

Bahagian A

[60 markah]

Jawab semua soalan.

1. Rajah 1.1 menunjukkan pokok tomato.

Diagram 1.1 shows a tomato plant.

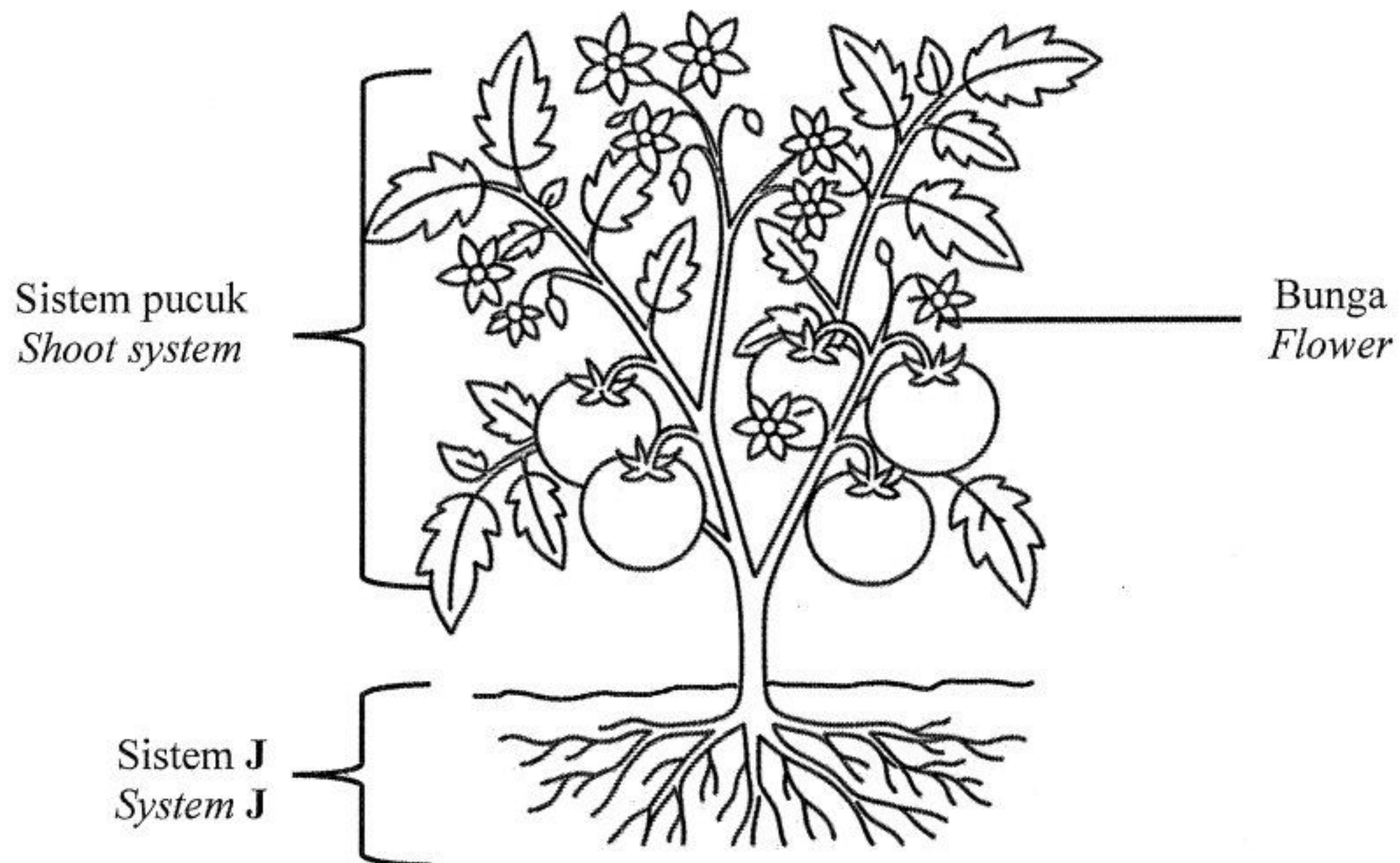


Diagram 1.1

Rajah 1.1

- (a) (i) Nyatakan nama sistem J.

State the name of system J.

1(a)(i)

.....
[1 markah]

[1 mark]

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- (ii) Nyatakan aras organisasi bagi bunga pokok tomato.

State the level of organisation for the tomato flower.

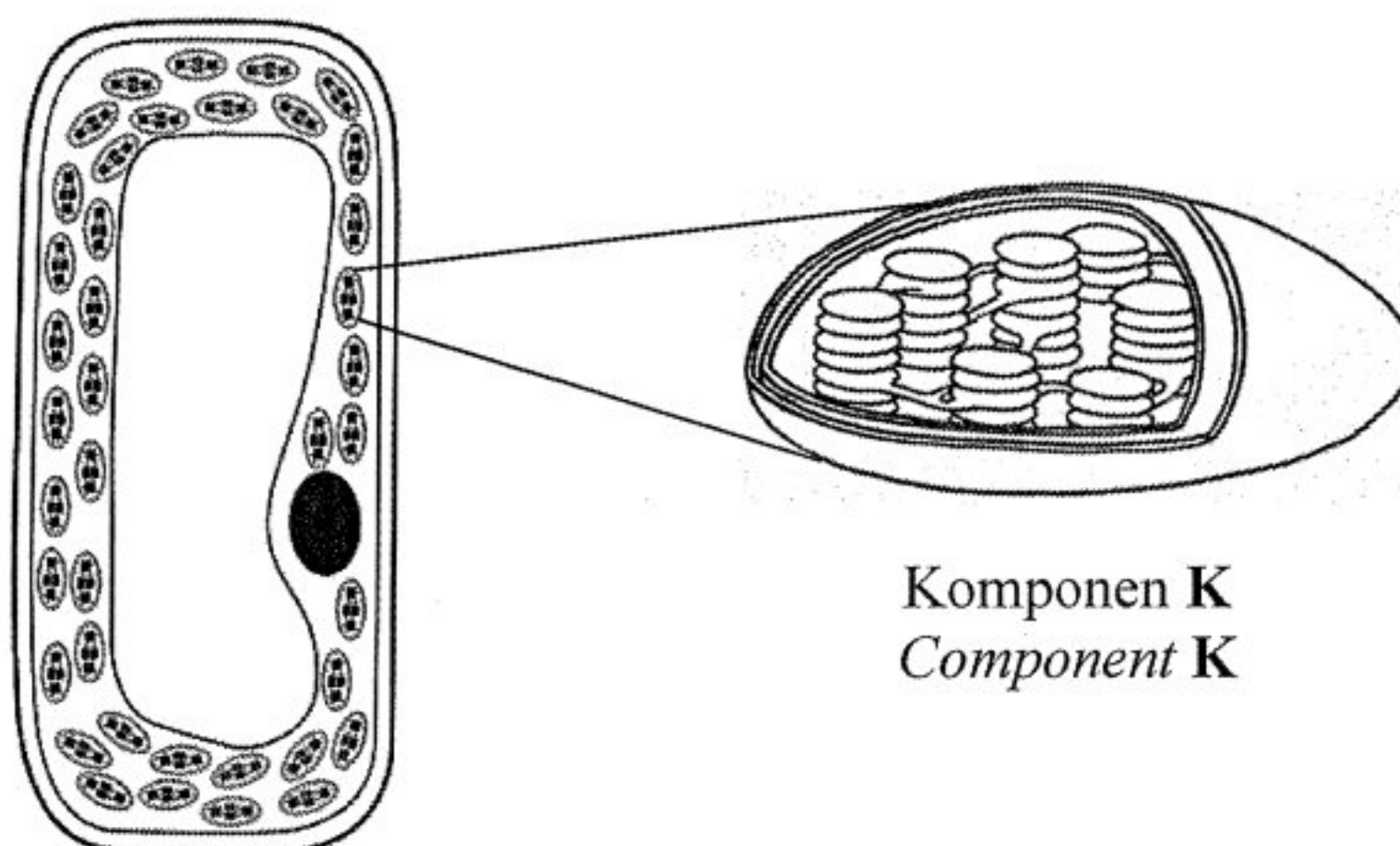
[1 markah]

[1 mark]

1(a)(ii)

- (b) Rajah 1.2 menunjukkan komponen **K** yang terdapat dalam sel daun pokok tomato.

*Diagram 1.2 shows component **K** found in the leaf cell of tomato plant.*



Rajah 1.2
Diagram 1.2

Terangkan fungsi komponen **K**.

*Explain the function of component **K**.*

[2 markah]

[2 marks]

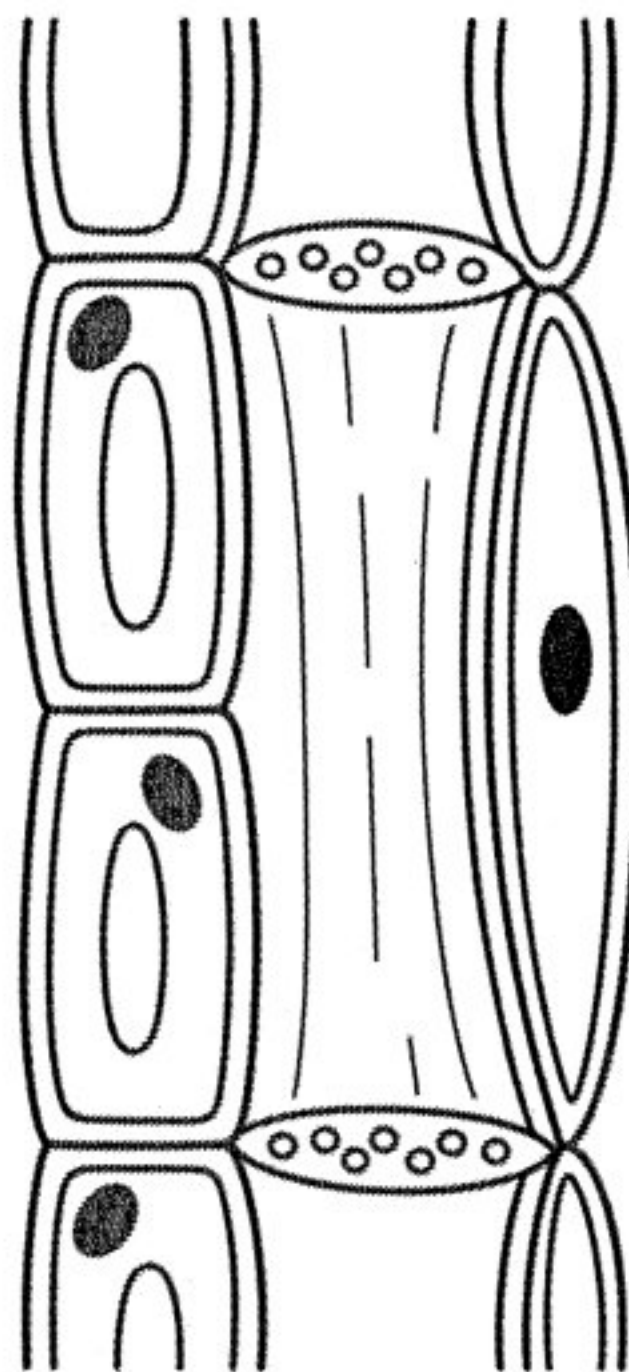
1(b)

[Lihat halaman sebelah

SULIT

- (c) Rajah 1.3 menunjukkan struktur floem.

Diagram 1.3 shows a phloem structure.



Rajah 1.3
Diagram 1.3

- (i) Labelkan sel rakan pada Rajah 1.3 dengan menggunakan huruf **L**.

Label a companion cell on Diagram 1.3 by using letter L.

[1 markah]

[1 mark]

- (ii) Nyatakan kepentingan kepadatan mitokondria yang tinggi di dalam sel rakan.

State the importance of high density of mitochondria in companion cells.

[1 markah]

[1 mark]

1(c)(i)

1(c)(ii)

Jumlah
A1

6

2. Jadual 1 di bawah menunjukkan persamaan perkataan bagi proses respirasi sel.

Table 1 below shows the word equation for cellular respiration process.

Proses <i>Process</i>	Persamaan perkataan <i>Word equation</i>
M	Glukosa + Oksigen → Karbon dioksida + Air + Tenaga <i>Glucose + Oxygen → Carbon dioxide + Water + Energy</i>
N	Glukosa → Etanol + Karbon dioksida + Tenaga <i>Glucose → Ethanol + Carbon dioxide + Energy</i>

Jadual 1

Table 1

- (a) (i) Namakan proses M dan N.

Name process M and N.

M:

N:

[2 markah]

[2 marks]

2(a)(i)

- (ii) Terangkan bagaimana proses N terlibat dalam proses pembuatan roti.

Explain how process N involve in the making of bread.

.....

.....

[2 markah]

[2 marks]

2(a)(ii)

[Lihat halaman sebelah

- (b) Seorang atlet dinasihatkan supaya menarik nafas dalam-dalam bagi mengelakkan kelesuan dan kekejangan otot setelah menamatkan larian.

Terangkan mengapa.

An athlete is advised to take deep breaths to avoid fatigue and muscle cramps after finishing a run.

Explain why.

.....

.....

.....

2(b)

[2 markah]

[2 marks]

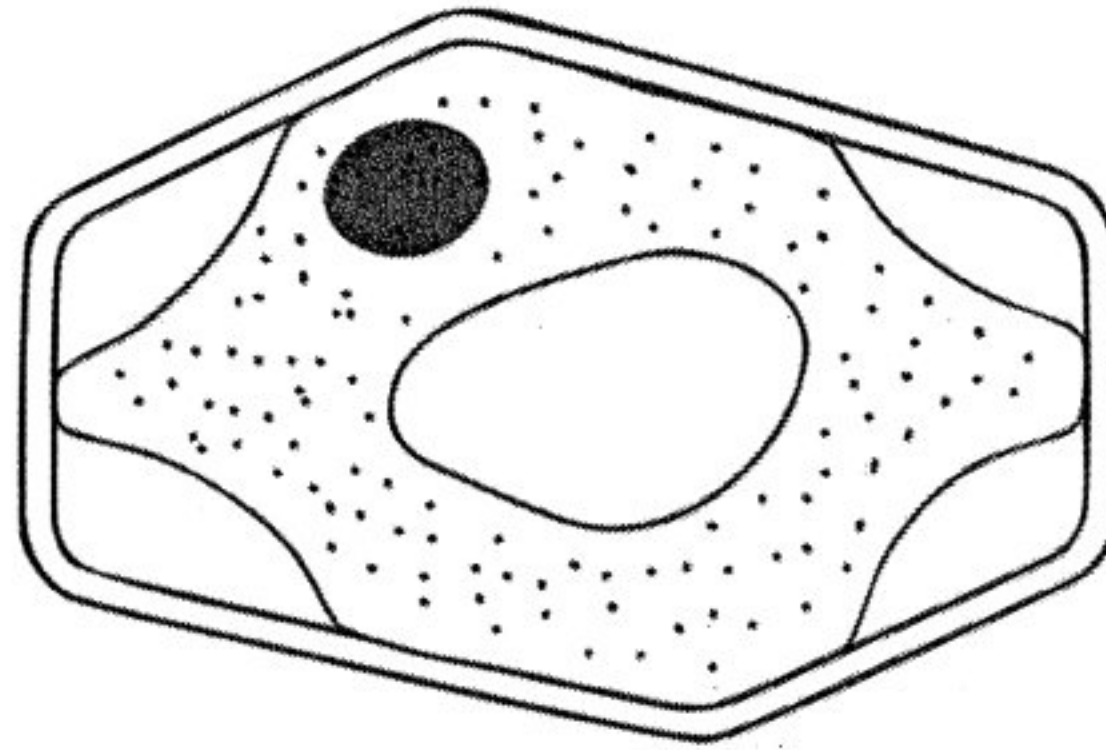
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Jumlah
A2

6

3. Rajah 3.1 menunjukkan keadaan satu sel tumbuhan selepas direndam di dalam larutan sukrosa 30%.

Diagram 3.1 shows the condition of a plant cell after being immersed in 30% sucrose solution.



Rajah 3.1
Diagram 3.1

- (a) (i) Nyatakan keadaan sel itu.

State the condition of the cell.

.....

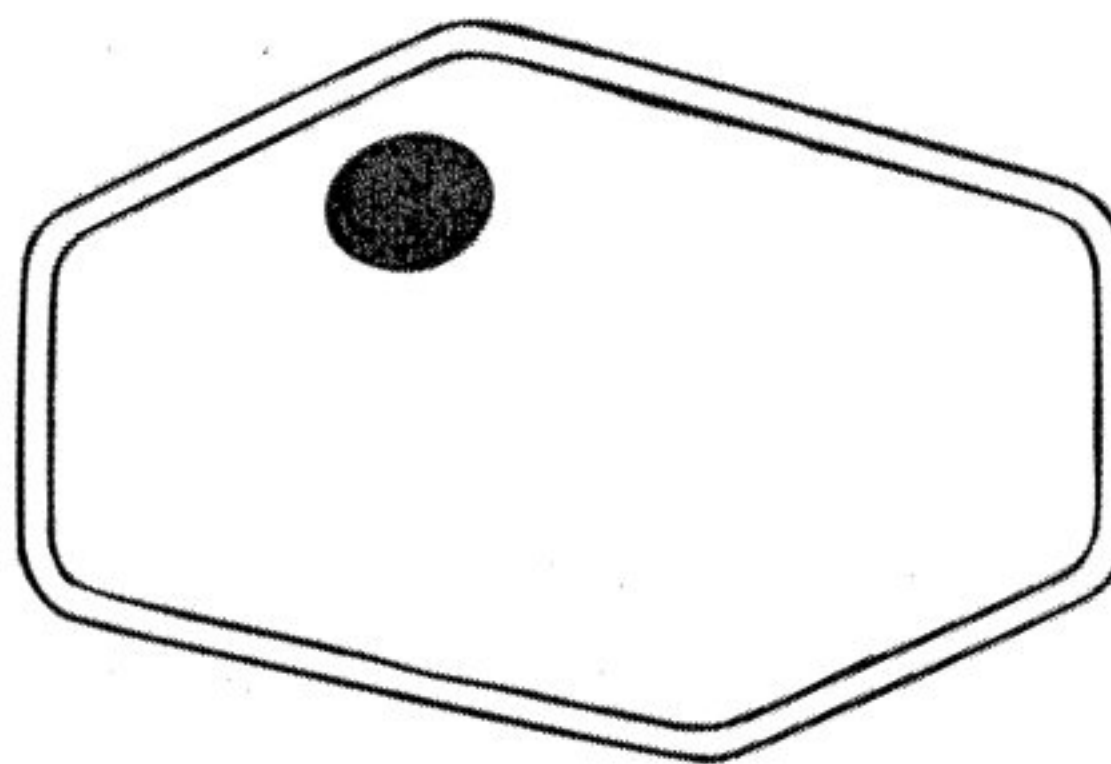
[1 markah]

[1 mark]

3(a)(i)

- (ii) Lengkapkan Rajah 3.2 dengan melukis keadaan vakuol selepas sel direndam dalam air suling selama 30 minit.

Complete Diagram 3.2 by drawing the condition of the vacuole after the cell being immersed in distilled water for 30 minutes.



Rajah 3.2
Diagram 3.2

[1 markah]

[1 mark]

3(a)(ii)

[Lihat halaman sebelah

(iii) Berdasarkan jawapan di (a)(ii) terangkan bagaimana keadaan ini berlaku.

Based on the answer in (a)(ii) explains how this condition occurs.

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

3(a)(iii)

[2 markah]

[2 marks]

(b) Seorang pemain ragbi berada dalam keadaan sangat lemah selepas dua perlawanan berturut-turut. Dia telah dirawat menggunakan larutan *saline*.

Terangkan bagaimana larutan *saline* berfungsi dalam rawatan tersebut.

A rugby player is in a very weak condition after two consecutive matches. He was treated with a saline solution.

Explain how saline solution works in the treatment.

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

3(b)

[3 markah]

[3 marks]

Jumlah
A3

7

4. Jadual 2 menunjukkan contoh nutrien tak organik utama yang diperlukan oleh tumbuhan mengikut kuantiti.

Table 2 shows examples of main inorganic nutrients required by plants according to their quantities.

Nutrien Tak Organik Utama <i>Main Inorganic Nutrients</i>	Contoh <i>Example</i>
.....	Klorin, Besi, Mangan, Boron, Zink, Kuprum, Nikel dan Molibdenum. <i>Chlorine, Iron, Manganese, Boron, Zinc, Copper, Nickel and Molybdenum.</i>
.....	Karbon, Oksigen, Hidrogen, Nitrogen, Kalium, Kalsium, Magnesium dan Fosforus. <i>Carbon, Oxygen, Hydrogen, Nitrogen, Potassium, Calcium, Magnesium and Phosphorus.</i>

Jadual 2
Table 2

- (a) Lengkapkan Jadual 2.
Complete Table 2.

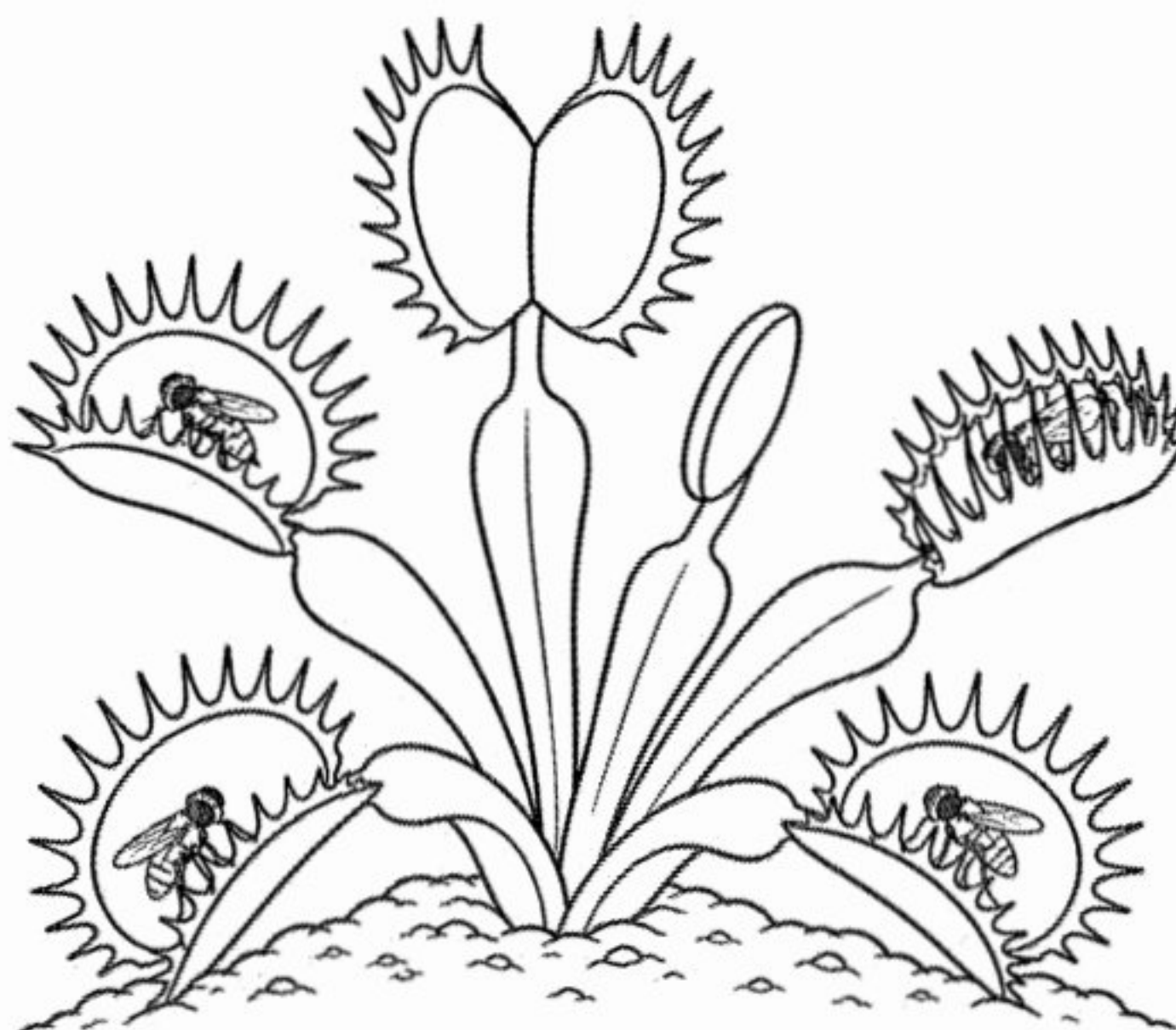
[2 markah]
[2 marks]

4(a)

[Lihat halaman sebelah

(b) Rajah 4 menunjukkan sejenis tumbuhan.

Diagram 4 shows a type of plant.



Rajah 4
Diagram 4

Terangkan jenis penyesuaian nutrisi bagi tumbuhan tersebut.

Explain the type of nutritional adaptation for the plant.

.....

.....

.....

[2 markah]
[2 marks]

4(b)

- (c) Pernyataan berikut menunjukkan kesan kekurangan nutrien yang berlaku pada pokok getah.

Statement below shows effects of nutrient deficiency that occur in rubber plants.

- Bahagian di antara urat daun matang menjadi kuning
Parts between matured leaves veins become yellowish
- Bintik merah pada permukaan daun
Red spots on leaf surfaces
- Daun bercuping dan terherot
Lobed and distorted leaves
- Pertumbuhan terbantut
Stunted growth

Terangkan mengapa baja dolomit yang mengandungi unsur kalsium dan magnesium sering digunakan oleh pekebun getah bagi mengatasi masalah tersebut.

Explain why dolomite fertilizer which contains calcium and magnesium is commonly used by rubber planters to overcome the problem.

.....

.....

.....

.....

[3 markah]
[3 marks]

4(c)

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Jumlah
A4

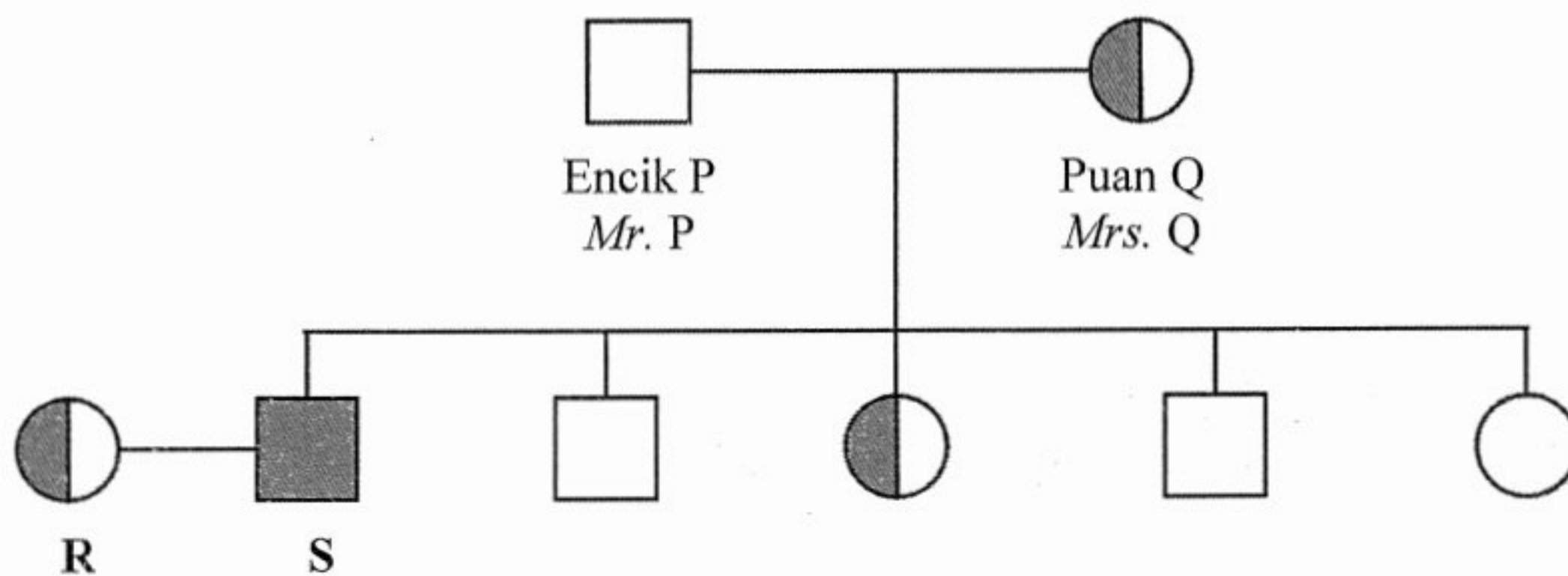
7

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SULIT

5. Rajah 5 menunjukkan pedigri pewarisan bagi buta warna.

Diagram 5 shows the pedigree of inheritance for colour blindness.



Kekunci : Key			
	Lelaki normal <i>Normal male</i>		Perempuan normal <i>Normal female</i>
	Lelaki buta warna <i>Colourblind male</i>		Perempuan pembawa <i>Female carrier</i>
Alel dominan diwakili oleh X^B manakala alel resesif diwakili oleh X^b <i>Dominant allele is represented by X^B while recessive allele is represented by X^b</i>			

Rajah 5
Diagram 5

- (a) Nyatakan genotip.

State genotype.

Encik P :

Mr. P

Puan Q :

Mrs. Q

[2 markah]

[2 marks]

- (b) Terangkan bagaimana S mewarisi buta warna.

Explain how S inherits colour blindness.

.....

.....

.....

[2 markah]

[2 marks]

5(a)

5(b)

- (c) (i) Lengkapkan segi empat Punnett di bawah apabila S berkahwin dengan R.
Complete the Punnett's square below when S married to R.

Gamet S S gametes Gamet R R gametes	X^b	
	Genotip : <i>Genotype</i>	Genotip : <i>Genotype</i>
X^B	Genotip : <i>Genotype</i>	Genotip : <i>Genotype</i>
.....	Genotip : <i>Genotype</i>	Genotip : <i>Genotype</i>

[2 markah]

[2 marks]

5(c)(i)

- (ii) Nyatakan kebarangkalian mendapat anak perempuan buta warna.
Tunjukkan pengiraan anda.

State the probability of getting a daughter with colour blindness. Show your calculations.

Kebarangkalian :

Probability

[2 markah]

[2 marks]

5(c)(ii)

Jumlah
A5

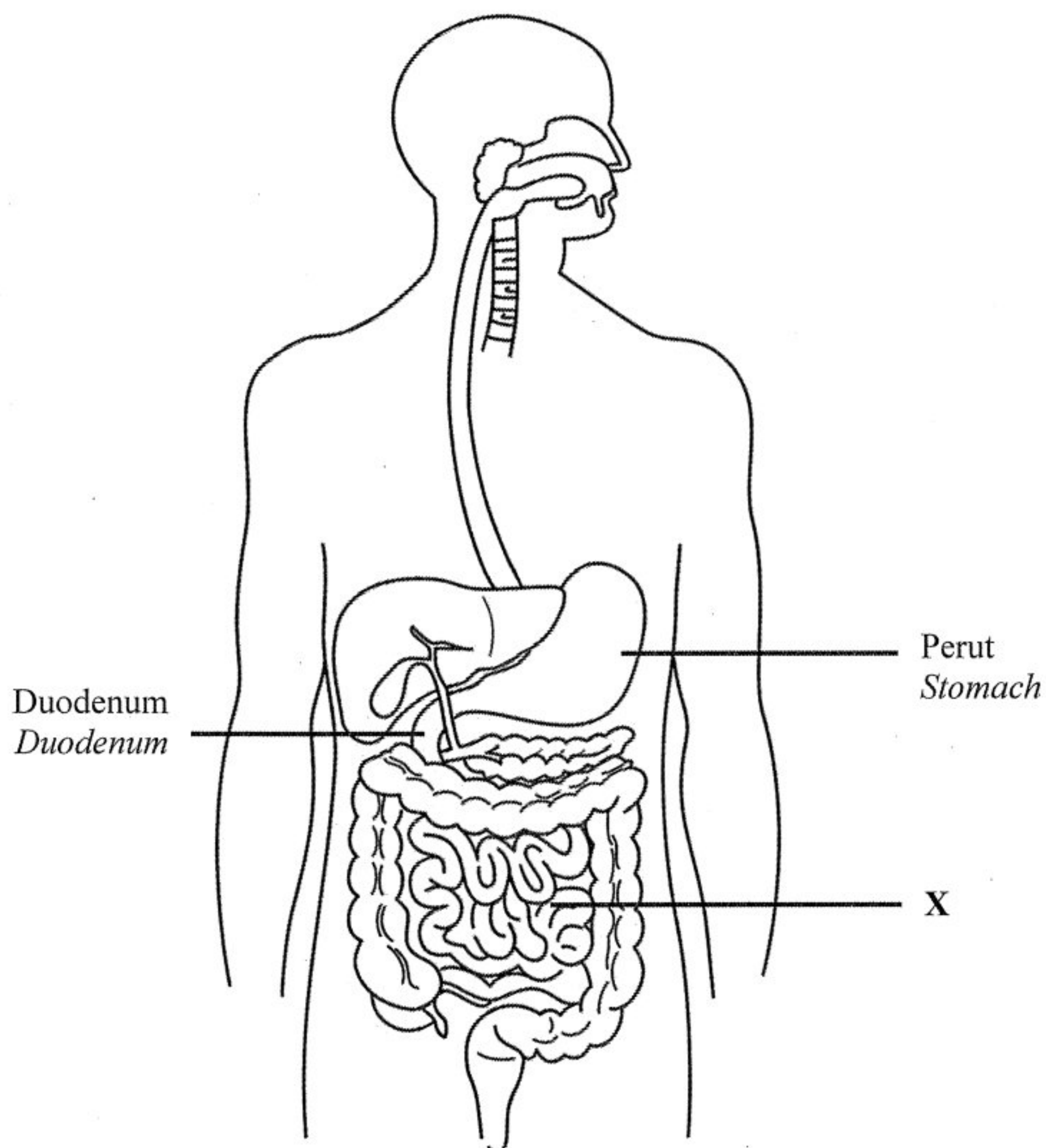
8

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SULIT

6. Rajah 6 menunjukkan sistem pencernaan manusia.

Diagram 6 shows the human digestive system.



Rajah 6
Diagram 6

- (a) (i) Terangkan **satu** ciri penyesuaian organ X dalam penyerapan nutrien.

*Explain **one** adaptation of organ X in nutrient absorption.*

.....

.....

[2 markah]
[2 marks]

6(a)(i)

- (ii) Bandingkan proses pencernaan lipid dan protein yang berlaku di dalam organ X.

Compare the digestion process of lipid and protein in organ X.

Persamaan <i>Similarity</i>		
Perbezaan <i>Differences</i>		
Pencernaan lipid <i>Digestion of lipid</i>	Aspek <i>Aspect</i>	Pencernaan protein <i>Digestion of protein</i>
	Enzim terlibat <i>Enzyme involved</i>	
	Hasil pencernaan <i>Product of digestion</i>	

[3 markah]
[3 marks]

6(a)(ii)

- (b) Seorang individu mengalami obesiti dengan BMI 42. Selepas pembedahan pintasan gaster, berat badannya turun 30 kg dalam masa enam bulan.

Terangkan bagaimana pembedahan ini boleh mengurangkan berat badannya.

An individual suffers from obesity with BMI of 42. After undergoing gastric bypass surgery, his body weight dropped by 30 kg in six months.

Explain how this surgery can reduce his weight.

.....

.....

.....

.....

[3 markah]
[3 marks]

6(b)

Jumlah
A6

8

[Lihat halaman sebelah
SULIT

7. Rajah 7 menunjukkan dua contoh variasi **T** dan **U** pada manusia.

*Diagram 7 shows two examples of variation **T** and **U** in humans.*



Rajah 7
Diagram 7

- (a) Berdasarkan Rajah 7, nyatakan jenis variasi **T** dan **U**.

*Based on Diagram 7, state the types of variation **T** and **U**.*

T :

U :

[2 markah]

[2 marks]

7(a)

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- (b) (i) Seorang pelancong berkulit cerah telah pergi bercuti ke kawasan yang beriklim panas. Selepas dua minggu, warna kulitnya berubah.

Terangkan bagaimana faktor persekitaran mempengaruhi perubahan warna kulit pelancong tersebut.

A fair skin tourist traveled to a hot climate region. After two weeks, his skin colour changed.

Explain how environmental factors affect the change of skin colour of the tourist.

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.....

.....

[3 markah]
[3 marks]

7(b)(i)

- (ii) Cap jari dan pemprofilan DNA merupakan kaedah yang boleh digunakan untuk mengenal pasti identiti individu. Di lapangan terbang, identiti pelancong tersebut disahkan menggunakan imbasan cap jari yang dipadankan dengan data dalam cip pasport.

Wajarkan kebaikan penggunaan pola cap jari berbanding pemprofilan DNA dalam situasi tersebut.

Fingerprint patterns and DNA profiling are methods that can be used to identify an individual. At the airport, a passenger's identity is verified using fingerprint scanning, which is matched with data stored in the passport chip.

Justify the advantages of using fingerprint patterns over DNA profiling in this situation.

.....

.....

.....

[2 markah]
[2 marks]

7(b)(ii)

[Lihat halaman sebelah

(c) Pernyataan berikut merujuk kepada satu penyakit genetik.

The following statement refers to a genetic disease.

Apa itu albinisme?

Albinisme atau lebih dikenali sebagai albino, merujuk kepada individu yang dilahirkan dengan keadaan genetik kekurangan atau ketiadaan pigmen melanin dalam kulit, rambut dan mata.

Keadaan ini berlaku apabila seseorang mewarisi gen albinisme daripada kedua-dua ibu bapa.

Sumber : Berita Harian, 3 Julai 2025

What is albinism?

Albinism, commonly known as albino, refers to a genetic condition in which a person is born with little or no melanin pigment in their skin, hair and eyes.

This condition occurs when a person inherits albinism genes from both parents.

Source : Berita Harian, 3rd July 2025

Cadangkan **dua** langkah yang perlu diambil oleh penghidap albinisme sekiranya mereka ingin menjalankan aktiviti luar rumah pada waktu siang.

*Suggest **two** measures that should be taken by the individual with albinism if they want to carry out outdoor activities during the day.*

.....

.....

.....

7(c)

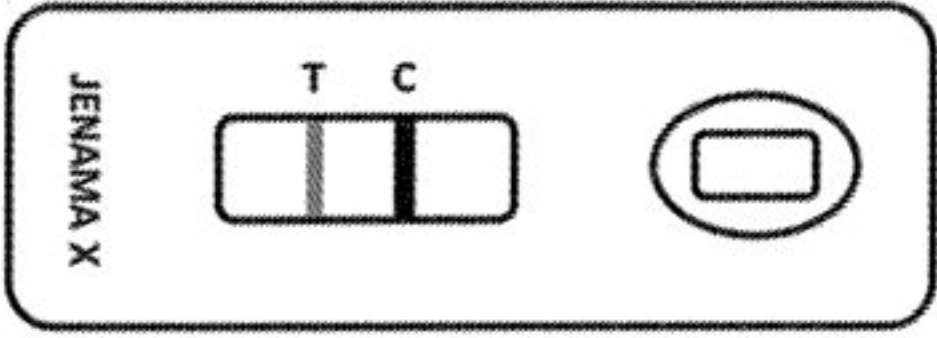
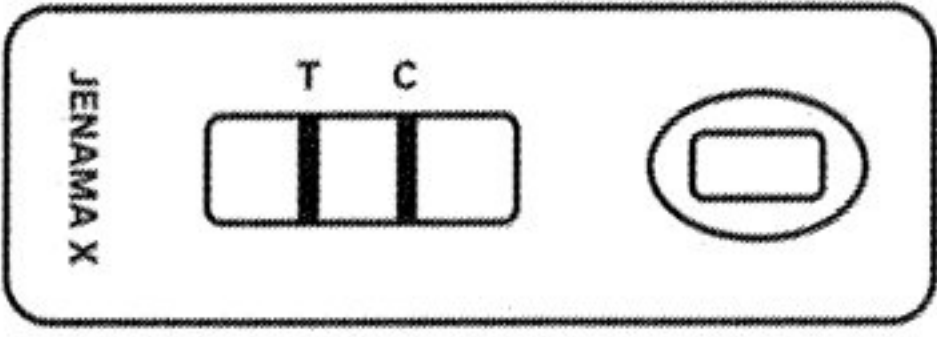
[2 markah]
[2 marks]

Jumlah
A7

9

8. Jadual 3 menunjukkan keputusan ujian saringan air kencing Puan J dengan menggunakan kit ujian kehamilan. Ujian saringan ini dilakukan setelah beliau menyedari bahawa haidnya terlewat dari tarikh yang dijangkakan.

Table 3 shows the results of Mrs. J's urine screening test using a pregnancy test kit. This screening test was performed after she realized that her menstruation was late from the expected date.

Bilangan hari lewat haid <i>Number of days late for menstruation</i>	Keputusan kit ujian kehamilan <i>Pregnancy test kit results</i>
7	
14	

Petunjuk : T = Ujian/ Test
Key C = Kawalan / Control

Jadual 3
Table 3

- (a) Berdasarkan Jadual 3, terangkan keputusan pada hari ke-14.

Based on Table 3, explain result on day 14.

.....

.....

.....

.....

[3 markah]
[3 marks]

8(a)

[Lihat halaman sebelah
SULIT

- (b) Terangkan perbezaan kesan aras hormon progesteron terhadap keadaan uterus ketika kehamilan dan keguguran.

Explain the difference in the effect of progesterone hormone level on uterus during pregnancy and miscarriage.

.....

.....

.....

8(b)

[2 markah]

[2 marks]

- (c) Pasangan suami isteri yang baru berkahwin masih belum bersedia untuk mempunyai anak. Mereka bercadang supaya isteri mengambil pil pencegah hamil.

Bincangkan kebaikan kaedah tersebut.

A newly married couple is not yet ready to have children. They decided for the wife to take contraceptive pills.

Discuss the advantages of this method.

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.....

.....

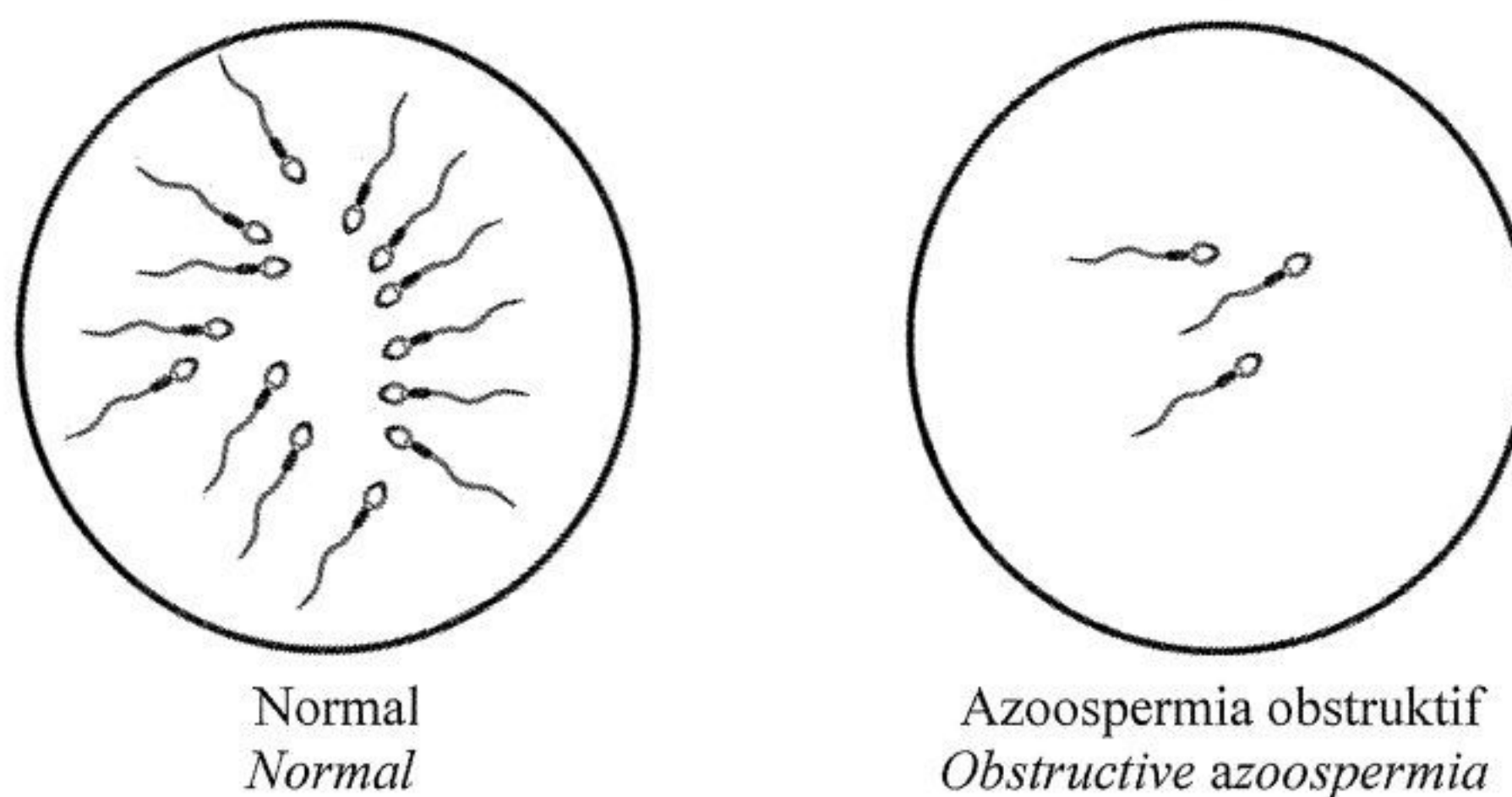
8(c)

[2 markah]

[2 marks]

(d) Rajah 8 menunjukkan imej sperma yang dilihat di bawah mikroskop.

Diagram 8 shows sperms image seen under microscope.



Rajah 8
Diagram 8

Azoospermia obstruktif ialah keadaan di mana sperma dihasilkan secara normal di dalam testis, tetapi tidak dapat keluar kerana terdapat sumbatan pada saluran duktus sperma (vas deferens).

Obstructive azoospermia is a condition where sperm are produced normally in the testes but are unable to exit because of a blockage in the sperm duct (vas deferens).

Berdasarkan Rajah 8 dan pernyataan di atas, bincangkan **satu** kaedah yang boleh digunakan untuk mendapatkan anak.

*Based on Diagram 8 and statement above, discuss **one** method that can be used to have children.*

.....

.....

.....

[2 markah]
[2 marks]

8(d)

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Jumlah
A8

9

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SULIT

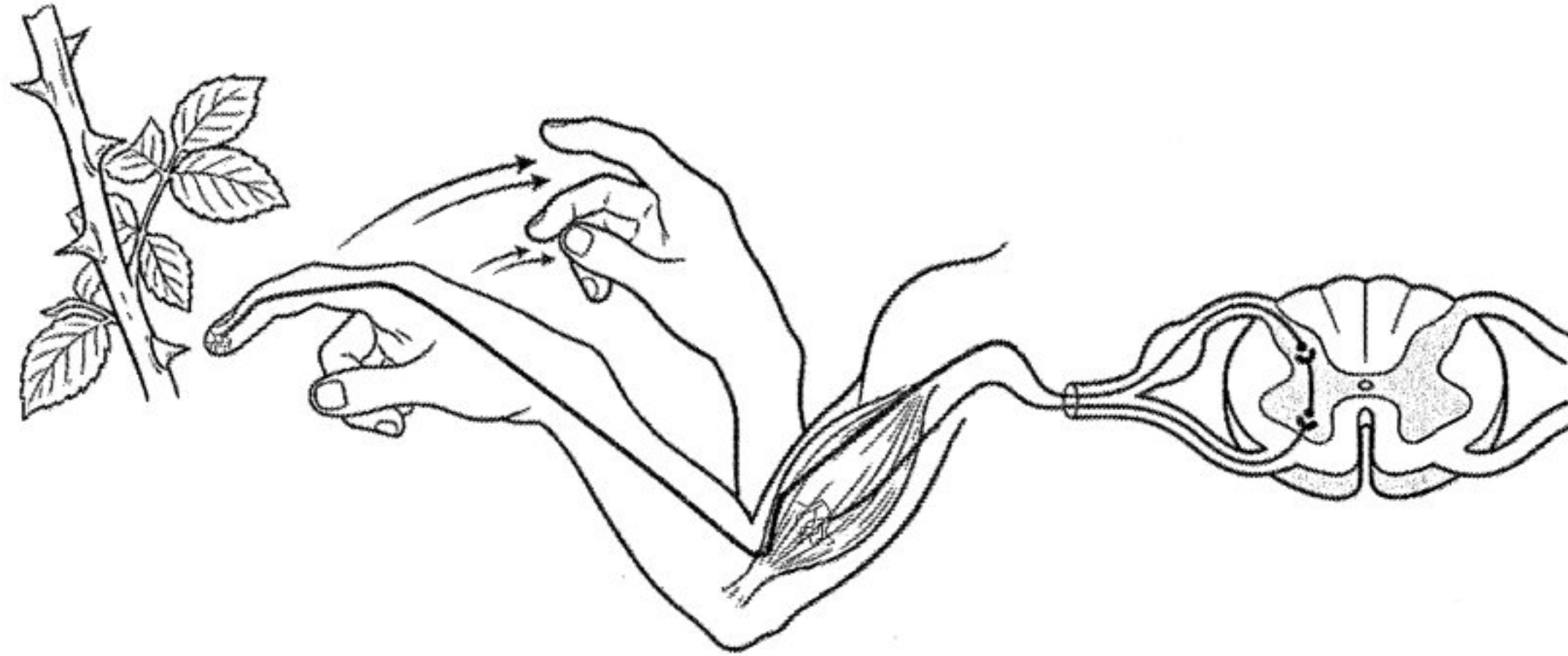
Bahagian B

[20 markah]

Bahagian ini mengandungi dua soalan. Jawab satu soalan.

9. Rajah 9.1 menunjukkan gerak balas tangan seorang individu dalam satu situasi.

Diagram 9.1 shows the hand response of an individual in a situation.



Rajah 9.1
Diagram 9.1

- (a) Berdasarkan Rajah 9.1, terangkan jenis gerak balas tersebut. [2 markah]

Based on Diagram 9.1, explain the type of response. [2 marks]

- (b) Rajah 9.2 menunjukkan seorang pelajar dikejar oleh sekumpulan anjing liar.

Diagram 9.2 shows a student is chased by a pack of stray dogs.



Rajah 9.2
Diagram 9.2

Huraikan bagaimana sistem endokrin pelajar tersebut bergerak balas untuk menghadapi situasi ini.

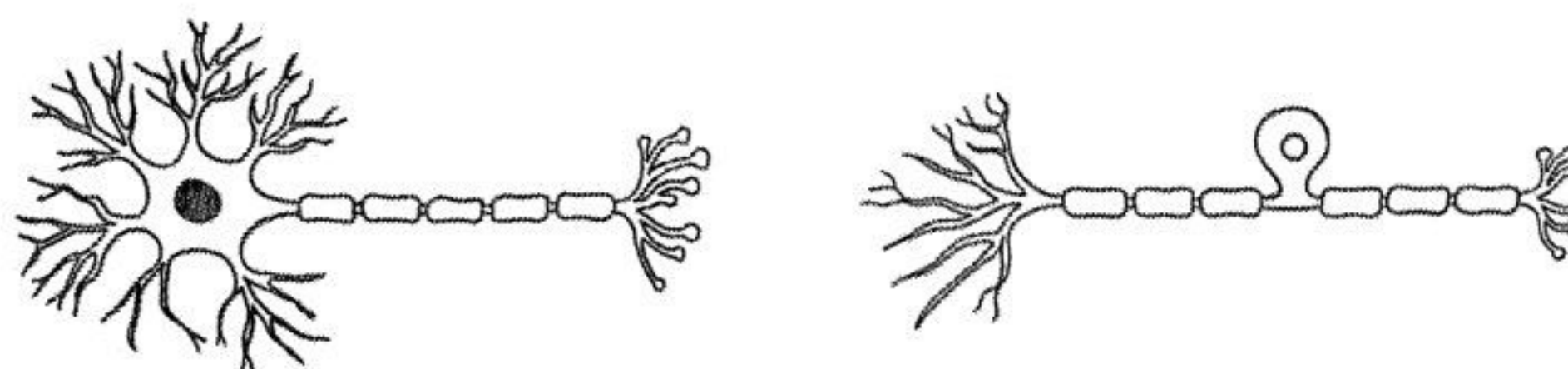
[8 markah]

Describe how endocrine system of the student responds to this situation.

[8 marks]

(c) (i) Rajah 9.3 menunjukkan dua jenis neuron.

Diagram 9.3 shows two types of neurones.



Neuron X
Neurone X

Neuron Y
Neurone Y

Rajah 9.3
Diagram 9.3

Bezakan neuron X dan neuron Y.

[4 markah]

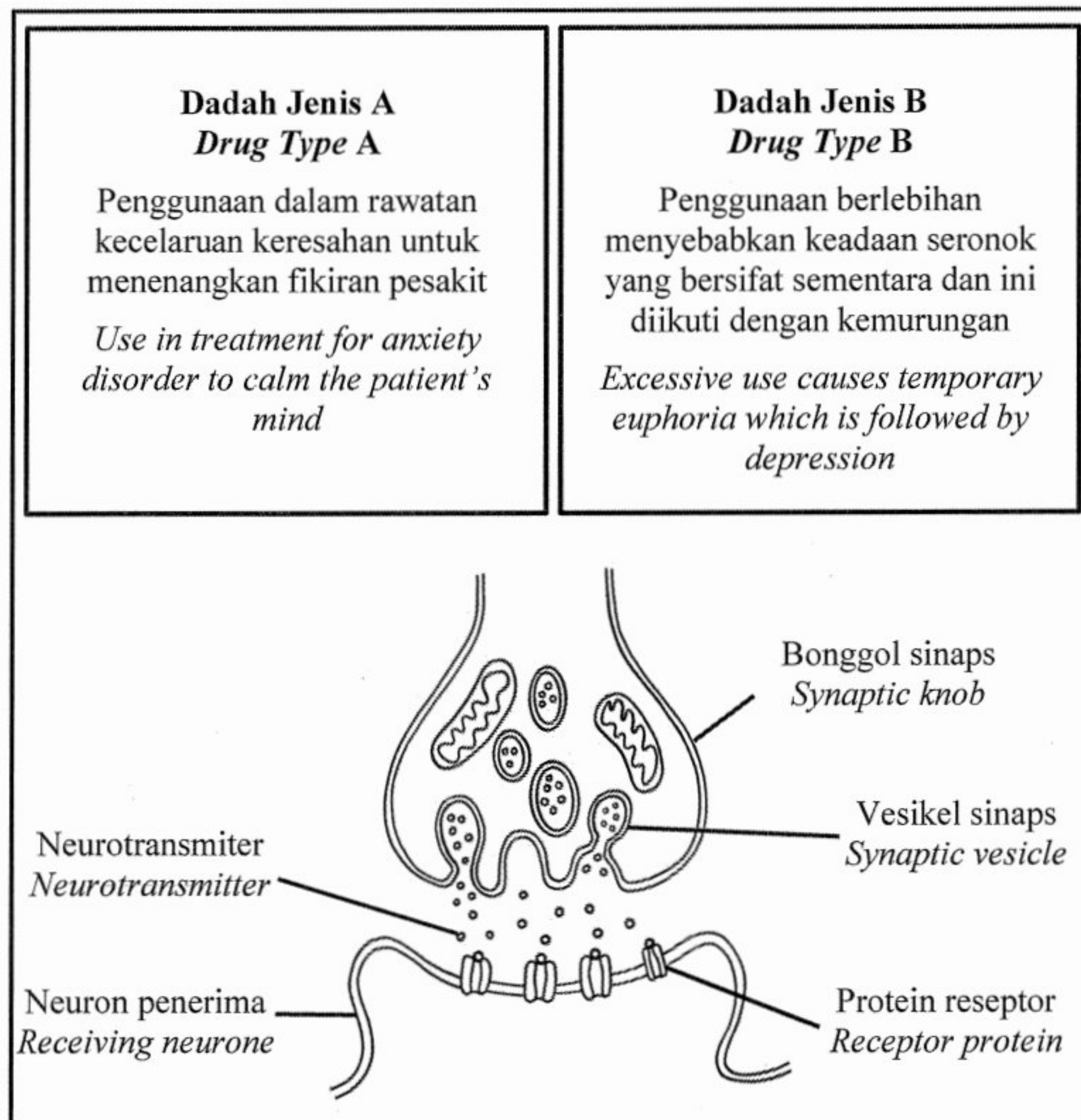
Differentiate neurone X and neurone Y.

[4 marks]

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- (ii) Rajah 9.4 menunjukkan maklumat berkaitan penggunaan jenis dadah yang berbeza terhadap penghantaran impuls melalui sinaps.

Diagram 9.4 shows information related to the use of different types of drugs on the transmission of impulses through the synapse.



Rajah 9.4
Diagram 9.4

Berdasarkan Rajah 9.4, terangkan hubungan antara proses penghantaran impuls merentasi sinaps dengan dadah Jenis A dan dadah Jenis B.

[6 markah]

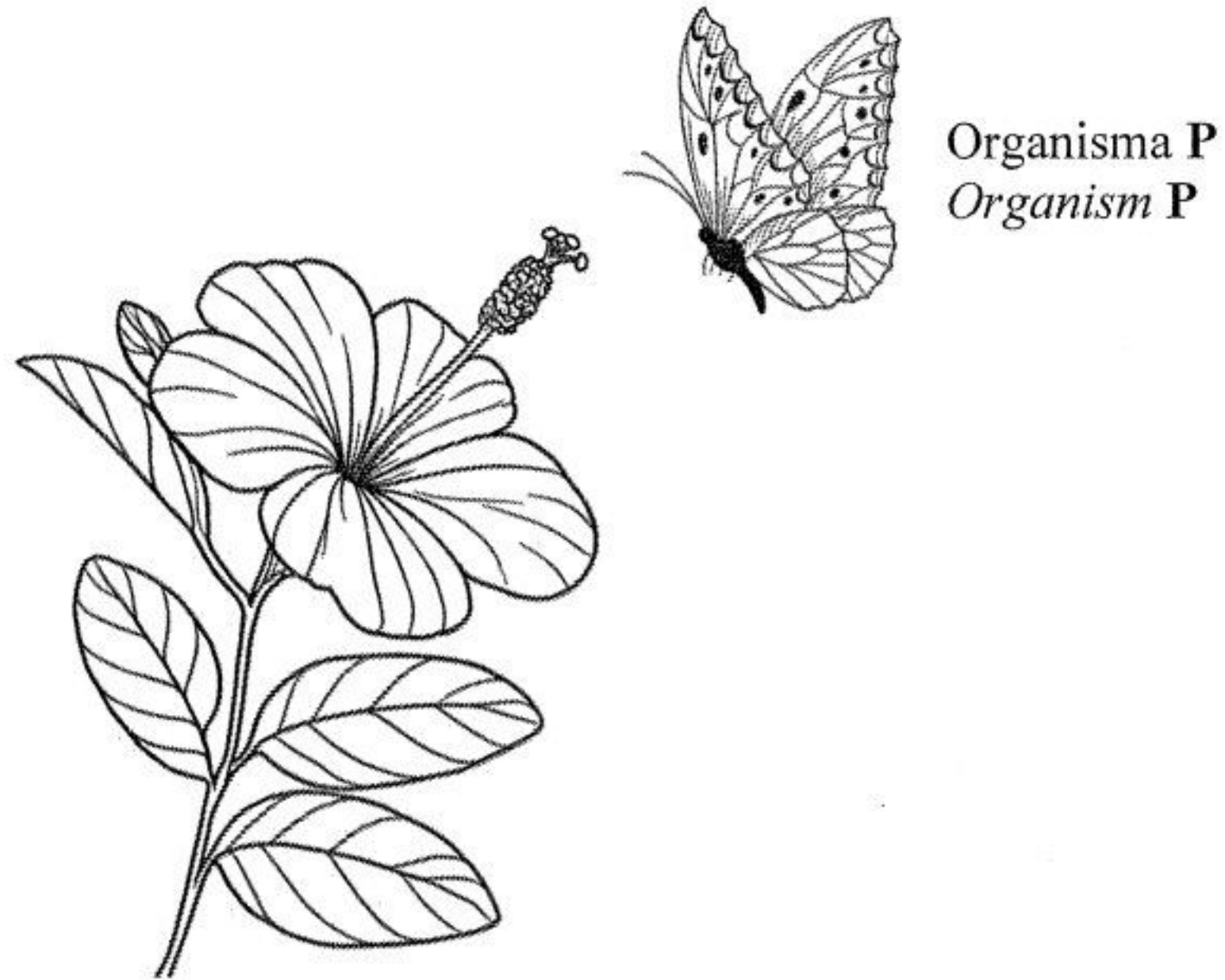
Based on Diagram 9.4, explain the relationship between the process of the transmission of impulse with drug Type A and Type B.

[6 marks]

[Lihat halaman sebelah

10. Rajah 10.1 menunjukkan aktiviti organisma P.

Diagram 10.1 shows an activity of organism P.



Rajah 10.1
Diagram 10.1

(a) Berdasarkan Rajah 10.1, terangkan peranan organisma P.

[2 markah]

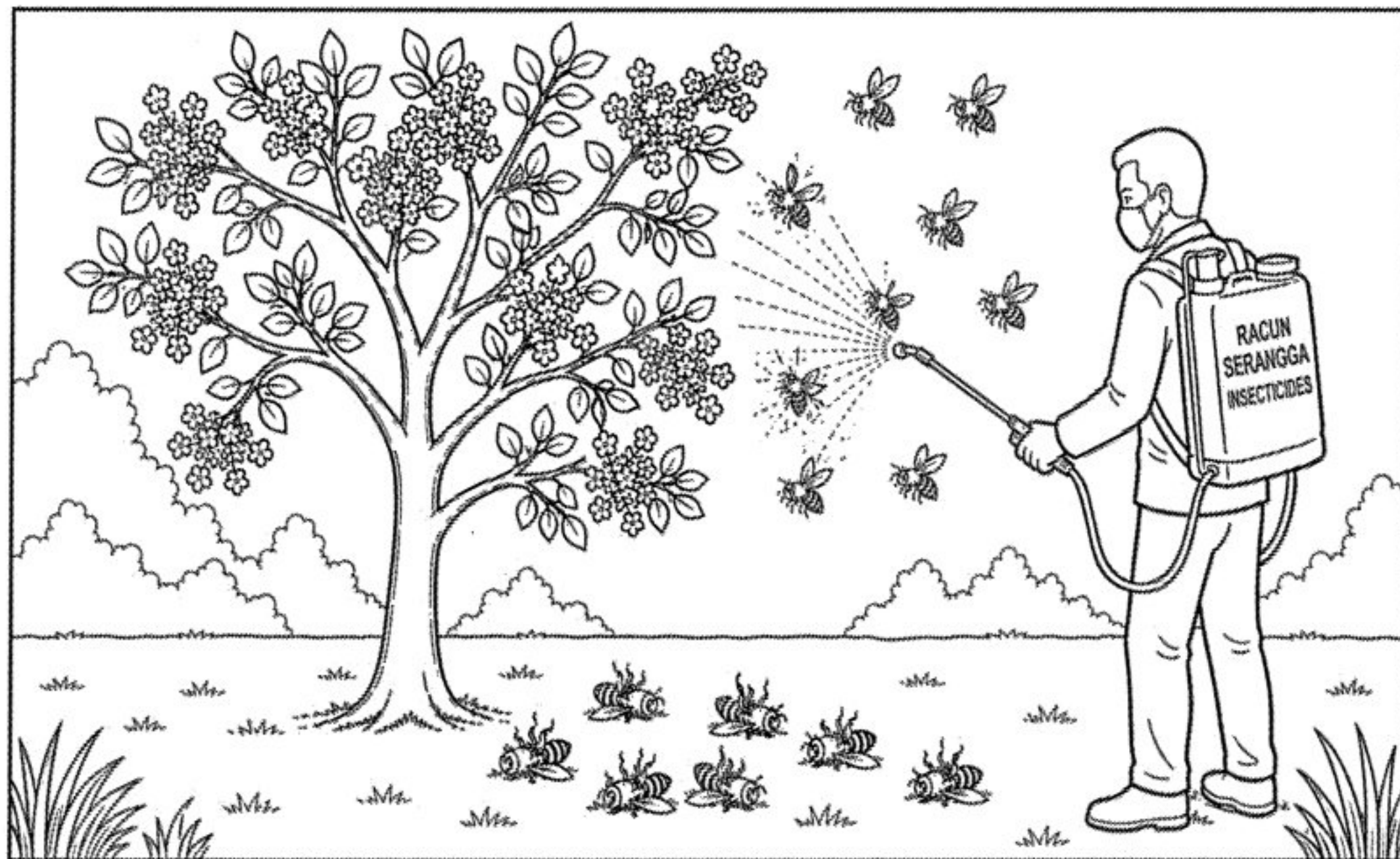
Based on Diagram 10.1, explain the role of organism P.

[2 marks]

<https://t.me/cikgufazliebiosensei>

- (b) Rajah 10.2 menunjukkan aktiviti seorang pekebun ladang buah.

Diagram 10.2 shows an activity of a fruit farmer.



Rajah 10.2
Diagram 10.2

- (i) Terangkan kesan aktiviti tersebut kepada penghasilan buah.

[5 markah]

Explain the effects of the activity on fruit production.

[5 marks]

- (ii) Pekebun tersebut menggunakan satu kaedah untuk menghasilkan buah tanpa biji. Berdasarkan pengetahuan biologi anda, huraikan kaedah tersebut.

[3 markah]

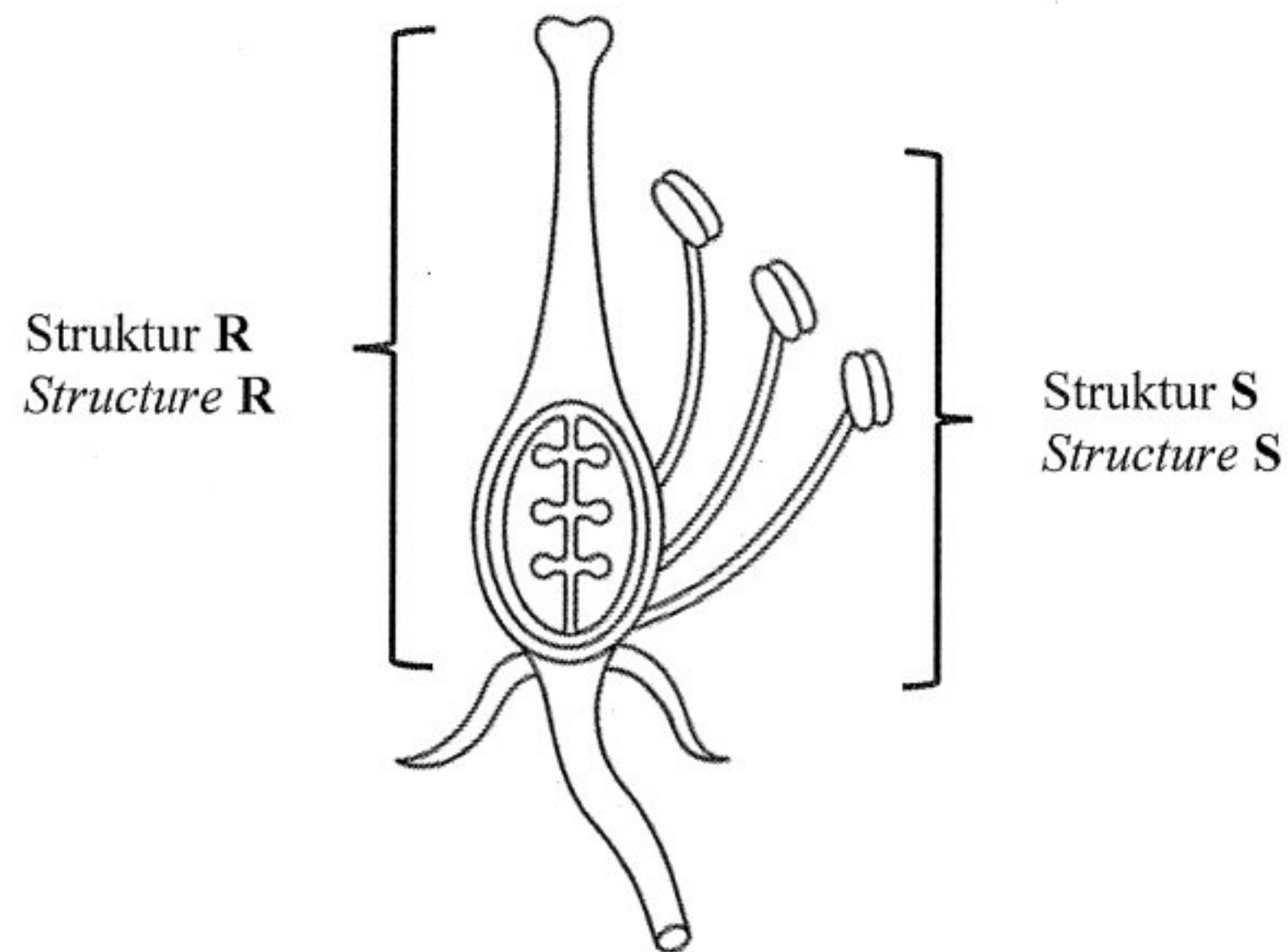
The fruit farmer used a method to produce seedless fruit. Based on your biological knowledge, describe the method.

[3 marks]

[Lihat halaman sebelah
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- (c) (i) Rajah 10.3 menunjukkan keratan rentas sekuntum bunga.

Diagram 10.3 shows a cross section of a flower.



Rajah 10.3
Diagram 10.3

Bandingkan struktur R dan S.

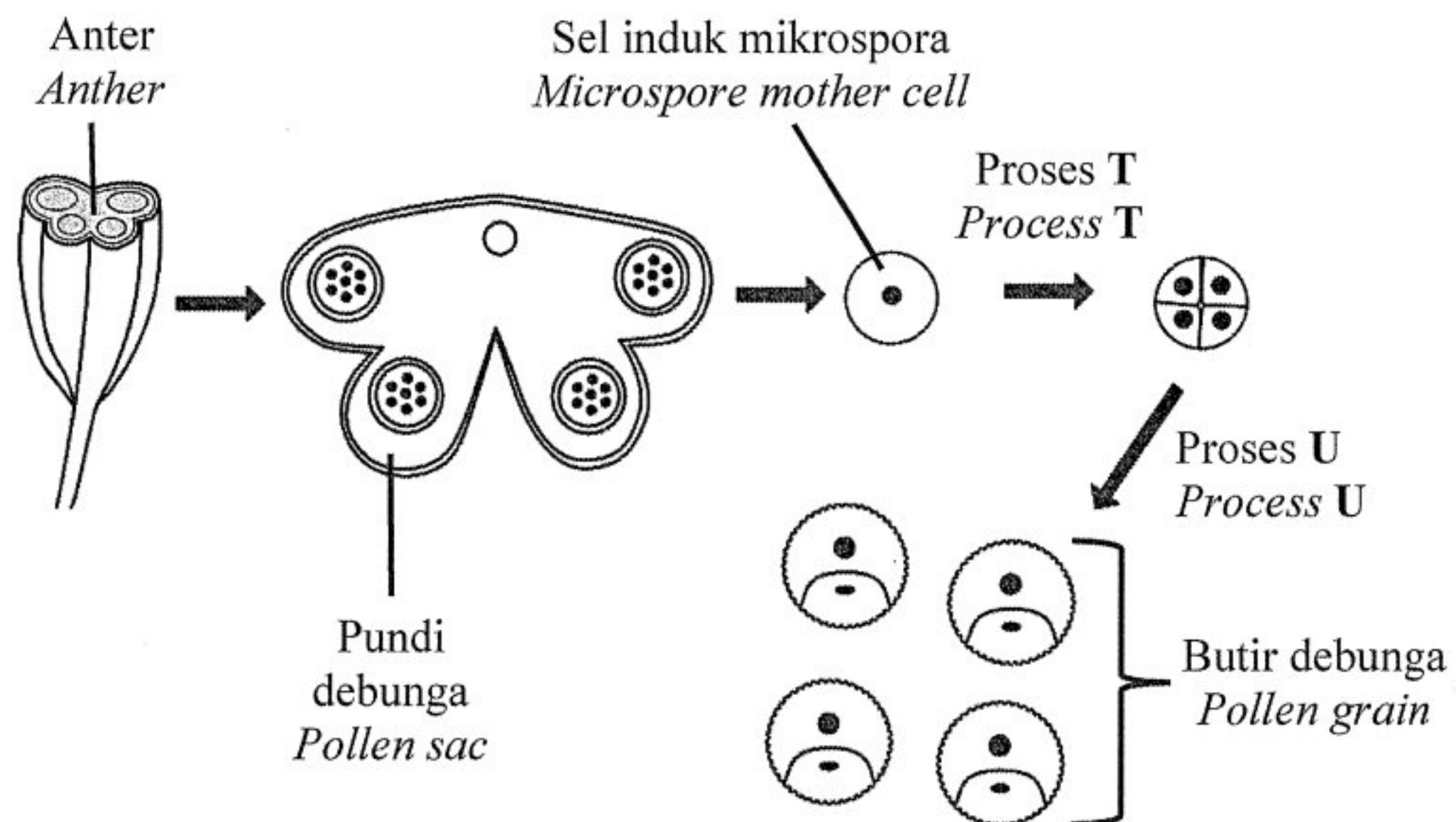
[5 markah]

Compare the structure R and S.

[5 marks]

- (ii) Rajah 10.4 menunjukkan pembentukan butir debunga. Proses T dan proses U ialah proses pembahagian sel.

Diagram 10.4 shows the pollen grain formation. Process T and process U are cell division process.



Rajah 10.4
Diagram 10.4

Berdasarkan Rajah 10.4, bezakan proses T dan U.

[5 markah]

Based on Diagram 10.4, differentiate between process T and U.

[5 marks]

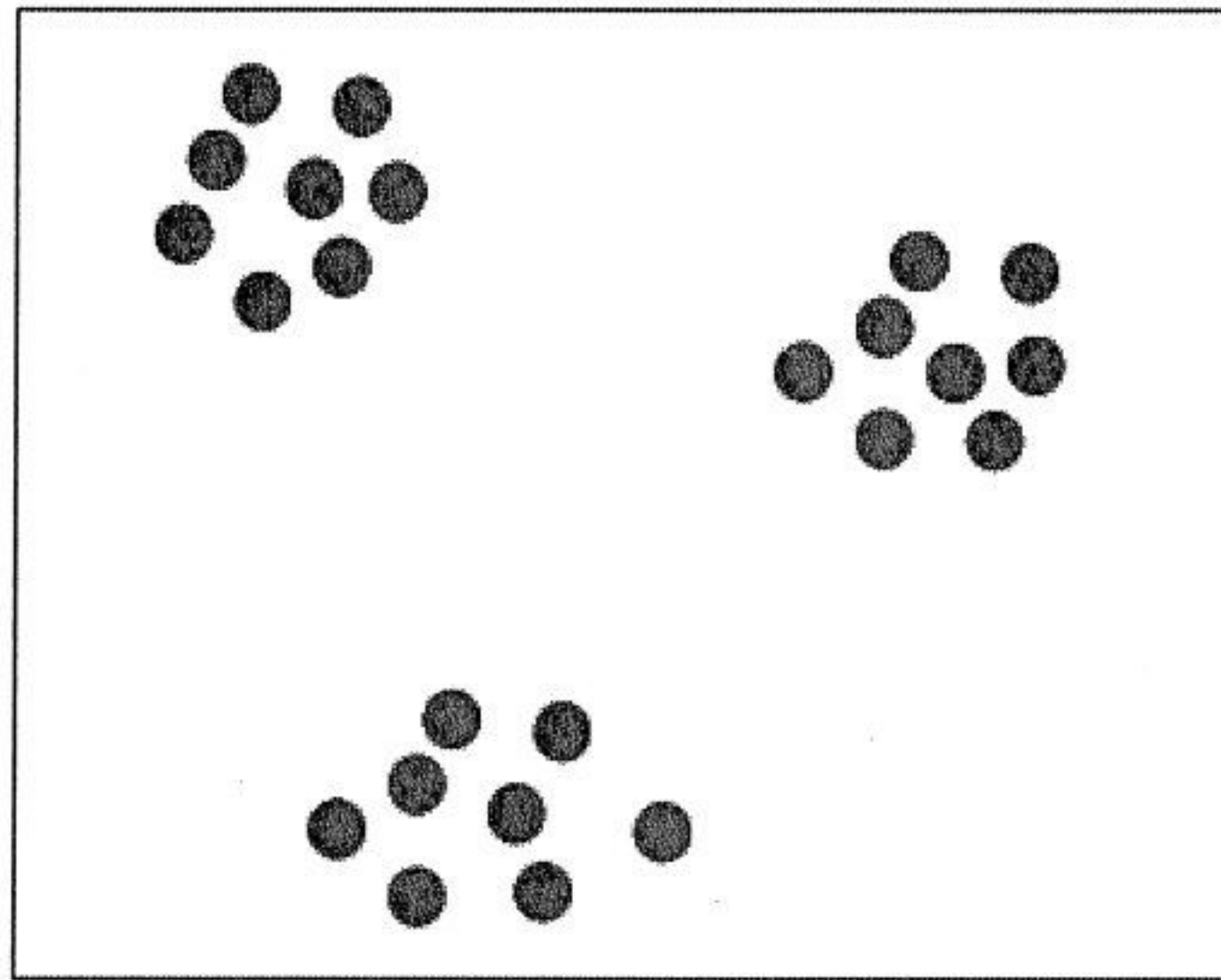
Bahagian C

[20 markah]

Soalan ini mesti dijawab.

11. Rajah 11.1 menunjukkan taburan populasi satu organisma.

Diagram 11.1 shows the population distribution of an organism.



Rajah 11.1
Diagram 11.1

(a) Terangkan corak taburan populasi yang ditunjukkan.

[2 markah]

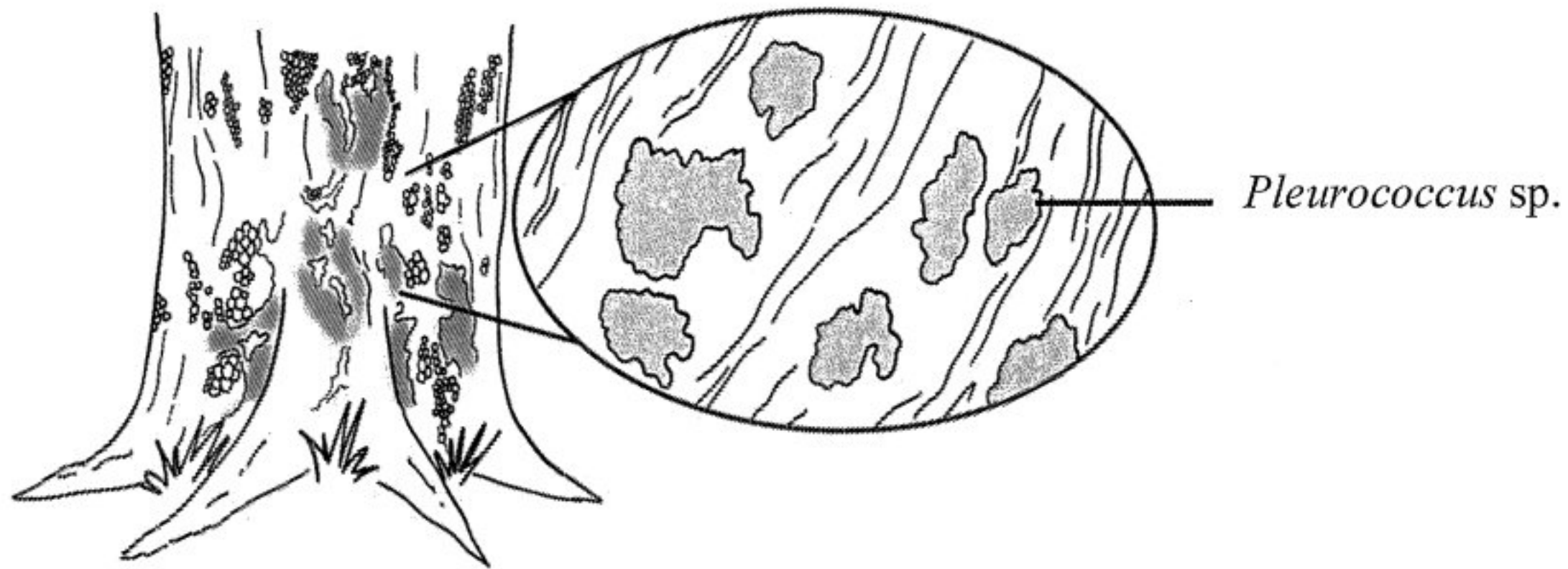
Explain the pattern of population distribution shown.

[2 marks]

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- (b) Rajah 11.2 menunjukkan sejenis alga hijau *Pleurococcus* sp. yang tumbuh di atas batang pokok.

*Diagram 11.2 shows a type of green algae *Pleurococcus* sp. which grow on tree trunk.*



Rajah 11.2
Diagram 11.2

Cadangkan satu kaedah untuk mengkaji taburan populasi *Pleurococcus* sp.
Terangkan kaedah tersebut.

[3 markah]

*Suggest a method to study the population distribution of *Pleurococcus* sp.
Explain the method.*

[3 marks]

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- (c) Artikel di bawah menunjukkan kesan tumpahan minyak kepada pokok bakau di Hutan Simpan Kekal Tanjung Tuan, Port Dickson.

The article below shows the effects of oil spill on mangrove trees in Hutan Simpan Kekal Tanjung Tuan, Port Dickson.

Port Dickson: Pokok bakau yang dicemari tumpahan minyak lazimnya melalui tempoh kritikal antara 6 hingga 12 bulan sebelum mati secara semula jadi. Pokok berkenaan akan menunjukkan tanda kesukaran untuk hidup dalam tempoh itu, terutama daunnya bertukar menjadi kekuningan.

Pengkaji pokok bakau dari Institut Alam Sekitar dan Pembangunan Universiti Kebangsaan Malaysia (UKM), Dr Aldrie Amir berkata, lazimnya kesan tumpahan minyak menjadi dominan ketika air pasang menyebabkan keseluruhan akar pokok ditenggelami air laut yang dicemari minyak.

Port Dickson: Mangrove trees contaminated by oil spills usually go through a critical period of between 6 and 12 months dying naturally. During this period, the trees show signs of difficulty in surviving, especially as their leaves turn yellowish.

A mangrove researcher from the Institute of Environment and Development, Universiti Kebangsaan Malaysia (UKM), Dr. Aldrie Amir, said that the effects of oil spills typically become more dominant during high tide, when the entire root system of the trees is submerged oil-contaminated seawater.

Sumber: Bernama, 17 Mac 2021
Source: Bernama, 17 March 2021

Berdasarkan artikel di atas, terangkan kesan tumpahan minyak kepada kemandirian spesies pokok bakau.

[6 markah]

Based on the article above, explain the impact of oil spills on the survival of mangrove tree species.

[6 marks]

- (d) Sebuah syarikat telah memilih satu kawasan paya bakau untuk membuka sebuah kilang pembuatan arang kayu.

Bincang kebaikan pilihan tersebut.

[4 markah]

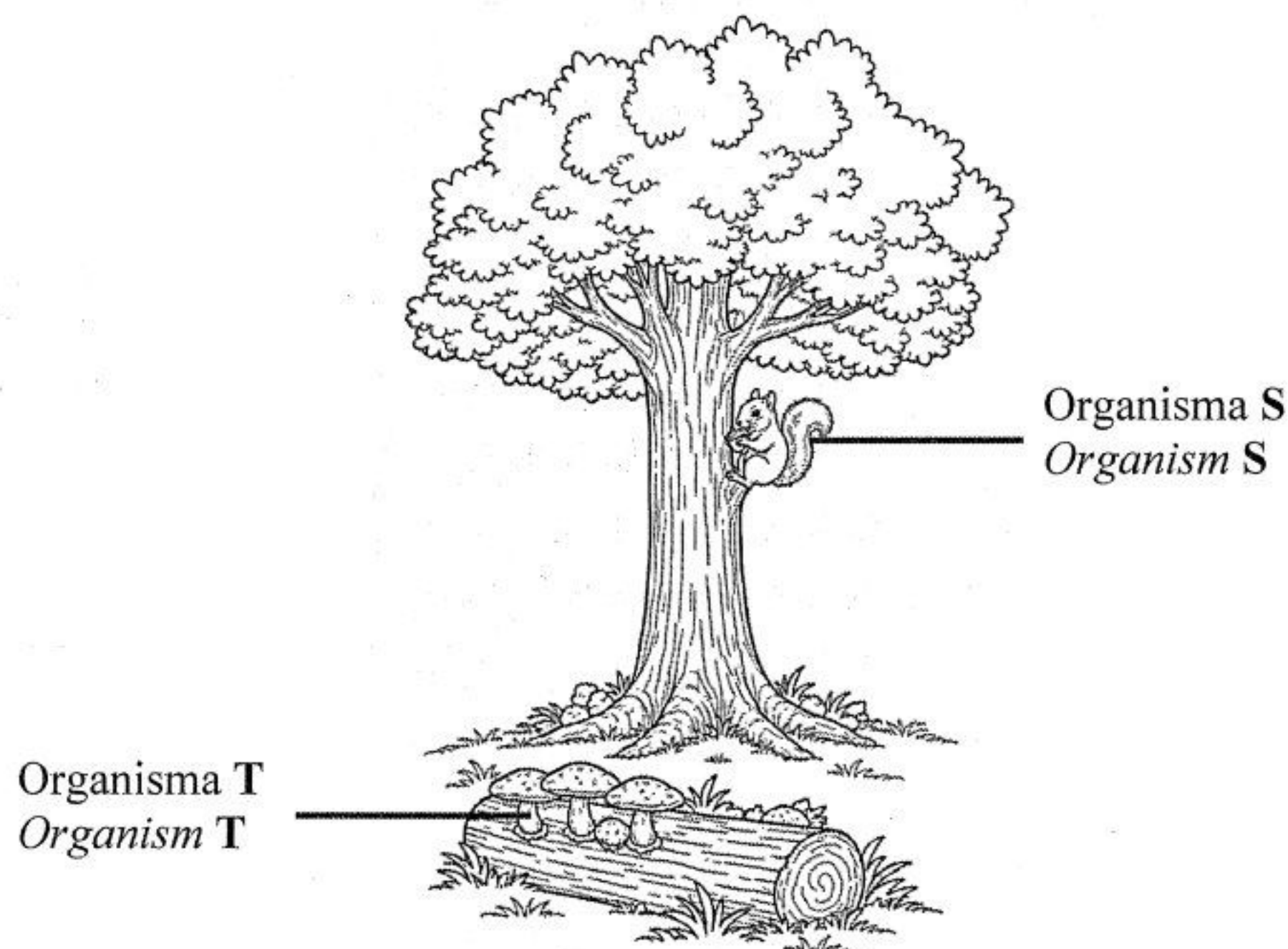
A company chose a mangrove swamp area to open a charcoal production factory.

Discuss the advantages of the choice.

[4 marks]

- (e) Rajah 11.3 menunjukkan organisma dalam satu kawasan.

Diagram 11.3 shows organisms in an area.



Rajah 11.3
Diagram 11.3

Banding bezakan tabiat nutrisi organisma S dan organisma T.

[5 markah]

Compare and contrast the nutrition of organism S and organism T.

[5 marks]

<https://t.me/cikgufazliebiosensei>

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