pembinaan rumah hijau bagi memastikan tanaman dapat mengeluarkan hasil yang berterusan sepanjang tahun.

Based on Diagram 11.2, suggest and explain the aspects that need to be considered in building the greenhouse to ensure the continuous production of the crop yields throughout the year.

[7 markah]

[7 marks]

- (ii) Proses pendebungaan oleh serangga jarang berlaku dalam rumah hijau dan menyebabkan buah yang dihasilkan dalam rumah hijau adalah sedikit. Kaedah partenokarpi boleh digunakan bagi menggalakkan penghasilan buah dalam rumah hijau. Kaedah ini menggunakan semburan fitohormon auksin bagi merangsang perkembangan ovari. Ovari seterusnya akan berkembang membentuk buah.

Pollination process by insects rarely occur in the greenhouse and cause the fruit produced in the greenhouse is little. Parthenocarpy method can be used to promote the production of fruit in the greenhouse. This method uses a phytohormone auxin spray to stimulate the development of ovaries. The ovary is then developed to form a fruit.

Bincangkan kebaikan dan keburukan bagi kaedah partenokarpi.

Discuss the advantages and disadvantages of parthenocarpy method.

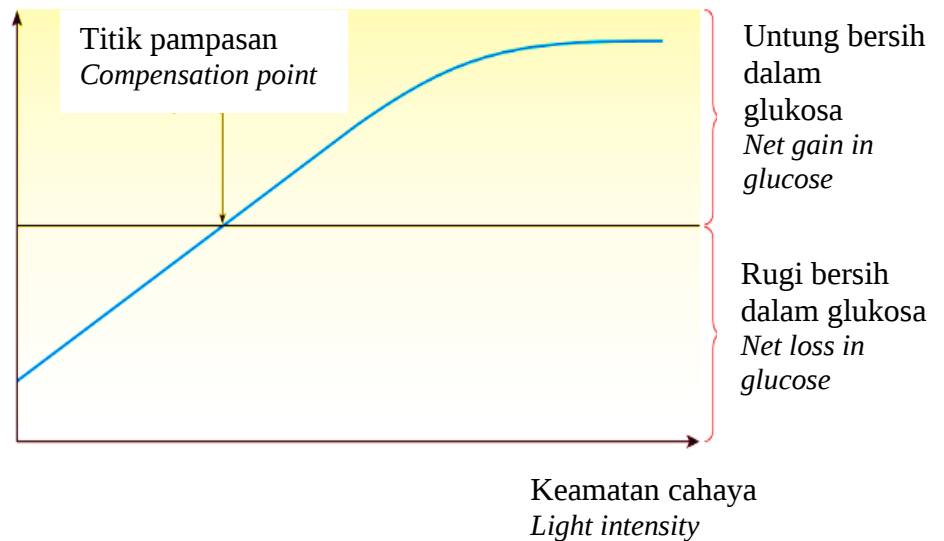
[5 markah]

[5 marks]

- (c) Rajah 11.3 menunjukkan titik pampasan. Titik pampasan ialah aras keamatan cahaya apabila kadar respirasi sama dengan kadar fotosintesis. Apabila keamatan cahaya terus meningkat melepasi titik pampasan, kadar fotosintesis menjadi lebih tinggi daripada kadar respirasi.

Diagram 11.3 shows compensation point. Compensation point is the level of light intensity when the rate of respiration equals to the rate of photosynthesis. When light intensity continues to increase beyond the compensation point, the rate of photosynthesis becomes higher than the rate of respiration.

Pengambilan karbon dioksida
Carbon dioxide uptake



Rajah 11.3
Diagram 11.3

Kadar fotosintesis mesti melebihi kadar respirasi setiap hari.
Wajarkan.

*The rate of photosynthesis must exceed the rate of respiration.
Justify.*

[4 markah]
[4 marks]

-SOALAN TAMAT-
-END OF QUESTIONS-