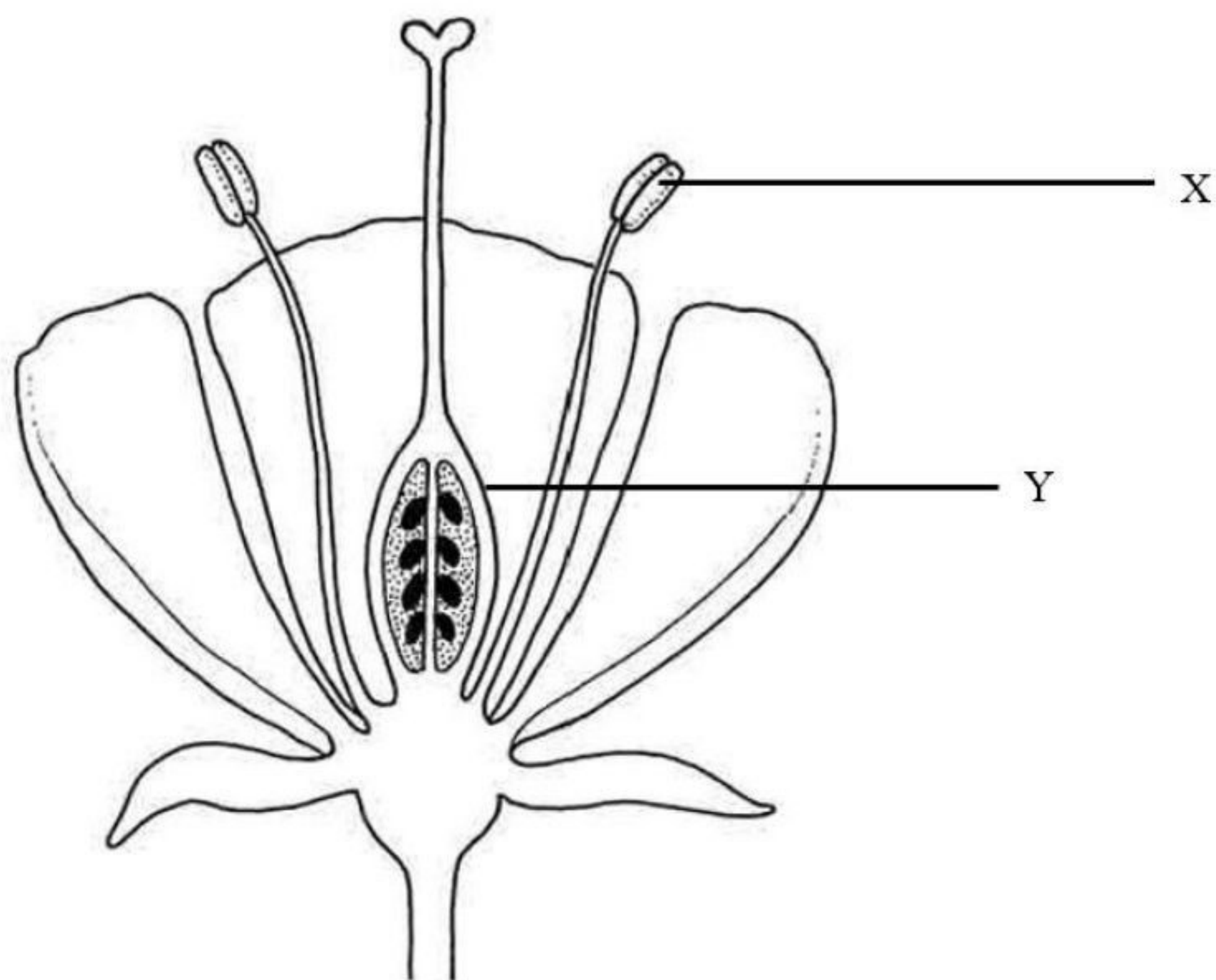


Bahagian A
[60 markah]
Jawab **semua** soalan.

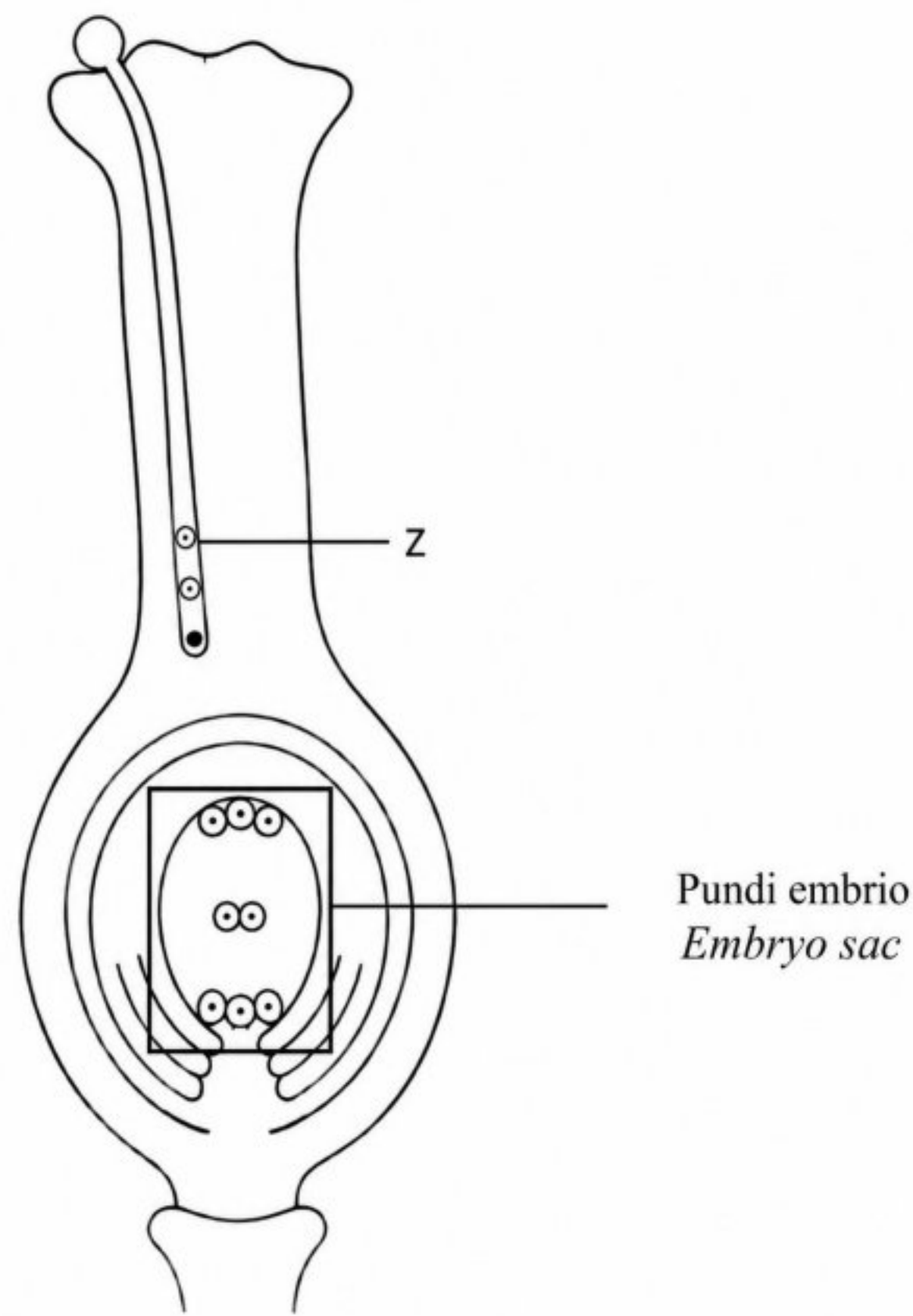
- 1 Rajah 1.1 menunjukkan struktur organ pembiakan tumbuhan.
Diagram 1.1 shows the structure of the reproductive organs of a plant.



Rajah 1.1 / *Diagram 1.1*

- (a) (i) Namakan struktur X dan Y
Name structure X and Y
X :
Y :
[2 markah / marks]
- (ii) Nyatakan fungsi X.
State the function of X.
.....
[1 markah / mark]

- (b) Rajah 1.2 menunjukkan pembentukan tiub debunga.
Diagram 1.2 shows formation of a pollen tube.



Rajah 1.2 / *Diagram 1.2*

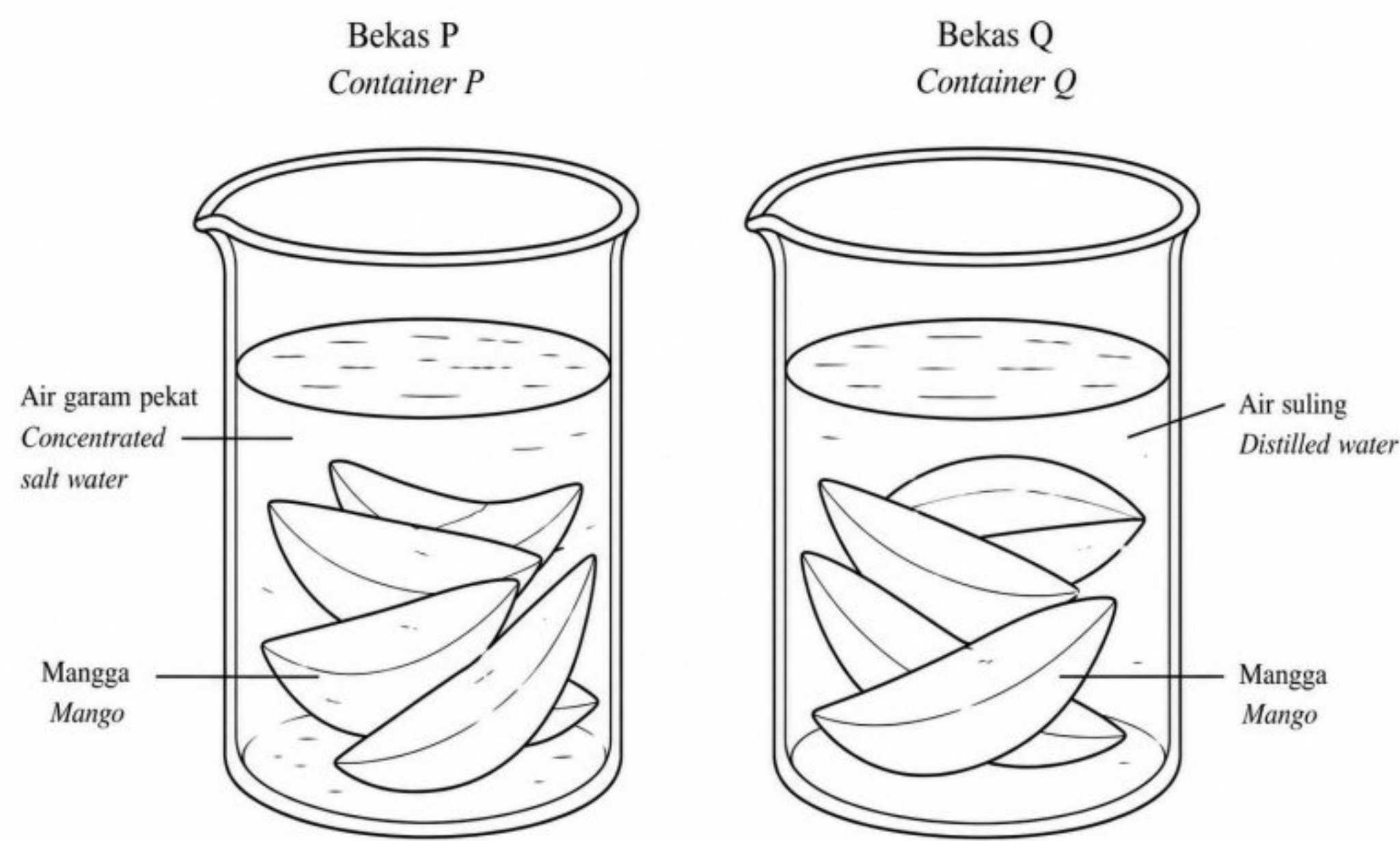
- (i) Namakan Z.
Name of Z.

[1 markah / mark]
- (ii) Tiub debunga pada Rajah 1.2 dijangkiti sejenis patogen dan menyebabkan pembentukannya terbantut. Terangkan kesan ke atas persenyawaan di pundi embrio.
The pollen tube in Diagram 1.2 is infected by a pathogen and its formation is stunted. Explain the effect on fertilization in the embryo sac.

[2 markah / marks]

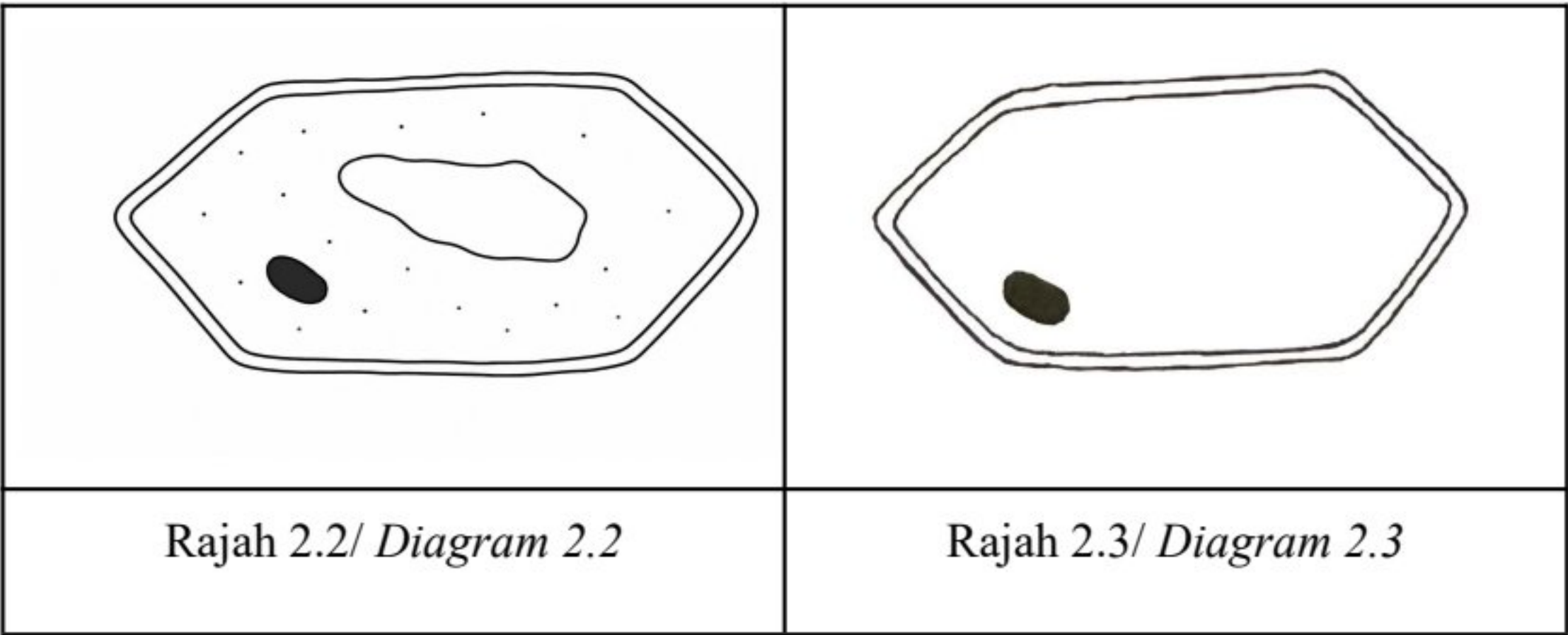
2. Rajah 2.1 menunjukkan potongan buah mangga yang direndam dalam bekas P dan bekas Q.

Diagram 2.1 shows strips of mango fruit soaked in container P and container Q.



Rajah 2.1 / Diagram 2.1

- (a) Rajah 2.2 menunjukkan keadaan sel mangga sebelum direndam dalam bekas P.
Diagram 2.2 shows the condition of mango cells before being immersed in a container P



- (i) Lengkapkan Rajah 2.3 selepas direndam dalam air garam pekat
Complete Diagram 2.3 after soaking in concentrated salt water.
- [1 markah / mark]

(b) (i) Nyatakan tekstur hirisan mangga dalam bekas Q selepas dua hari.
 Terangkan jawapan anda.
State the texture of the mango slices in container Q after two days.
Explain your answer.

.....

.....

.....

[3 markah / marks]

(ii) Terangkan **satu** ciri membran plasma sel tumbuhan yang menyebabkan tekstur buah mangga berubah selepas 2 hari?
*Explain **one** characteristic of the plasma membrane of plant cells that causes the texture of mango fruit to change after 2 days?*

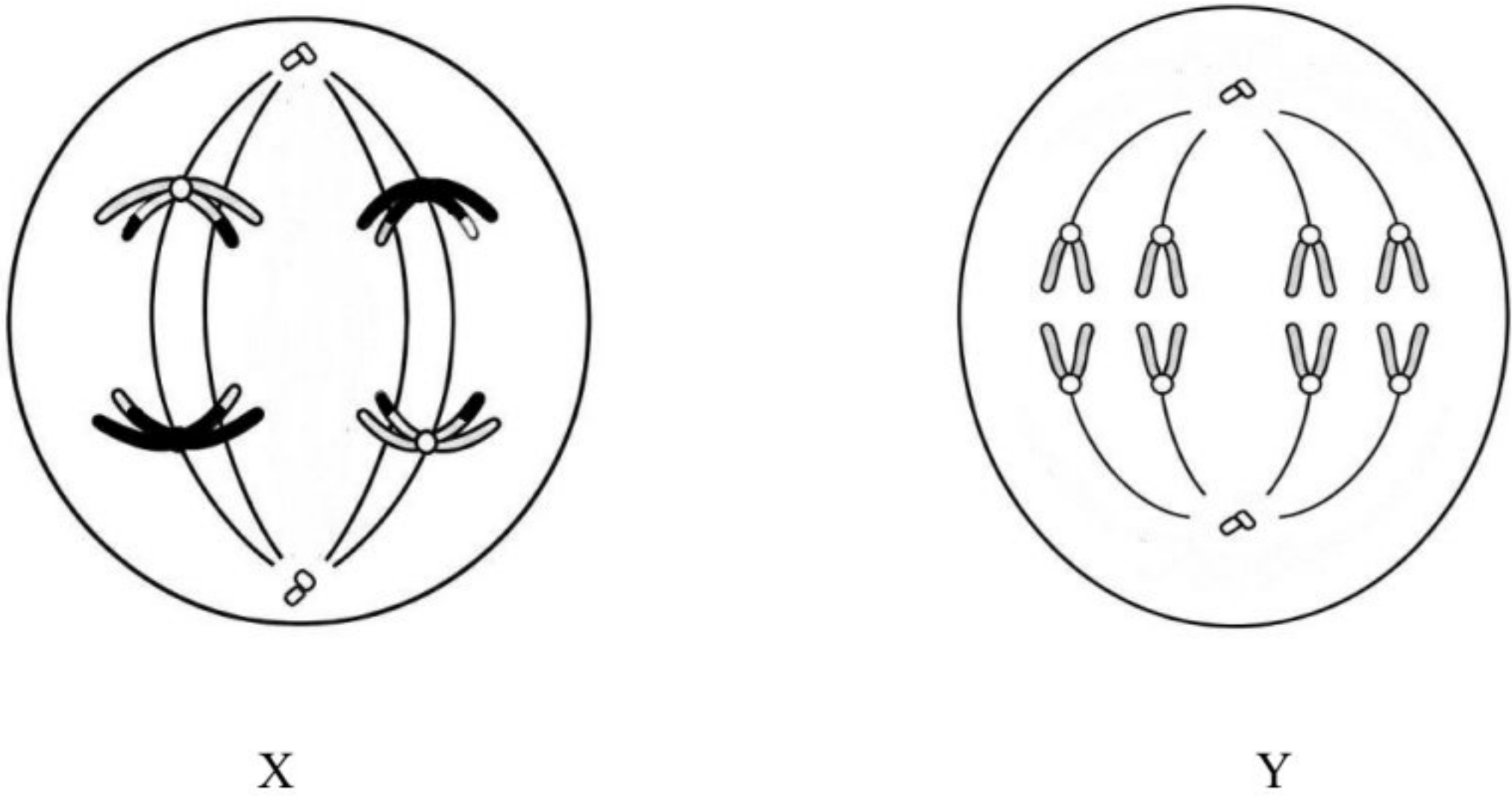
.....

.....

.....

[2 markah / marks]

3. Rajah 3.1 menunjukkan satu fasa dari dua jenis proses pembahagian sel yang berlaku di dalam manusia.
Diagram 3.1 shows two types of cell division processes that occur in humans.



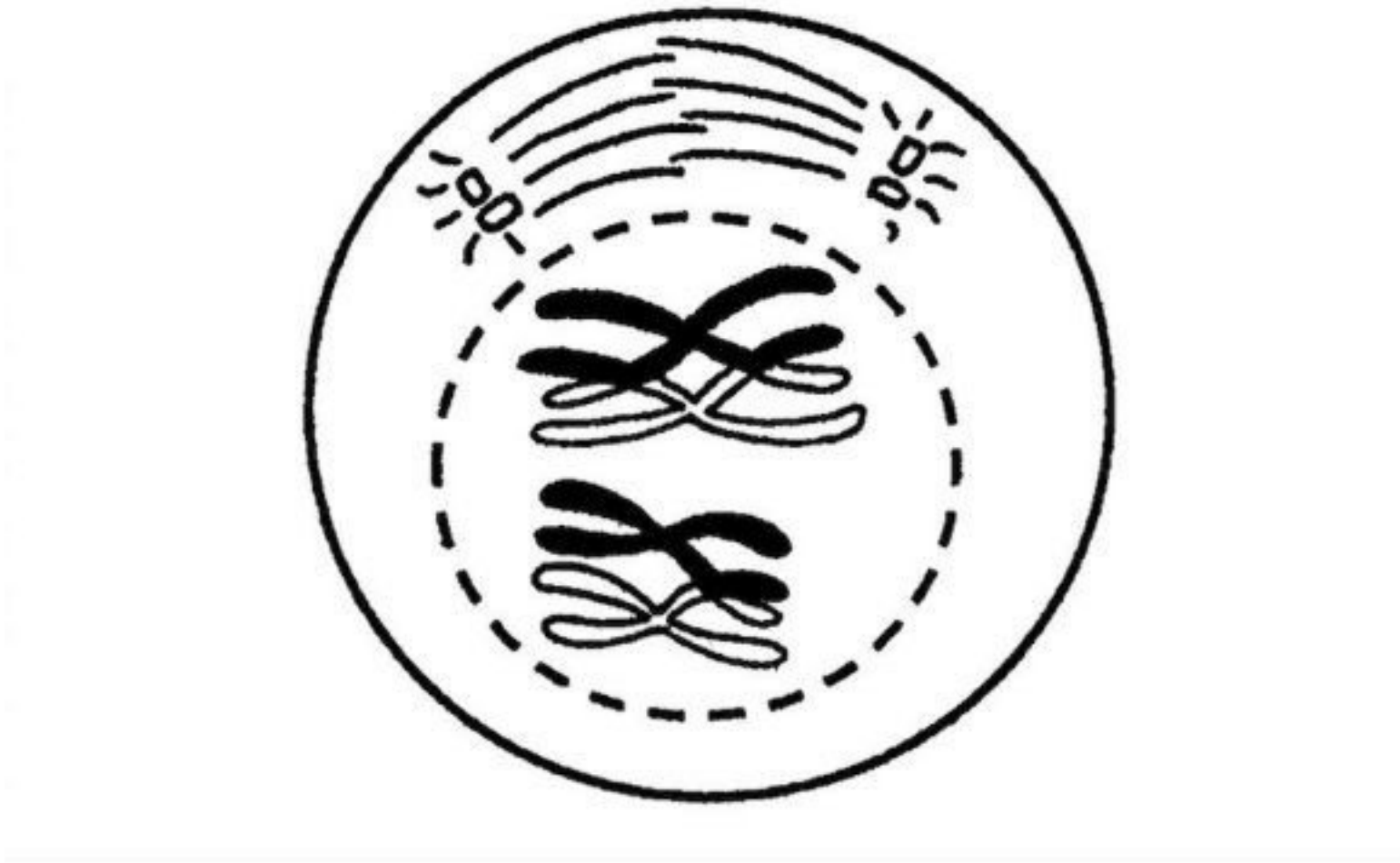
Rajah 3.1 / Diagram 3.1

- (a) Berdasarkan Rajah 3.1, lengkapkan jadual berikut.
Based on the Diagram 3.1 complete the table.

Aspek <i>Aspect</i>	X	Y
Fasa <i>Phase</i>		
Bilangan sel anak <i>The number of daughter cells</i>		

[2 markah / *marks*]

- (b) Rajah 3.2 menunjukkan satu proses yang berlaku semasa pembahagian sel.
Diagram 3.2 shows a process that happened during cell division.



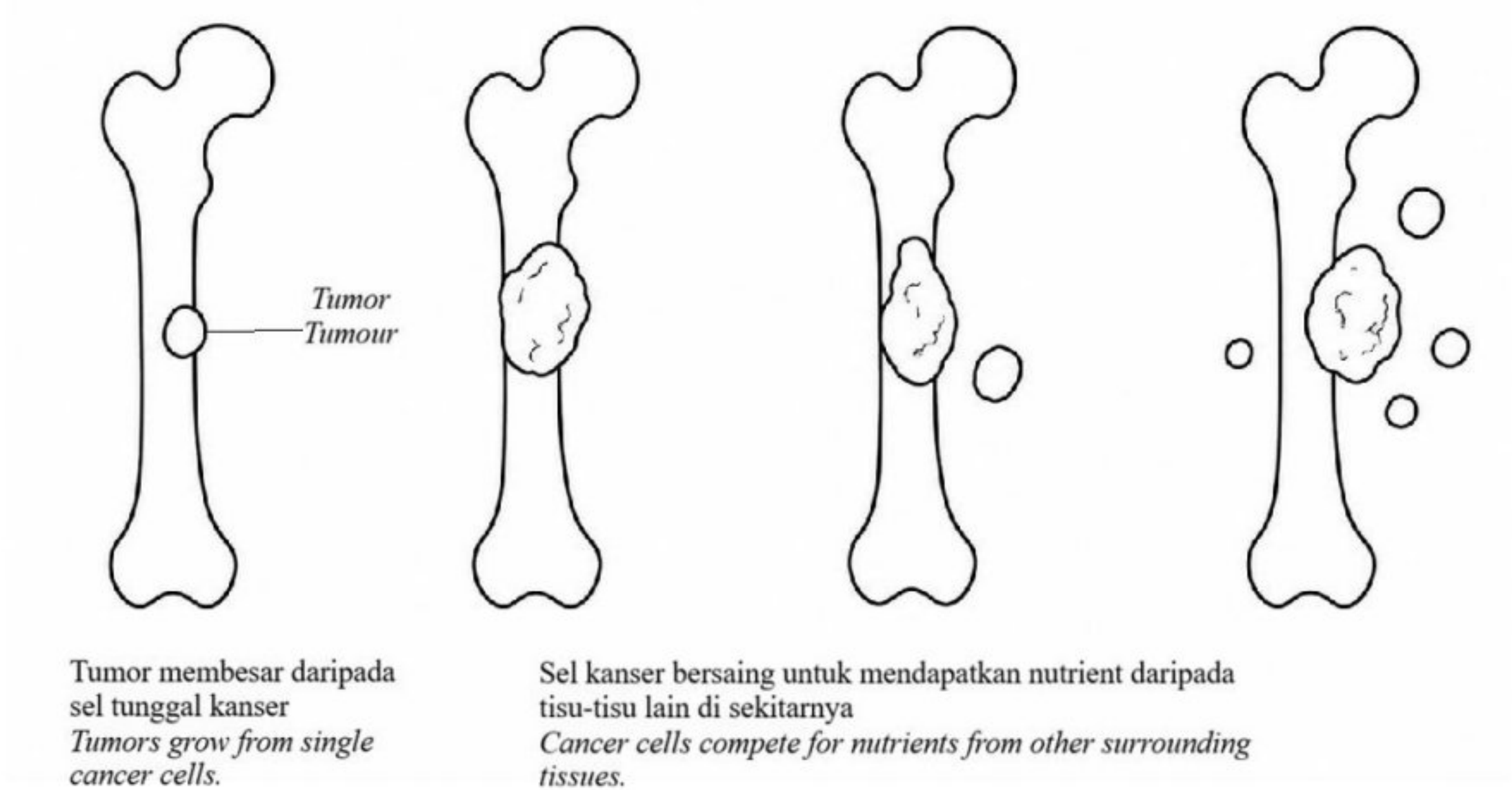
Rajah 3.2 / *Diagram 3.2*

- (i) Namakan proses tersebut.
Name the process.

[1 markah / *mark*]
- (ii) Nyatakan kepentingan proses tersebut.
Explain the importance of the process.

[1 markah / *mark*]
- 6

(c) Rajah 3.2 menunjukkan perkembangan kanser tulang
Diagram 3.2 shows the progression of bone cancer.



Rajah 3.2 / *Diagram 3.2*

Terangkan bagaimana terjadinya kanser.
Explain how cancer occur.

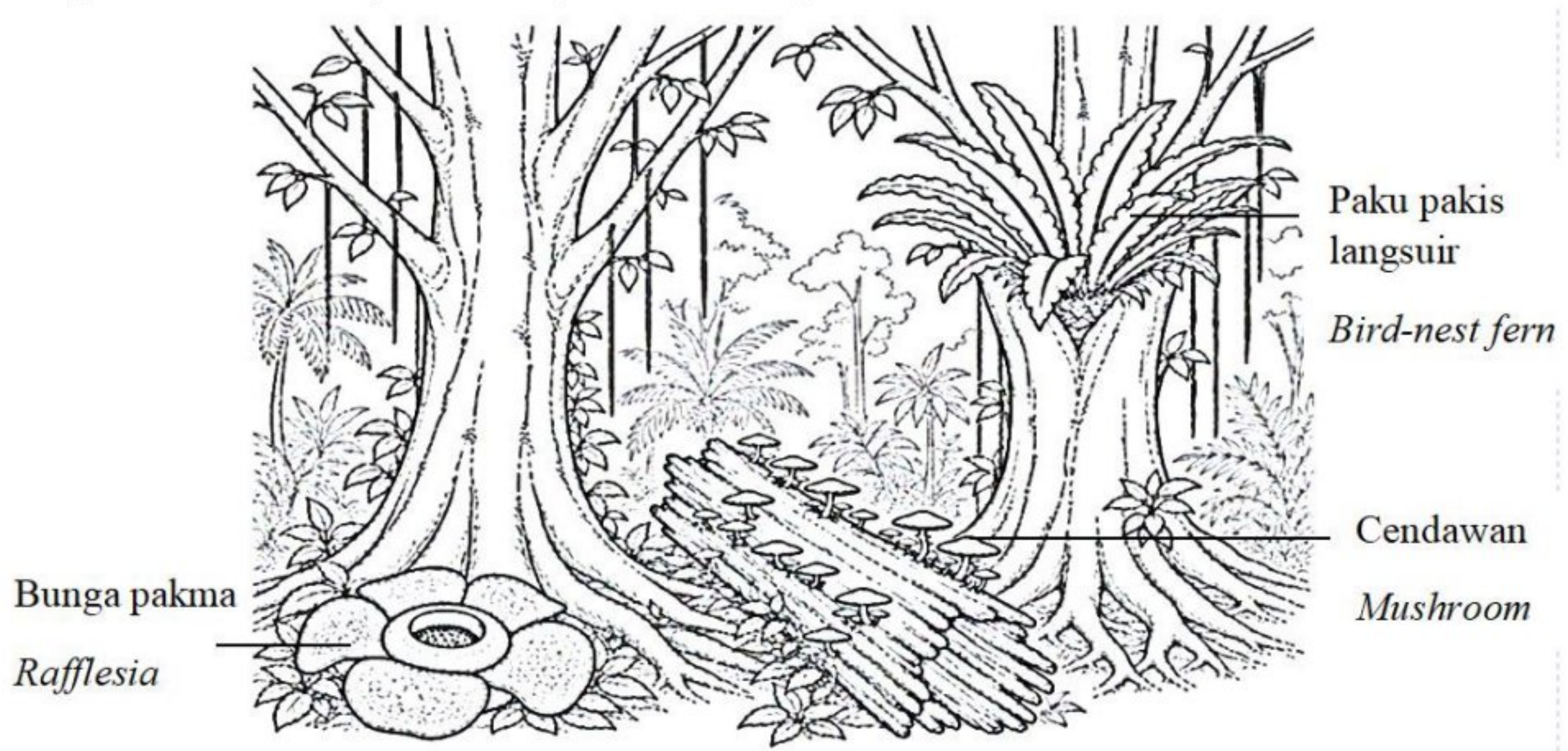
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.....

.....

[3 markah / *marks*]

4. Rajah 4 menunjukkan ekosistem hutan di Malaysia.
Diagram 4 shows the forest ecosystem in Malaysia.



Rajah 4 / *Diagram 4*

- (a) Nyatakan maksud ekosistem.
State the meaning of ecosystem.

.....

[2 markah / *marks*]

- (b) Cendawan ialah sejenis organisma saprofit. Nyatakan nic cendawan di dalam ekosistem ini.
Mushrooms are a type of saprophytic organism. State the niche of mushrooms in this ecosystem.

.....

[1 markah / *mark*]

- (c) Bandingkan penyesuaian nutrisi pokok bunga pakma dan paku pakis langsuir.
Compare the nutritional adaptations of the Rafflesia and the bird-nest fern.

Persamaan <i>Similarity</i>	
Perbezaan <i>Differences</i>	
Bunga pakma <i>Rafflesia</i>	Paku pakis langsuir <i>Bird-nest fern</i>

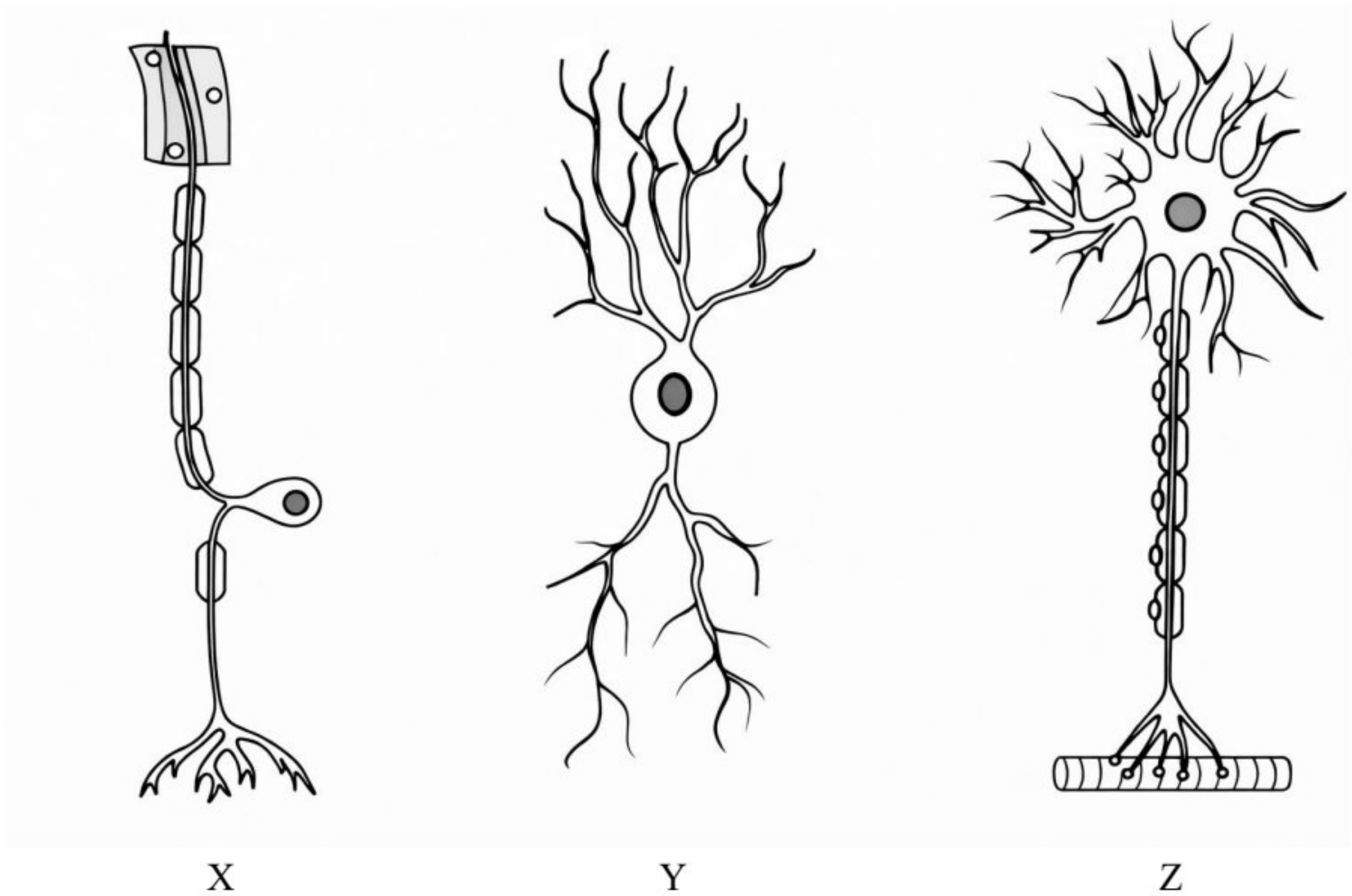
[2 markah / marks]

- (d) Ramalkan kesan jangka masa panjang kehadiran tumbuhan berikut terhadap perumahannya.
Predict the long-term effects of the presence of the following plants on their host.

- (i) Bunga pakma / *Rafflesia*:
.....
- (ii) Paku pakis sarang burung / *Bird-nest fern*:
.....

[2 markah / marks]

5. (a) Rajah 5.1 menunjukkan tiga jenis neuron X, Y dan Z.
Diagram 5.1 shows three types of neuron X, Y and Z.



Rajah 5.1 / *Diagram 5.1*

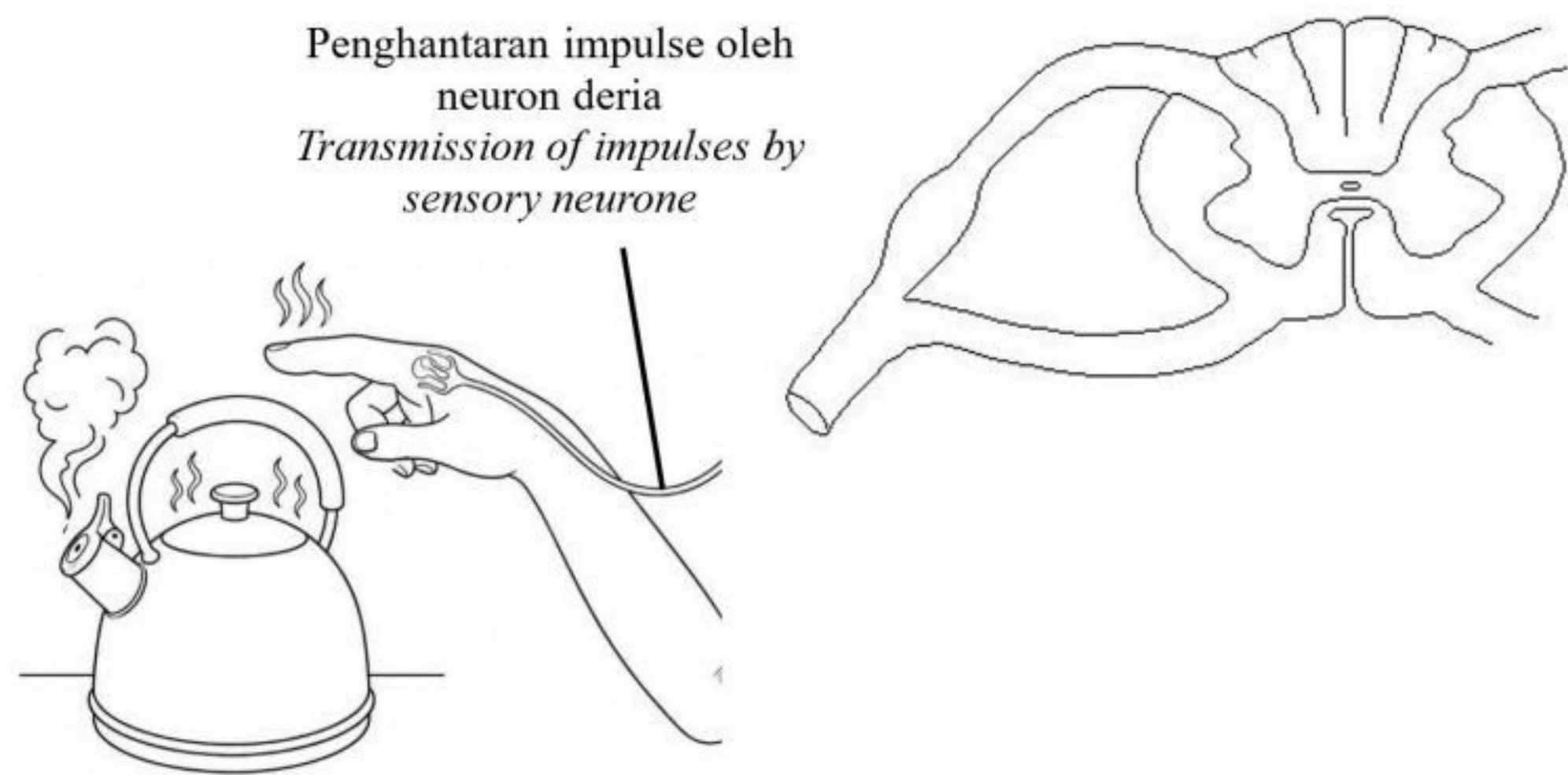
- (i) Berdasarkan Rajah 5.1, nyatakan neuron yang manakah terlibat dalam penghantaran impuls saraf dari reseptor ke sistem saraf pusat?
Based on Diagram 5.1, which of the following neurone is involved in the transmission of nerve impulses from the receptor to the central nervous system?

.....
 [1 markah / mark]

- (ii) Berdasarkan jawapan di 5(a) (i), lukiskan anak panah (→) pada neuron tersebut arah pergerakan impuls.
Based on the answer in 5(a)(i), draw arrows (→) at the neuron to show the direction of the impulse movement.

[1 markah / mark]

- (b) Rajah 5.2 menunjukkan jari Encik K yang tersentuh cerek panas.
Diagram 5.2 shows Mr. K's finger touching a hot kettle.



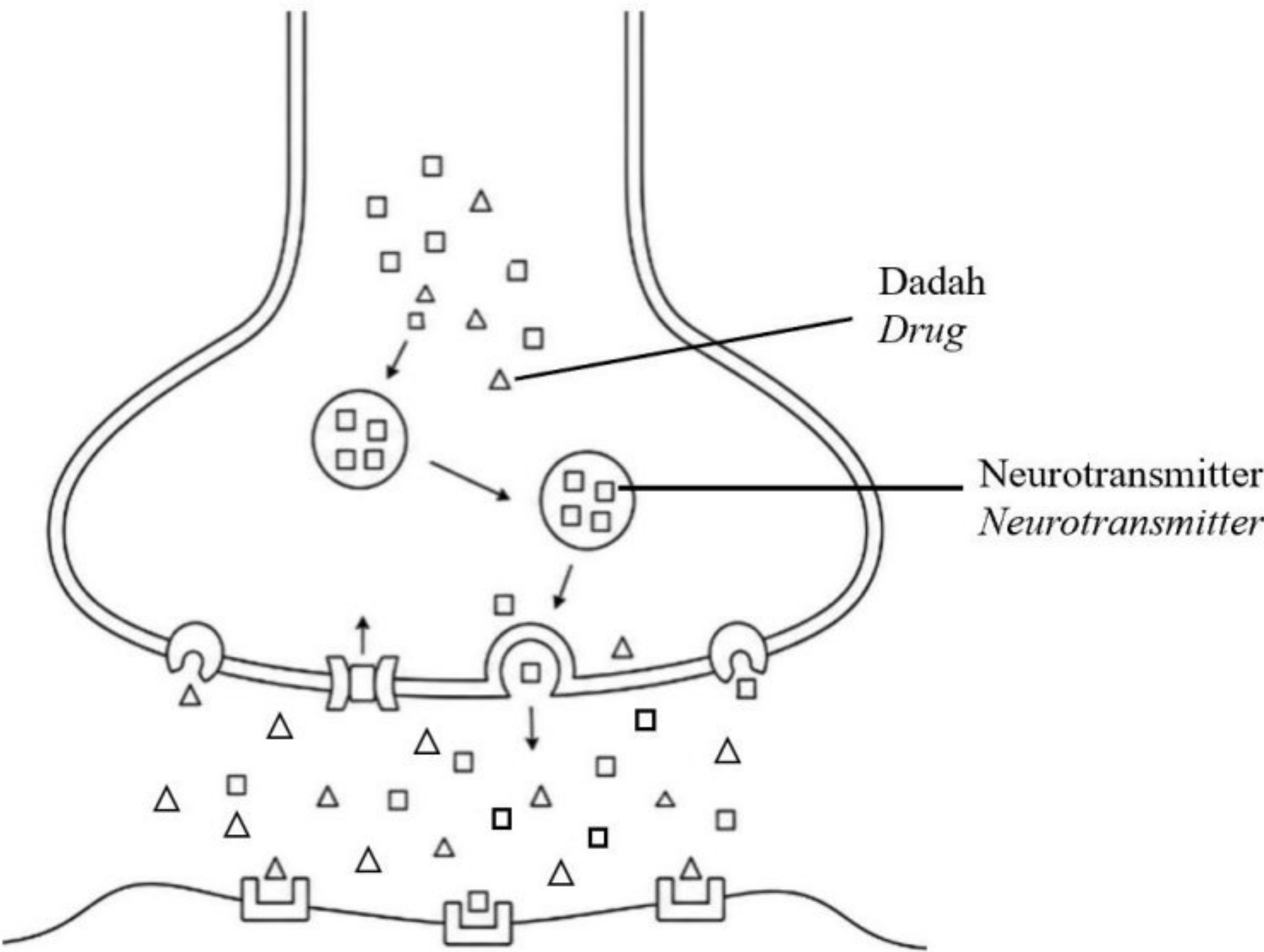
Rajah 5.2 / Diagram 5.2

- (i) Nyatakan jenis gerak balas yang dihasilkan berdasarkan Rajah 5.2.
State the type of response produced based on Diagram 5.2.
-
- [1 markah / mark]
- (ii) Pada Rajah 5.2, lengkapkan laluan penghantaran impuls oleh neuron deria dari reseptor ke jirim kelabu di saraf tunjang dengan menggunakan simbol anak panah. (→)
In Diagram 5.2, complete the impulse transmission pathway by the sensory neurone from the receptor to the grey matter in the spinal cord by using arrow symbols (→).
- [1 markah / mark]
- (ii) Saraf spina Encik K mengalami kecederaan serius. Terangkan bagaimana keadaan ini mempengaruhi gerak balas Encik K terhadap rangsangan dalam Rajah 5.2.
Mr K's spinal nerve has suffered a serious injury. Explain how this condition affects Mr K's response to the stimulus in Diagram 5.2.
-
-
-

[2 markah / marks]

- (c) Seorang budak lelaki telah mengalami kecederaan serius di bahagian kaki akibat kemalangan dan perlu menjalani prosedur pembedahan.
 Doktor telah menyuntik sejenis dadah iaitu morfin kepada budak lelaki itu sebelum melakukan pembedahan.
A boy experienced serious leg injuries due to an accident and needs to undergo a surgical procedure.
A doctor injected a type of drug, which is morphine, into the boy before performing the surgery.

Rajah 5.3 menunjukkan dadah tersebut sedang merentasi celahan sinaps.
Diagram 5.3 shows the drug crossing the synaptic cleft.



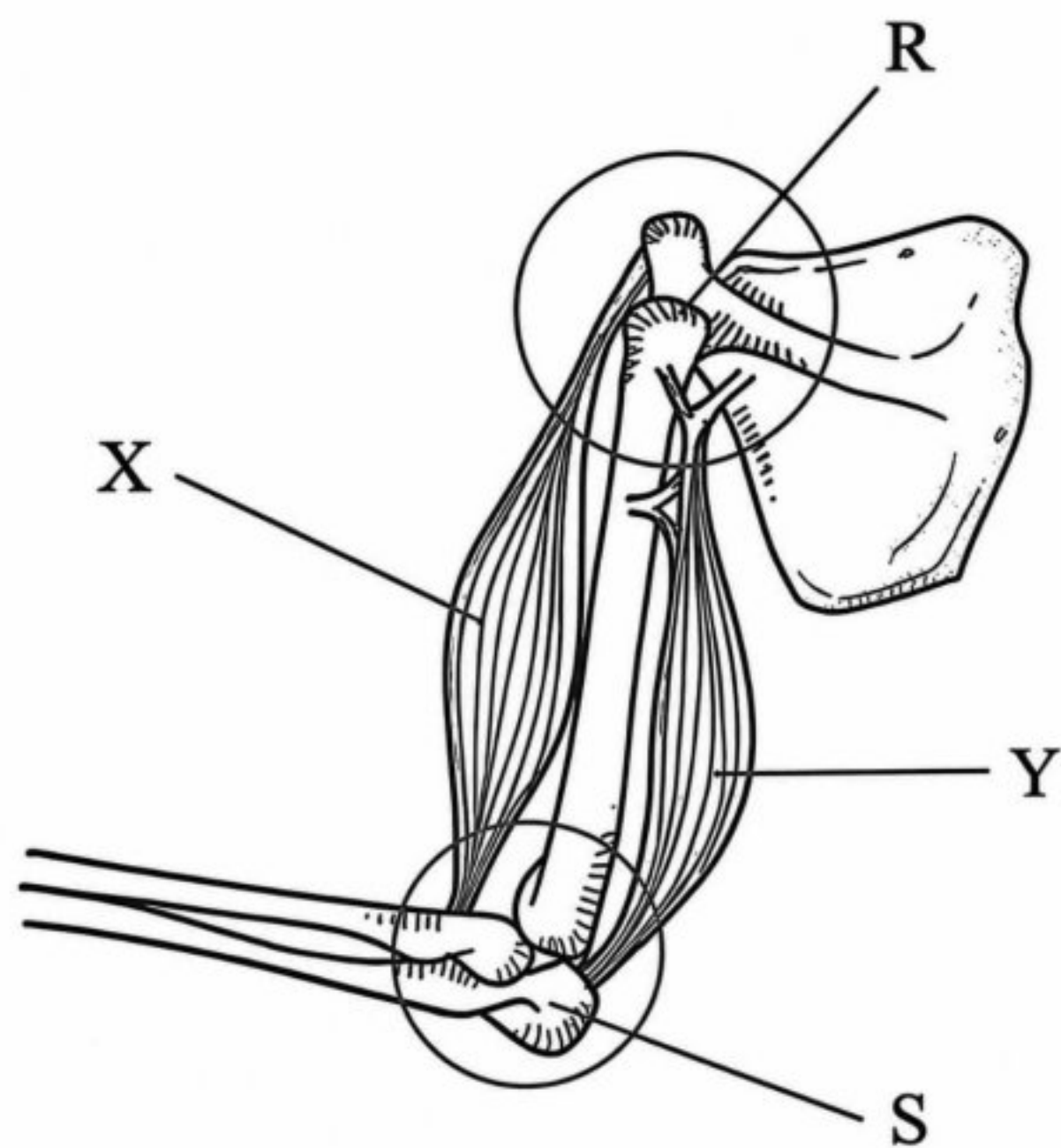
Rajah 5.3 / Diagram 5.3

Terangkan bagaimana dadah tersebut bertindak bagi mengurangkan rasa sakit semasa pembedahan.
Explain how the drug acts to reduce pain after surgery.

.....

[2 markah / marks]

6. Rajah 6 menunjukkan struktur lengan manusia.
Diagram 6 shows the structure of the human arm.



Rajah 6 / *Diagram 6*

- (a) (i) Namakan jenis sendi di R dan S.
Name the type of joint at R and S.

R :
 S :

[2 markah / *marks*]

- (ii) Nyatakan **dua** perbezaan antara sendi R dan S.
*State **two** differences of joint R and S.*

.....

[2 markah / *marks*]

- (iii) Berdasarkan Rajah 6, terangkan tindakan otot X dan otot Y apabila lengan diluruskan.

Based on Diagram 6, explain the action of muscle X and muscle Y when the arm is straightened.

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

[2 markah / marks]

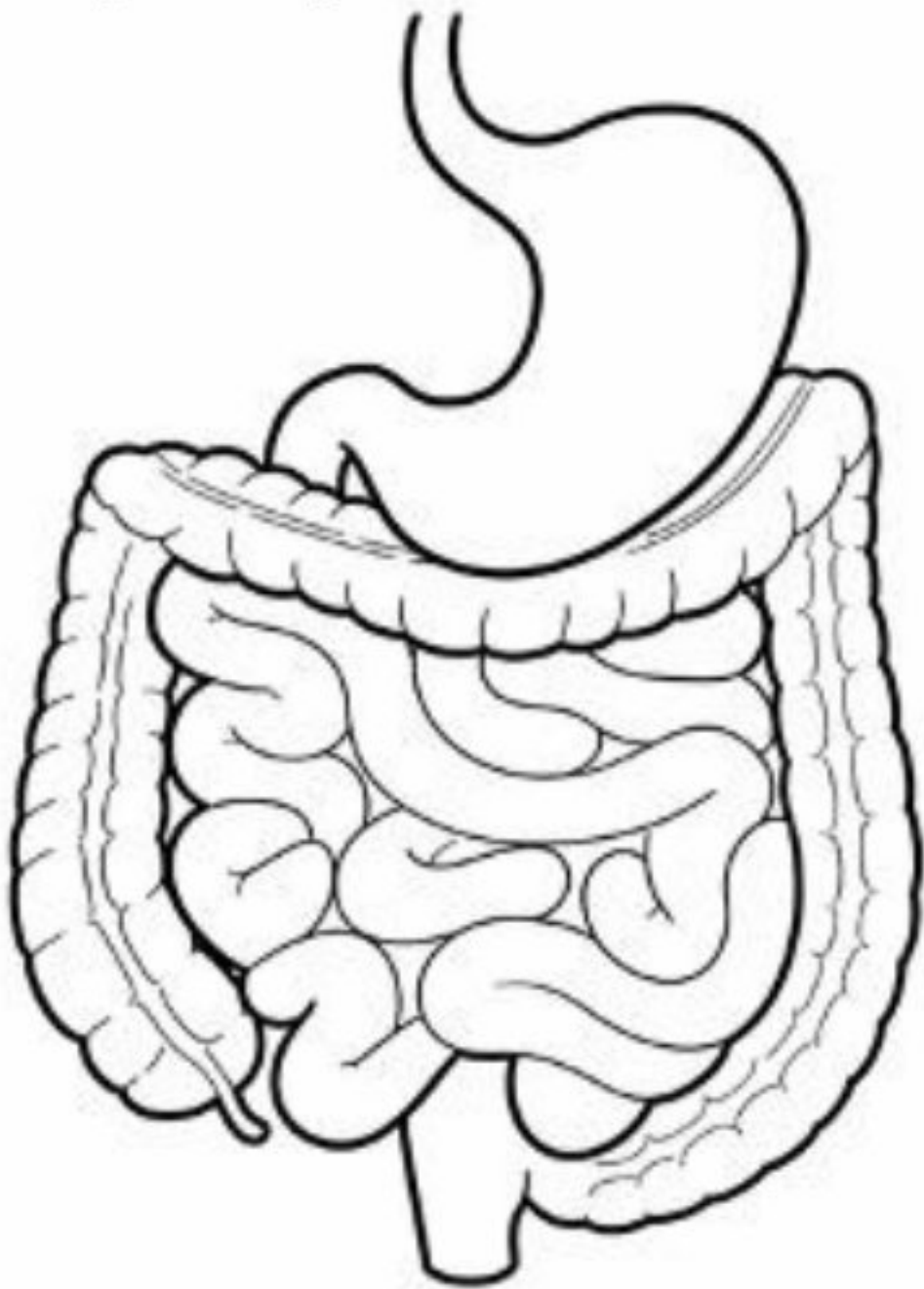
- (b) Tulang radius seorang murid retak akibat terjatuh dari pokok. Doktor menasihati murid tersebut supaya mengambil lebih banyak kalsium dan vitamin D. Jelaskan mengapa?

A student's radius bone was fractured after falling from a tree. The doctor advised the student to take more calcium and vitamin D. Explain why?

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

[2 markah / marks]

7. Rajah 7.1 menunjukkan sistem pencernaan manusia.
Diagram 7.1 shows a human digestive system.

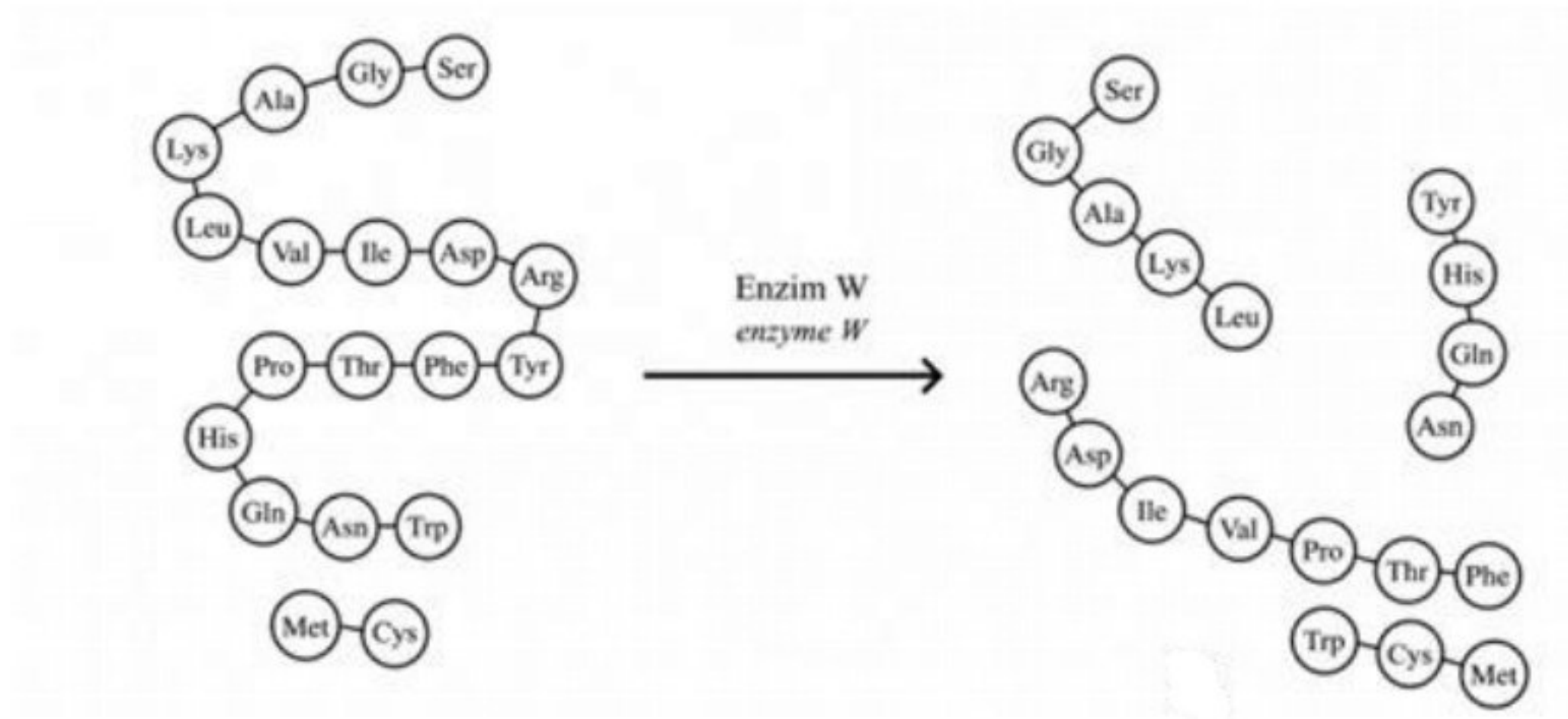


Rajah 7.1 / Diagram 7.1

- (a) (i) Pada Rajah 7.1 labelkan organ yang merembeskan enzim pencernaan protein dengan huruf **R**
*On the Diagram 7.1 , label the organ that secretes protein digesting enzymes with the letter **R**.*

[1 markah / mark]

Rajah 7.2 menunjukkan proses yang berlaku di dalam organ R.
Diagram 7.2 shows a process that occurs in organ R.



Rajah 7.2 / Diagram 7.2

- (ii) Nyatakan jenis metabolisme yang berlaku dalam proses tersebut .
State type of metabolism that occurs in the process.
-
- [1 markah / *mark*]
- (iii) Seorang murid mempunyai tabiat minum air berlebihan semasa sedang makan .
Terangkan bagaimanakah tabiat tersebut boleh mempengaruhi pencernaan protein.
A student has a habit of drinking excessive water while eating. Explain how this habits can affect protein digestion.

.....

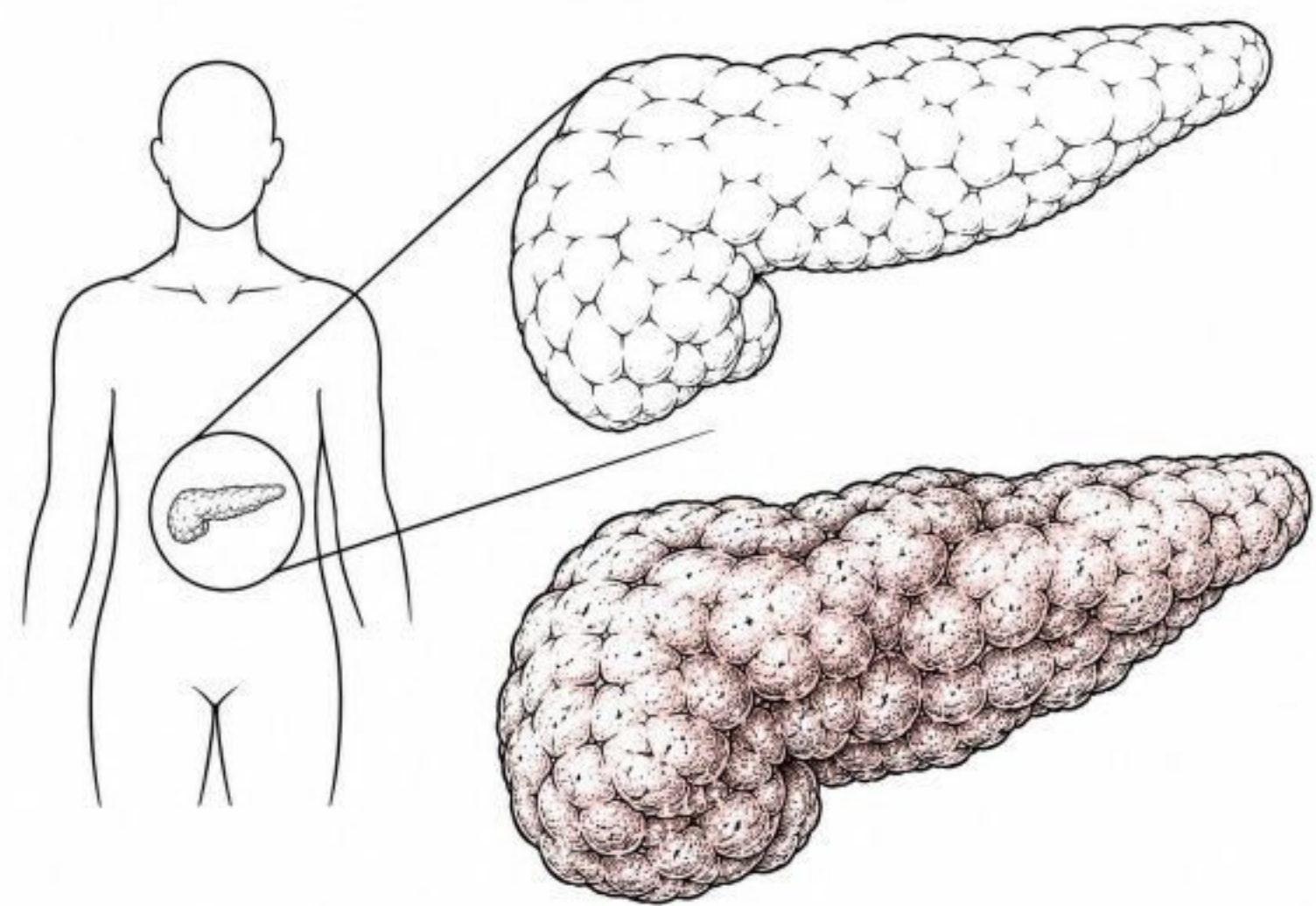
.....

.....

[3 markah / *marks*]

- (b) Rajah 7.3 menunjukkan organ pankreas yang normal dan organ pankreas yang mengalami keradangan .

Diagram 7.3 shows a normal pancreas organ and an inflamed pancreas organ.



Rajah 7.3/ Diagram 7.3

- (i) Namakan dua enzim yang dirembeskan oleh pankreas.
Name two enzymes secreted by the pancreas.

.....

[2 markah / marks]

- (ii) Pesakit tersebut mengalami radang pankreas tetapi masih mengambil makanan berlemak dalam kuantiti tinggi. Terangkan kesan terhadap pencernaan makanan tersebut.
The patient has inflammation of the pancreas but still consumes high quantities of fatty foods. Explain the effect on the digestion of these foods.

.....
.....

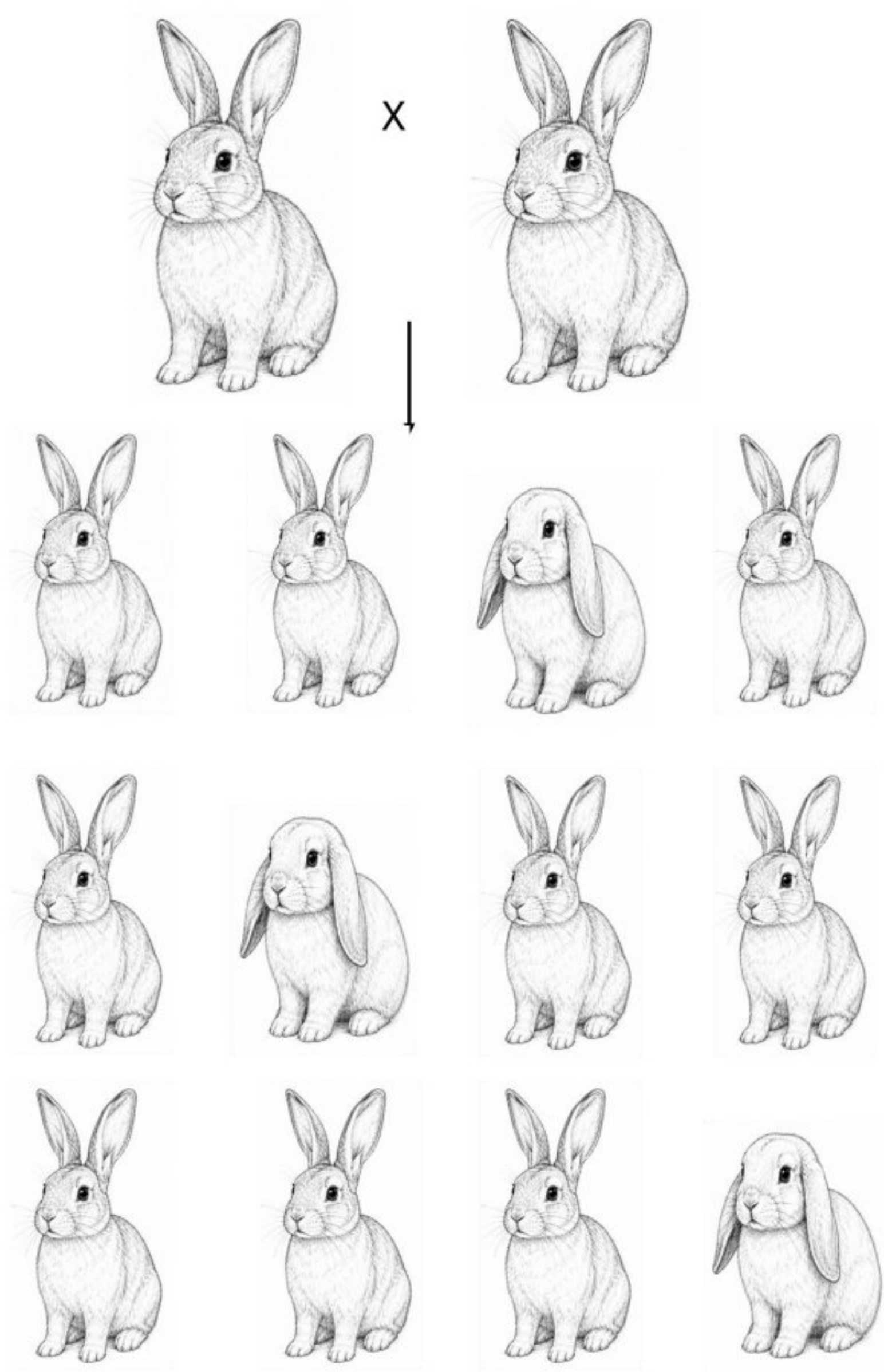
[2 markah / marks]

8. (a) Satu kumpulan penyelidik menjalankan kajian pewarisan bagi ciri jenis telinga terhadap sekumpulan arnab. Trait bagi jenis telinga adalah telinga tegak dan telinga terkulai.

A group of researchers conducted a inheritance study on the characteristics of ear types in a group of rabbits. The traits for ear types are erect ears and floppy ears.

Rajah 8.1 menunjukkan dua ekor arnab induk telinga tegak telah dikacukkan dan menghasilkan generasi F1 dengan dua variasi bentuk telinga.

Diagram 8.1 shows two erect-eared parent rabbits that have been crossed and produced F1 generation with two variations of ear shapes.



Rajah 8.1 / Diagram 8.1



- (i) Berdasarkan Rajah 8.1, tentukan nisbah fenotip bagi bentuk telinga arnab yang dihasilkan.

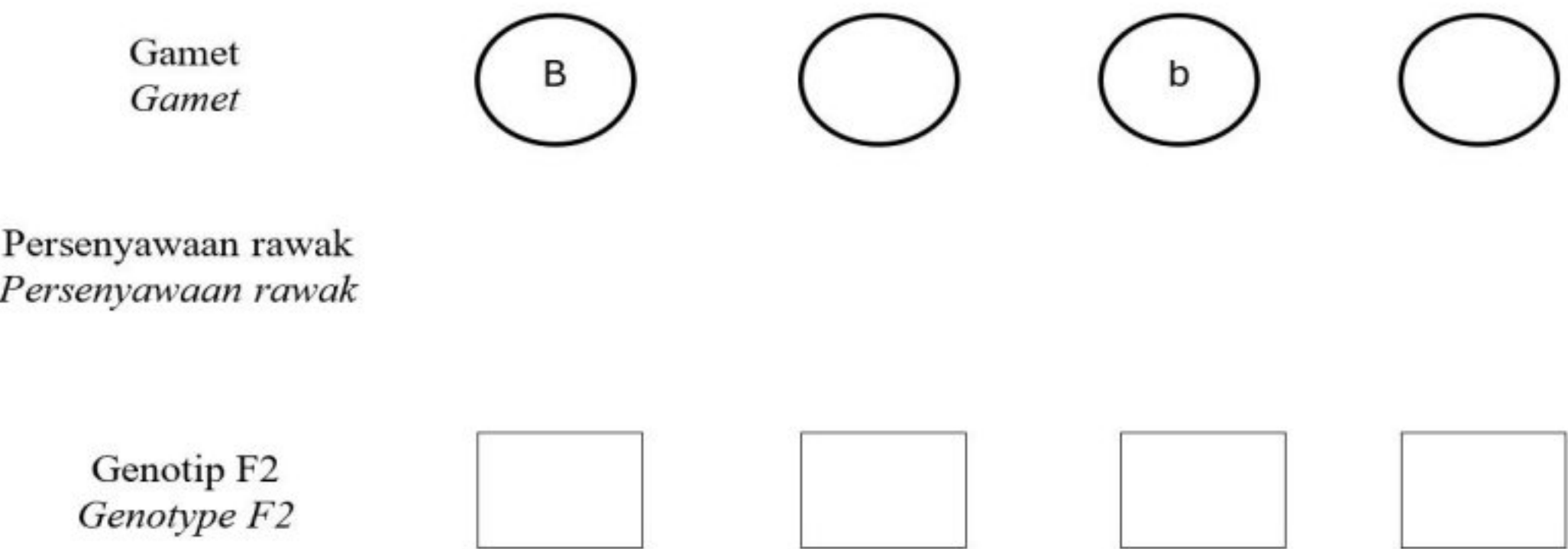
Based on Diagram 8.1, determine the phenotypic ratio for the type of ear types produced.

.....

[1 markah/ mark]

- (ii) Rajah 8.2 adalah sebahagian daripada rajah skema kacukkan induk arnab telinga tegak dan telinga terkulai. Lengkapkan rajah skema berikut.

Diagram 8.2 is a part of the genetic diagram for the cross between erect-eared and floppy-eared parent rabbits. Complete the following genetic diagram.



Rajah 8.2 / Diagram 8.2

[3 markah/ marks]

- (iii) Terangkan bagaimana arnab telinga terkulai dihasilkan dalam generasi F1 walaupun kedua-dua induk mempunyai telinga tegak.

Explain how floppy-eared rabbits are produced in the F1 generation even though both parents have erect ears

.....

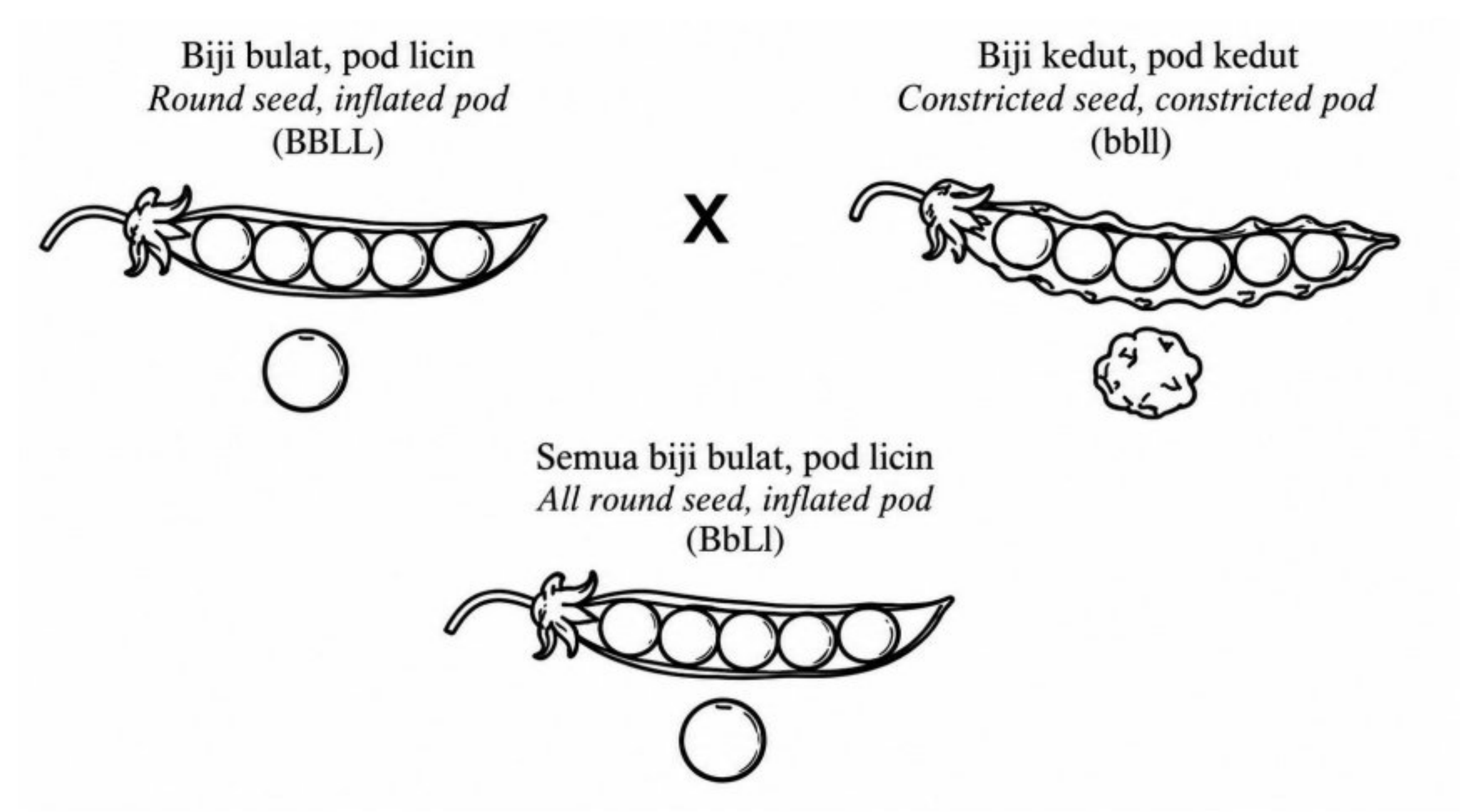
.....

.....

.....

[3 markah / marks]

- (b) Rajah 8.3 menunjukkan kacukkan antara dua induk baka tulen kacang pea.
Diagram 8.3 shows a cross between two pure-breeding pea plant parents.



Rajah 8.3 / Diagram 8.3

Berdasarkan pengetahuan genetik anda, nyatakan **dua** perbezaan jenis kacukkan pada Rajah 8.3 dengan jenis kacukkan Rajah 8.1.
*Based on your knowledge of genetics, state **two** differences between the type of cross in Diagram 8.3 and the type of cross in Diagram 8.1*

.....

.....

.....

[2 markah/marks]

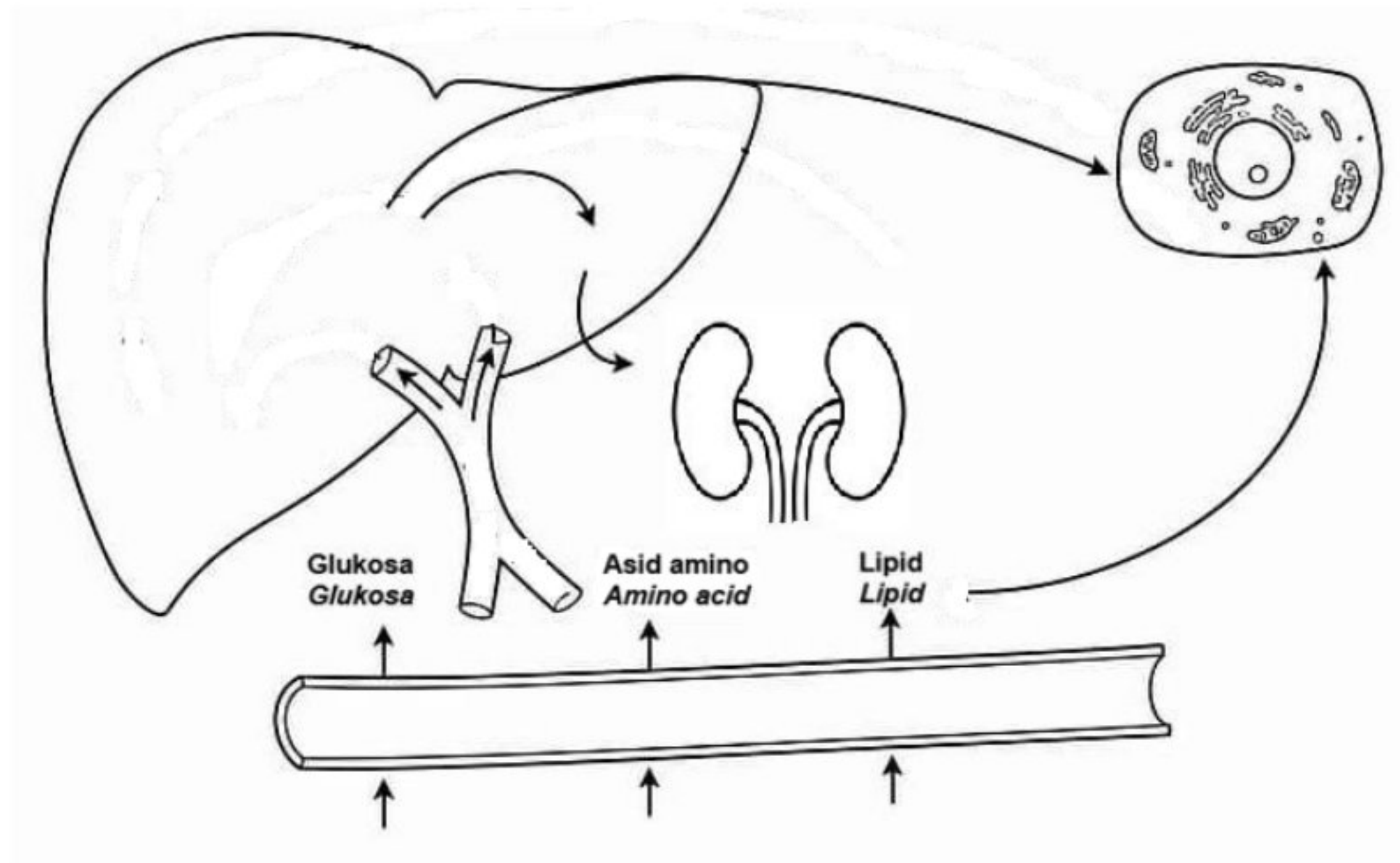
Bahagian B

[20 markah]

Bahagian ini mengandungi **dua** soalan. Jawab **satu** soalan.

- 9 Rajah 9.1 menunjukkan organ hati dan sel badan yang terlibat dalam proses asimilasi pada manusia.

Diagram 9.1 shows the liver organs and body cells involved in the assimilation process in humans.



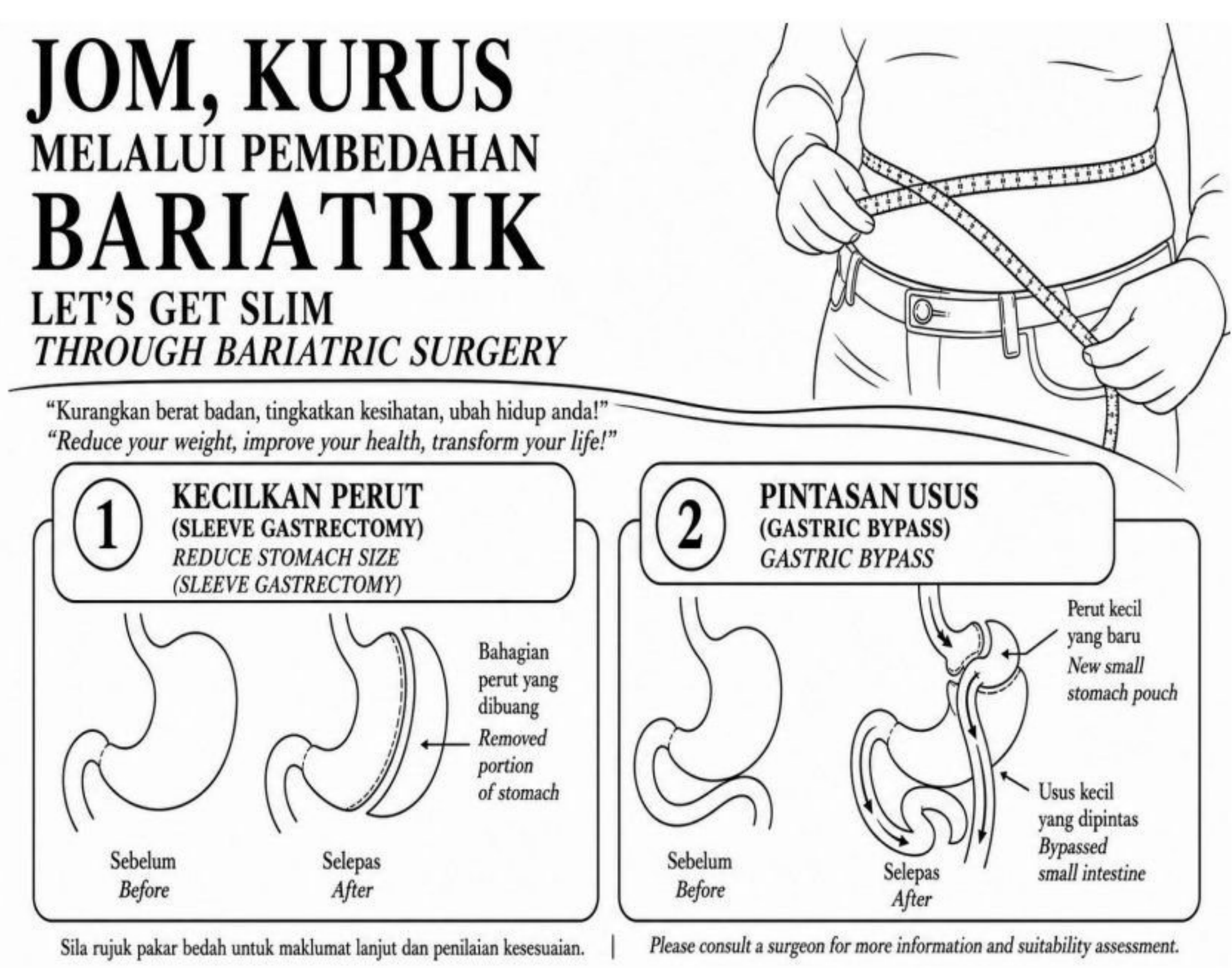
Rajah 9.1 / Diagram 9.1

- (a) Terangkan bagaimana organ hati dan sel terlibat dalam menjalankan asimilasi makanan tercerna jika pengambilan karbohidrat, protein dan lipid diambil secara berlebihan.
Explain how the liver and cells are involved in carrying out the assimilation of digested food if the intake of carbohydrates, proteins and lipids is excessive.

[10 markah / marks]

- (b) Rajah 9.2 menunjukkan satu poster yang menerangkan kaedah untuk membantu individu menurunkan berat badan berlebihan atau obesiti dengan cepat.

Diagram 9.2 shows a poster that explains methods to help individuals lose excess weight or obesity quickly.

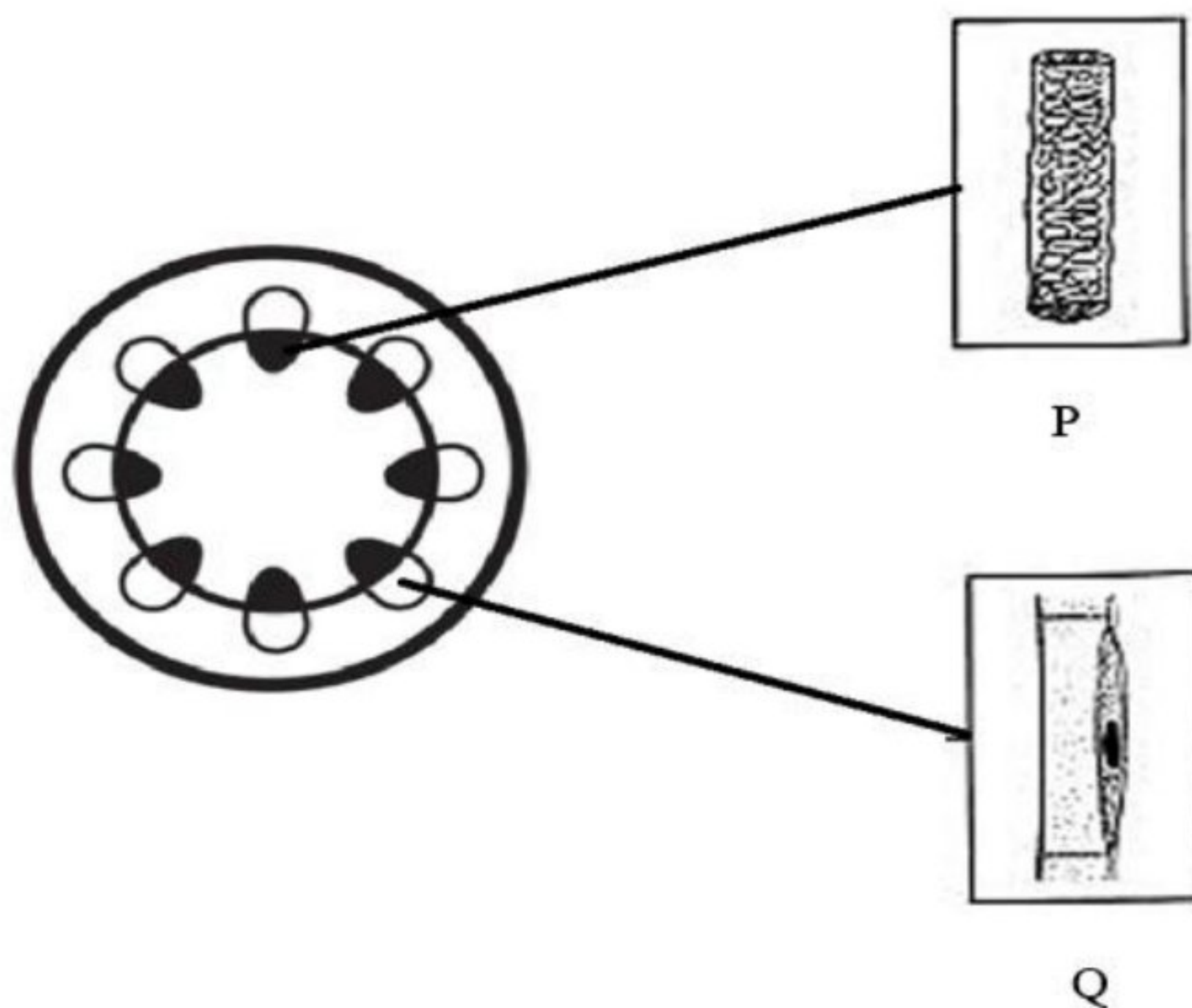


Rajah 9.2 / Diagram 9.2

- (i) Bincangkan kesan baik dan kesan buruk bagi kaedah tersebut.
Discuss the advantages and disadvantages of this method
- [4 markah /marks]
- (ii) Cadangkan kaedah lain yang membantu individu tersebut untuk mengatasi masalah berat badan berlebihan atau obesiti tanpa melalui pembedahan.
Suggest other methods that help the individual overcome the problem of overweight or obesity without undergoing surgery.

[6 markah /marks]

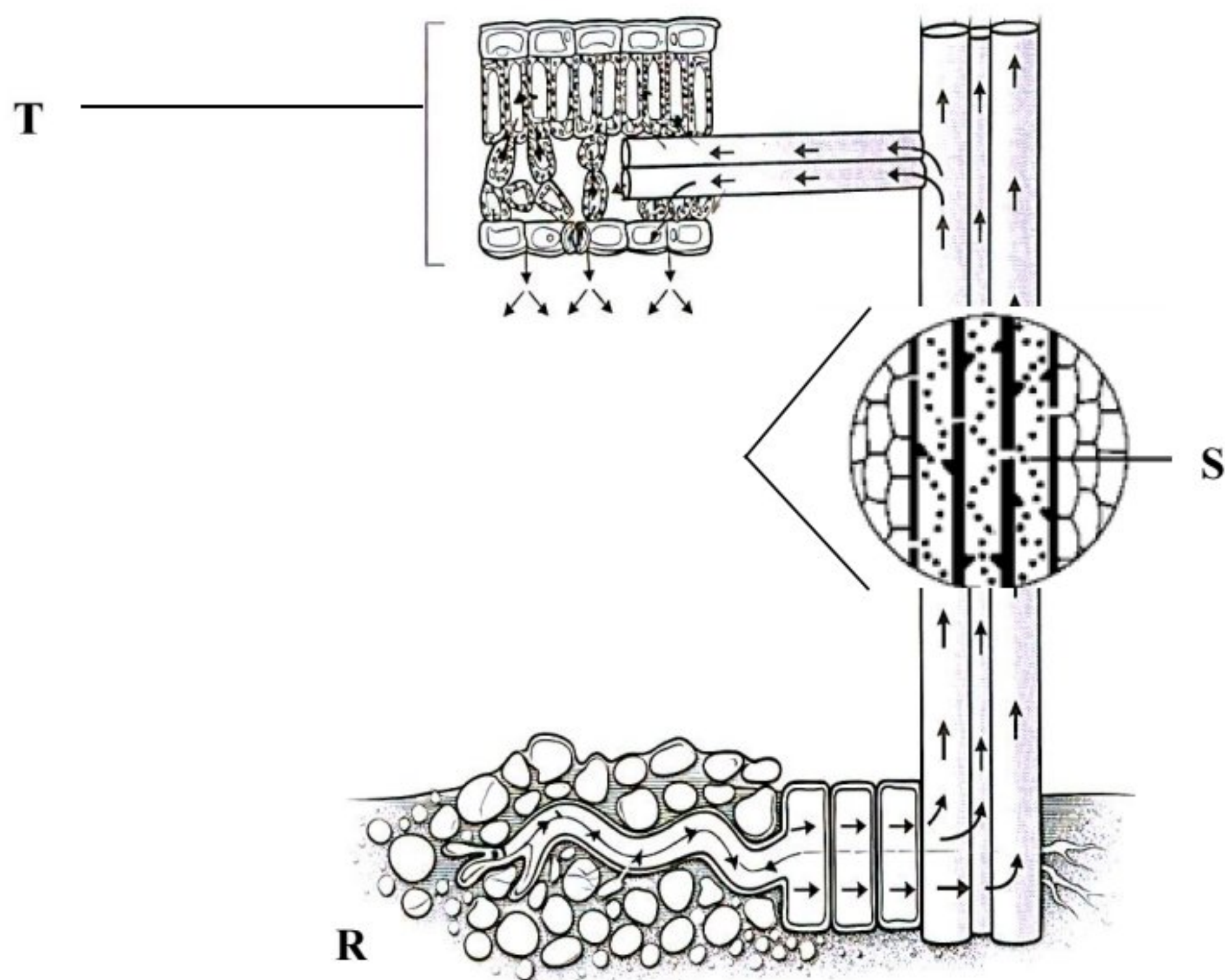
- 10 Rajah 10.1 menunjukkan keratan rentas batang tumbuhan eudikot.
Diagram 10.1 shows a cross section of a eudicot plant stem.



Rajah 10.1 / Diagram 10.1

- (a) (i) Namakan bahagian berlabel P dan Q.
Name parts labelled P and Q.
- [2 markah / marks]
- (ii) Terangkan **satu** penyesuaian struktur P bagi membolehkannya menjalankan fungsinya dengan lebih efisien.
*Explain **one** structural adaptation of P to enable it to carry out its functions more efficiently.*
- [2 markah / marks]

- (b) Rajah 10.2 menunjukkan pengangkutan air dalam sejenis tumbuhan.
Diagram 10.2 shows water transport in a type of plant.



Rajah 10.2 / Diagram 10.2

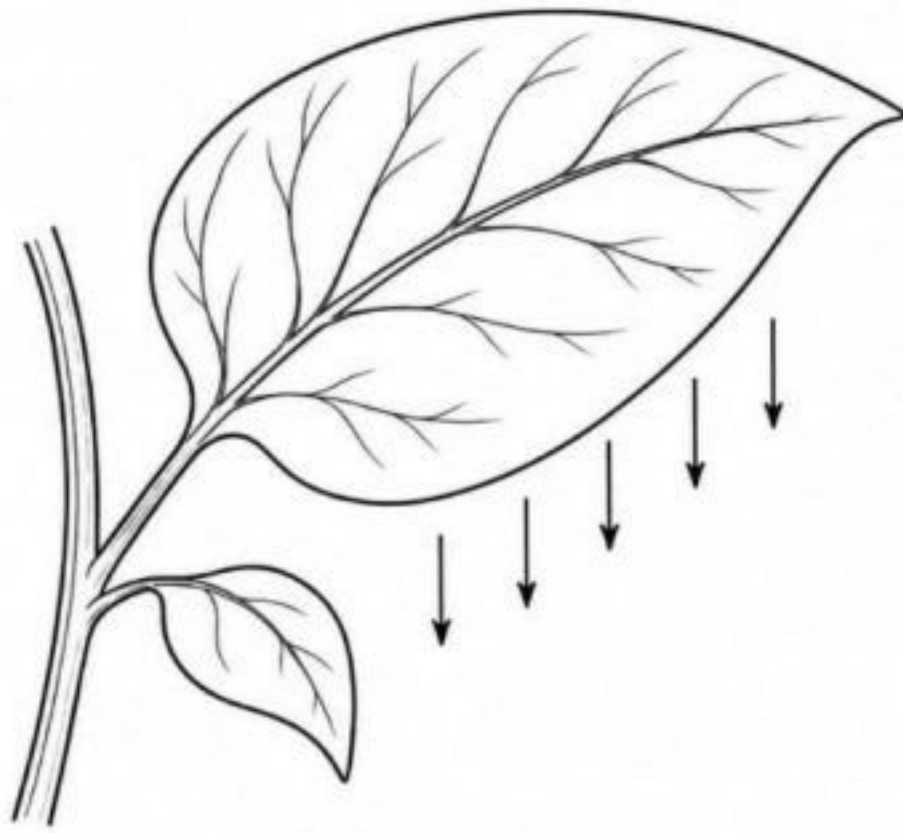
Huraikan bagaimana proses R, S dan T membantu mengangkut air dari dalam tanah hingga ke pucuk.

Describe how the R, S and T processes help transport water and mineral salts from the soil to the shoots.

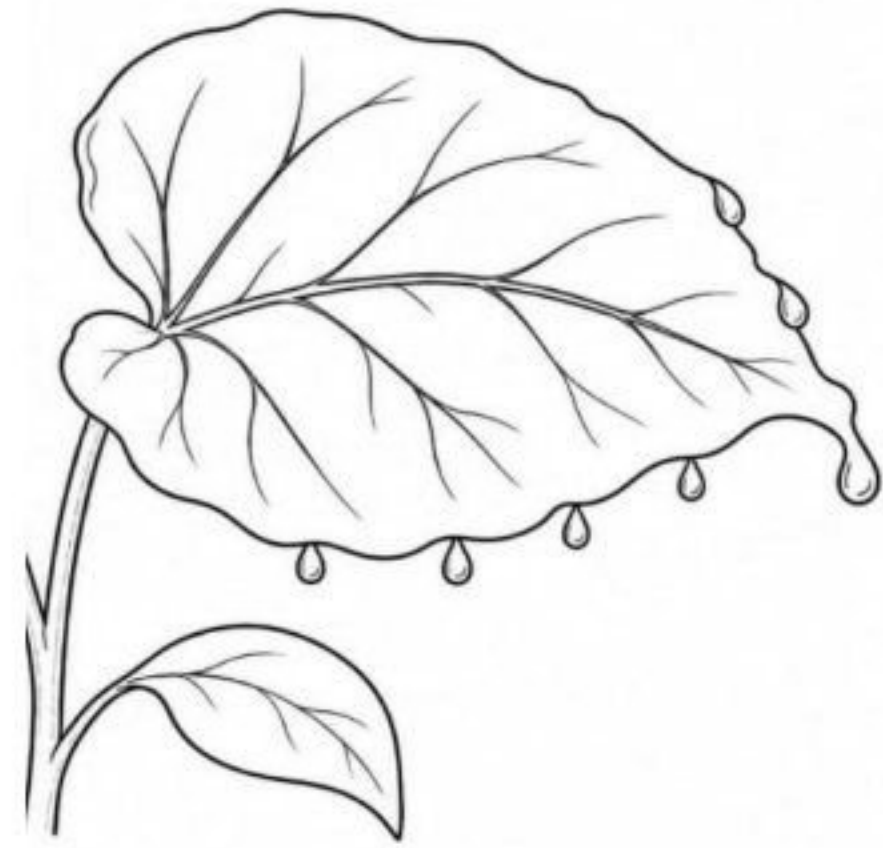
[8 markah / marks]

- (c) Rajah 10.3 (a) dan Rajah 10.3 (b) menunjukkan proses kehilangan air melalui daun yang berlaku pada tumbuhan.

Diagram 10.3 (a) and Diagram 10.3 (b) show the process of water loss through leaves that occurs in plants.



Rajah 10.3(a) / *Diagram 10.3(a)*



Rajah 10.3(b) / *Diagram 10.3(b)*

- (i) Banding bezakan proses di Rajah 10.3(a) dengan proses di Rajah 10.3(b).
Compare and contrast the process in Diagram 10.3(a) with the process in Diagram 10.3(b).

[5 markah / *marks*]

- (ii) Ramalkan kesan terhadap tumbuhan di dalam Rajah 10.3(a) sekiranya proses tersebut tidak berlaku.
Predict the effect on the plant in Diagram 10.3(a) if the process does not occur.

[3 markah / *marks*]

Bahagian C

[20 markah]

Soalan ini **mesti** dijawab.

- 11 Rajah 11.1 menunjukkan dua orang tukang masak yang berada di dalam dapur yang kurang mengamalkan aspek kebersihan.

Diagram 11.1 shows two cooks in a kitchen who are not practicing good hygiene.



Rajah 11.1 / Diagram 11.1

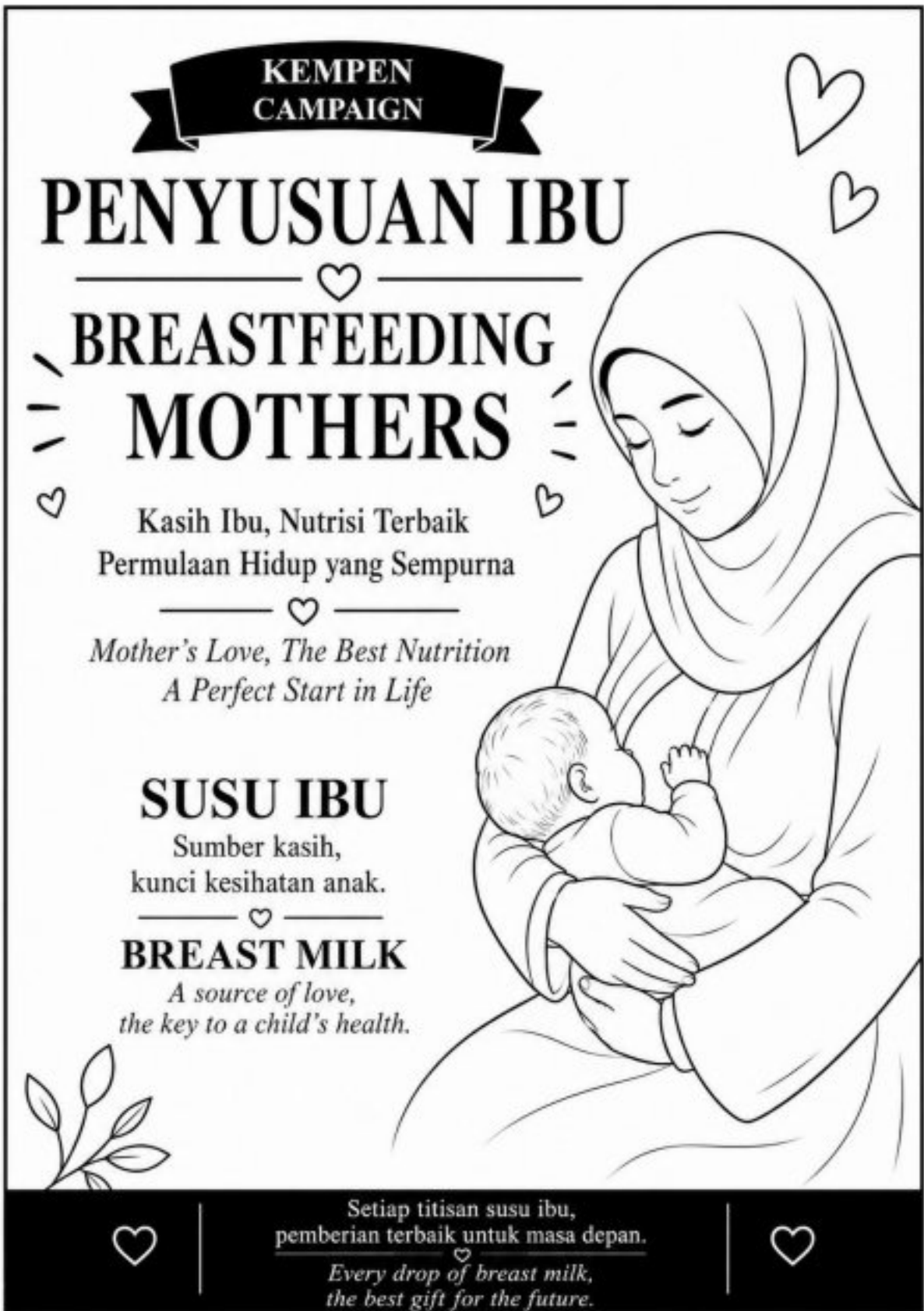
- (a) (i) Nyatakan maksud vektor dan patogen.
State the meaning of pathogen and vector.
- (ii) Berdasarkan Rajah 11.1 kenal pasti vektor dan penyakit yang dibawa serta cadangkan amalan baik yang boleh diamalkan bagi mengatasi masalah kesihatan yang berkaitan dengan sanitasi makanan.
Based on Diagram 11.1, identify the vectors and the diseases they carry and suggest good practices that can be implemented to overcome health problems related to food sanitation.

[2 markah / marks]

[8 markah / marks]

- (b) Rajah 11.2 menunjukkan satu poster yang menggalakkan supaya ibu-ibu memberikan susu ibu kepada bayi masing-masing bagi memastikan tahap kesihatan dan keimunan bayi dalam keadaan yang lebih baik.

Diagram 11.2 shows a poster that encourages mothers to breastfeed their babies to ensure that the baby's health and immunity are in better condition.



Rajah 11.2 / Diagram 11.2

- (i) Terangkan bagaimana amalan penyusuan susu ibu ini dapat memastikan tahap kesihatan dan keimunan bayi dalam keadaan yang lebih baik.

Explain how the practice of breastfeeding can ensure that the baby's health and immunity are in better condition.

[4 markah / marks]

- (ii) Epidemik virus Zika telah melanda di negara X dan memberi impak yang signifikan seperti menyebabkan simptom ringan seperti demam, ruam, sakit sendi, dan mata merah. Kebanyakan kes 60-80% tidak bergejala dan sembuh sendiri, namun ia berbahaya kepada ibu hamil kerana menyebabkan kecacatan dan kerosakan otak pada janin.

Puan Y ingin pergi ke negara X atas urusan kerja, cadangkan apakah yang perlu dilakukan oleh Puan Y untuk mengelakkan penyakit tersebut dan meningkatkan tahap kesihatannya.

The Zika virus epidemic has hit country X and has had a significant impact, causing mild symptoms such as fever, rash, joint pain, and red eyes. Most cases 60-80% are symptomatic and resolve on their own, but it is dangerous for pregnant women because it causes birth defects and brain damage in the fetus.

Mrs. Y wants to travel to country X for work, suggest what Mrs. Y should do to avoid the disease and improve her health.

[6 markah / marks]

KERTAS SOALAN TAMAT
END OF QUESTION PAPER