

4551/1
BIOLOGI
KERTAS 1
1 JAM 15 MINIT
JULAI 2026

NAMA :

KELAS :



**MODUL PINTAS PEPERIKSAAN PERCUBAAN SPM
TINGKATAN 5
TAHUN 2026**

BIOLOGI

Kertas 1

Satu jam lima belas minit

JANGAN BUKA KERTAS SOALAN INI SEHINGGA DIBERITAHU

Arahan: Kertas soalan ini mengandungi **40** soalan. Jawab **semua** soalan. Setiap jawapan diikuti dengan empat pilihan jawapan, **A, B, C** dan **D**. Bagi setiap soalan, pilih satu sahaja. Penggunaan kalkulator yang tidak boleh diprogramkan adalah dibenarkan.

Instruction: *This question paper consist of **40** questions. Answer **all** questions. Each question is followed by four choices of answers, **A, B, C** and **D**. For each question, choose one answer only. The use of non-programmable calculators is allowed.*

Kertas soalan ini mengandungi **32** halaman bercetak.

Jawab semua soalan.
Answer all the questions.

1. Dalam suatu penyiasatan, seorang murid telah mencatat data eksperimennya dalam satu jadual dan memplot data tersebut kepada bentuk graf.

Apakah pemboleh ubah yang diwakili oleh paksi-X apabila memplotkan graf?

In an investigation, a student recorded their experimental data in a table and plotted the data into a graph.

What variable does the X-axis represent when plotting a graph?

- A Pemboleh ubah dimalarkan
Fixed variable
- B Pemboleh ubah dimanipulasi
Manipulated variable
- C Pemboleh ubah bergerak balas
Responding variable

2. Pernyataan berikut adalah mengenai komponen sel, P.

The following statements are about cell components, P.

- | | |
|--|--|
| <ul style="list-style-type: none"> • Terdiri daripada RNA dan protein
<i>Made up of RNA and protein</i> | <ul style="list-style-type: none"> • Mensintesis protein
<i>Synthesis protein</i> |
|--|--|

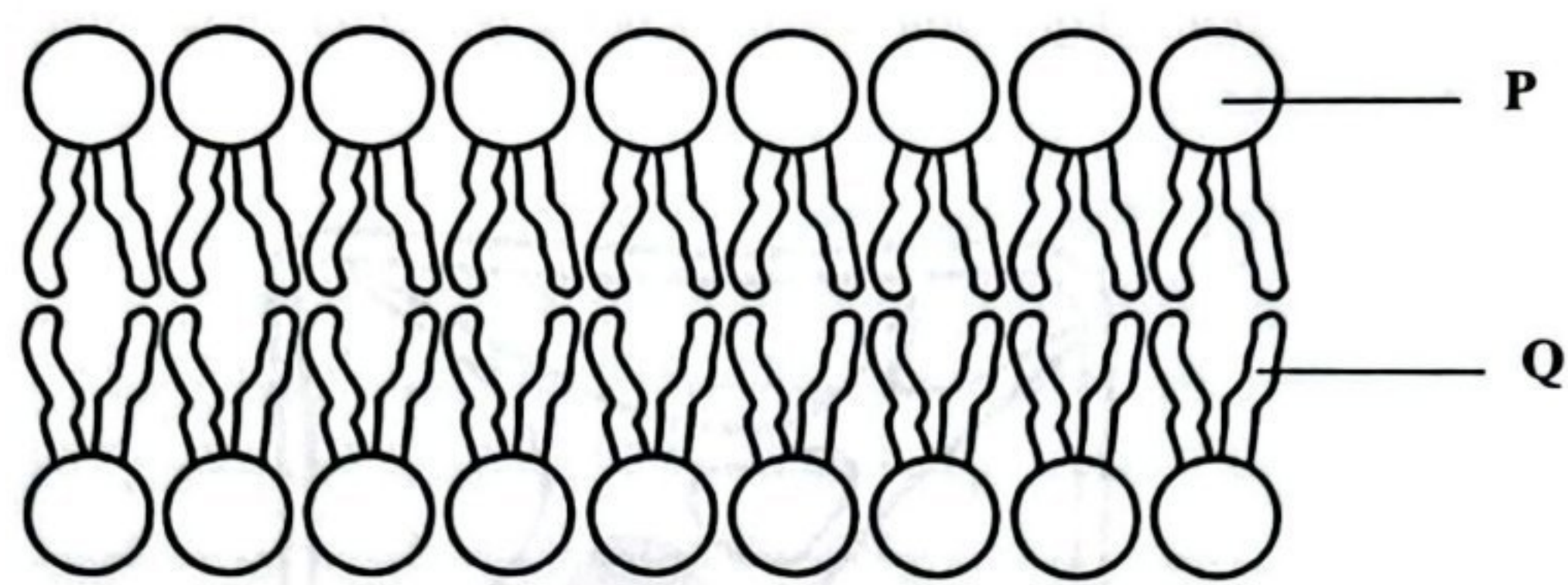
Apakah P?

What is P?

- A Lisosom
Lysosome
- B Ribosom
Ribosome
- C Jasad Golgi
Golgi apparatus
- D Jalinan endoplasma kasar
Rough endoplasmic reticulum



3. Rajah 1 menunjukkan struktur membran plasma.
Diagram 1 shows the structure of plasma membrane.



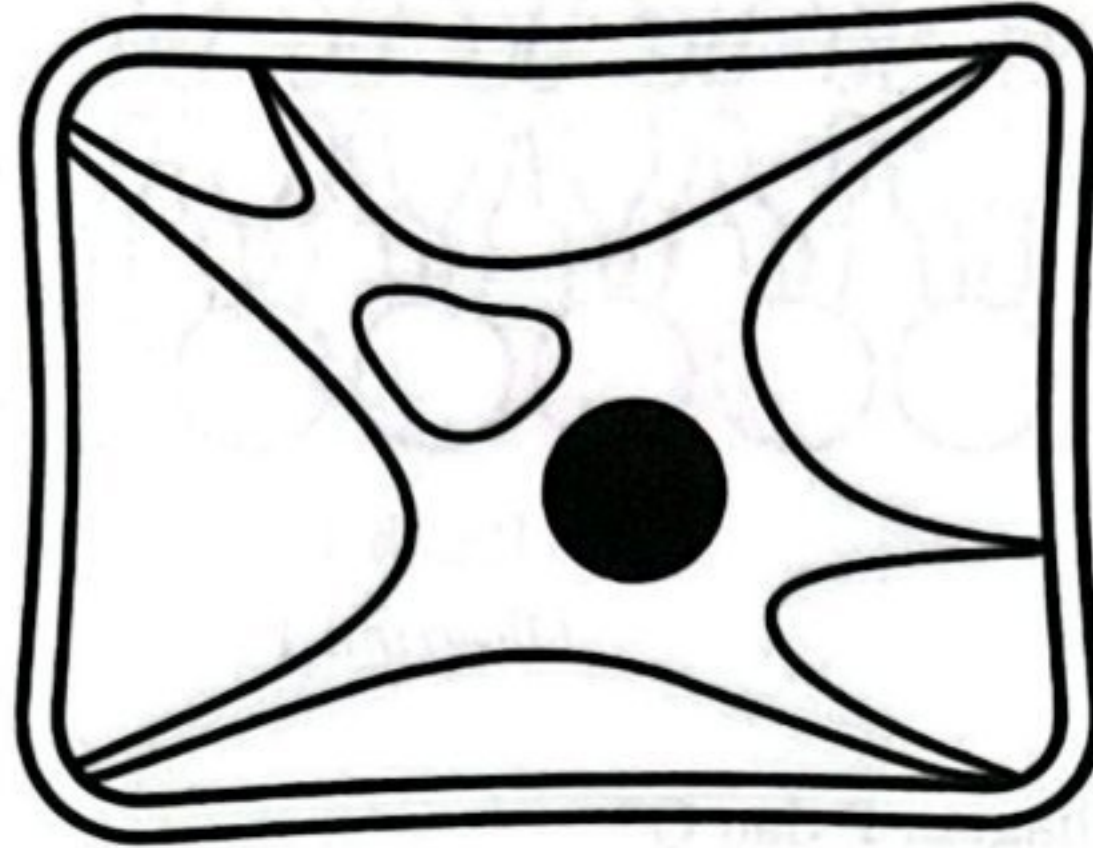
Rajah 1
Diagram 1

Apakah ciri-ciri bagi bahagian P dan Q?
What are the properties for parts P and Q?

	P	Q
A	Hidrofobik <i>Hydrophobic</i>	Hidrofilik <i>Hydrophilic</i>
B	Hidrofilik <i>Hydrophilic</i>	Hidrofilik <i>Hydrophilic</i>
C	Hidrofobik <i>Hydrophobic</i>	Hidrofobik <i>Hydrophobic</i>
D	Hidrofilik <i>Hydrophilic</i>	Hidrofobik <i>Hydrophobic</i>

4. Rajah 2 menunjukkan keadaan sel bawang selepas direndamkan dalam larutan garam selama 30 minit.

Diagram 2 shows a condition of onion cell after being immersed in salt solution within 30 minutes.



Rajah 2
Diagram 2

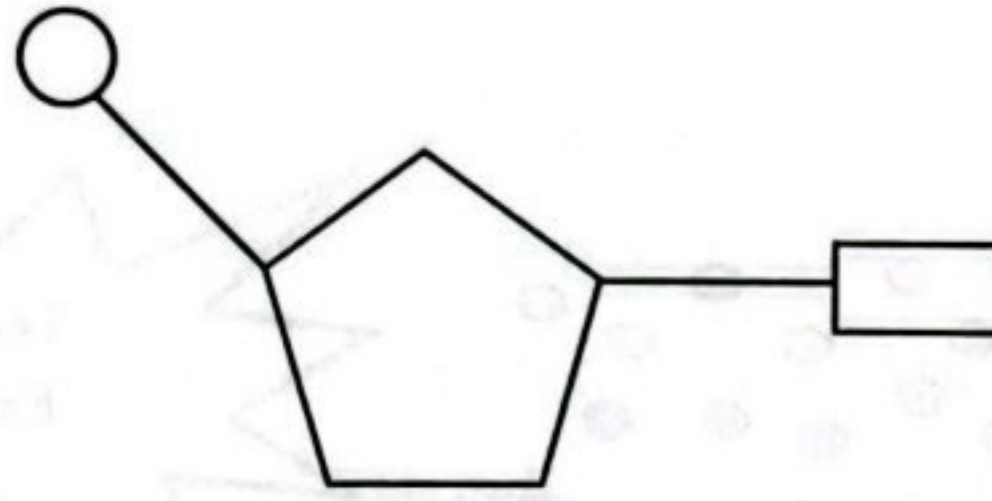
Antara pernyataan berikut, yang manakah menerangkan keadaan sel bawang di atas?

Which of the following statements explains the condition of onion cell above?

- A Air meresap keluar dari sap sel secara osmosis
Water diffuses out of the cell sap by osmosis
- B Air meresap ke dalam sap sel secara pengangkutan pasif
Water diffuses into the cell sap by passive transport
- C Molekul garam meresap ke dalam sap sel secara resapan ringkas
Salt molecules diffuses into the cell sap by simple diffusion
- D Molekul garam meresap ke dalam sel secara pengangkutan aktif
Salt molecules diffuses into the cell sap by active transport

5. Rajah 3 menunjukkan monomer bagi satu komposisi kimia.

Diagram 3 shows monomer of a chemical composition.



Rajah 3
Diagram 3

Apakah polimer yang dibentuk oleh monomer ini?

What is the polymer that is formed by this monomer?

- A Lipid

Lipid

- B Protein

Protein

- C Karbohidrat

Carbohydrates

- D Asid nukleik

Nucleic acid

6. Hormon seperti testosteron dan estrogen adalah lipid. Apakah jenis lipid dalam testosteron dan estrogen?

Hormones like testosterone and oestrogen are lipids. What is the type of lipid in testosterone and oestrogen?

- A Lilin

Wax

- B Lemak

Fat

- C Steroid

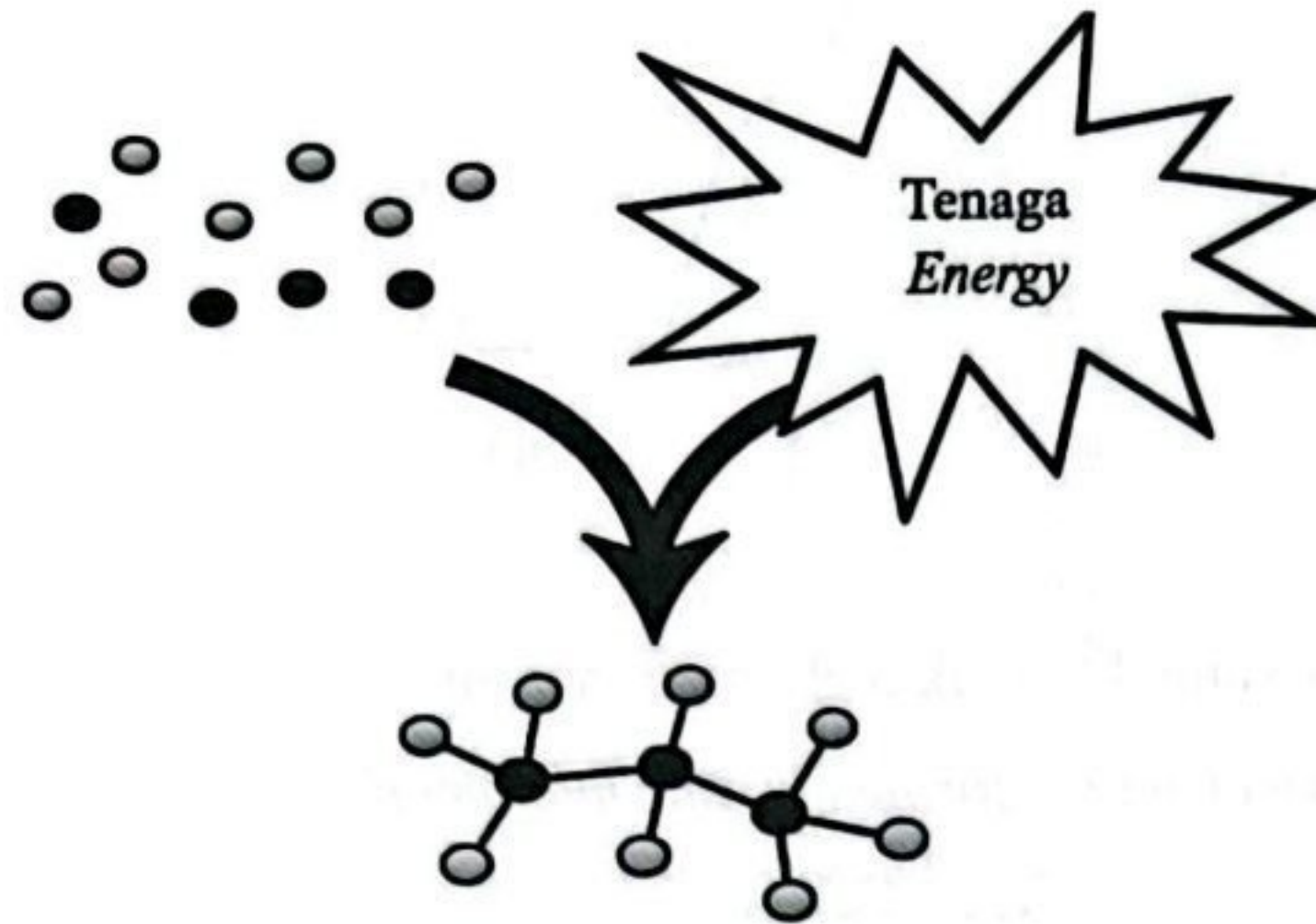
Steroid

- D Fosfolipid

Phospholipids

7. Rajah 4 menunjukkan sejenis metabolisme.

Diagram 4 shows a type of metabolism.



Rajah 4
Diagram 4

Antara tindak balas berikut, yang manakah mewakili metabolisme yang ditunjukkan dalam Rajah 4?

Which of the following reaction represents the metabolism shown in Diagram 4?

- A Respirasi aerob dalam otot manusia
Aerobic respiration in human muscle
- B Fermentasi alkohol dalam pokok padi
Alcohol fermentation in paddy plant
- C Hidrolisis karbohidrat dalam duodenum
Hydrolysis of carbohydrate in duodenum
- D Sintesis glikogen daripada glukosa dalam hati
Synthesis of glycogen from glucose in liver

8. Selulase dan pektinase merupakan enzim utama yang digunakan dalam industri pemrosesan daun teh. Antara pernyataan berikut, yang manakah benar tentang tindakan enzim tersebut terhadap daun teh?

Cellulase and pectinase are the main enzymes used in tea leaves processing industry. Which of the following statement is correct about the action of these enzymes to the tea leaves?

- A** Menguraikan komponen di dalam sel daun teh untuk menjadikannya lebih lazat
Break down the components inside the cells of tea leaves to make it tastier
- B** Menguraikan dinding sel daun teh dan menjadikan kandungannya lebih cepat melarut
Break down the cell wall of the tea leaves and make the contents dissolve faster
- C** Membentuk ikatan hidrogen di antara molekul protein dan menjadikannya lebih elastik
Form hydrogen bonds between the protein molecules to make it more elastic
- D** Menukarkan protein di dalam daun teh kepada asid amino dan menjadikan warnanya lebih cerah
Converts the proteins in the tea leaves to amino acids and make its colour brighter

Converts the proteins in the tea leaves to amino acids and make its colour brighter

9. Maklumat berikut menunjukkan ciri-ciri seorang kanak-kanak yang mengalami kecacatan genetik.

The following information shows the characteristics of a child with a genetic disorder.

- | | |
|--|--|
| <ul style="list-style-type: none"> • Mata sepet
<i>Slanted eyes</i> | <ul style="list-style-type: none"> • Lidah terjelir
<i>Potruding tongue</i> |
|--|--|

Apakah punca kecacatan genetik ini?

What is the cause of this genetic disorder?

- A** Sinapsis tidak berlaku semasa Profasa I
Synapsis did not occur during Prophase I
- B** Sitokinesis tidak berlaku semasa Telofasa II
Cytokinesis did not occur during Telophase II
- C** Membran nukleus tidak terbentuk semasa Telofasa II
Nucleus membrane did not form during Telophase II
- D** Kromatid kembar tidak terpisah semasa Anafasa II
Sister chromatids did not separate during Anaphase II

10. Antara berikut, persamaan perkataan yang manakah mewakili proses penghasilan yogurt?

Which of the following word equation represents the process of production of yogurt?

A Glukosa → Asid laktik + Tenaga

Glucose → Lactic acid + Energy

B Air + Karbon dioksida → Glukosa + Oksigen

Water + Carbon dioxide → Glucose + Oxygen

C Glukosa → Etanol + Karbon dioksida + Tenaga

Glucose → Ethanol + Carbon dioxide + Energy

D Glukosa + Oksigen → Karbon dioksida + Air + Tenaga

Glucose + Oxygen → Carbon dioxide + Water + Energy

11. Antara pernyataan berikut, yang manakah adalah kesan pembentukan karboksihemoglobin dalam badan manusia?

Which of the following statement is the effect of the formation of carboxyhaemoglobin in the human body?

A Tindakan pembekuan darah dihentikan

Blood clotting action is inhibited

B Kurang oksigen diangkut ke sel-sel badan

Less oxygen is transported to the body cells

C Sel-sel darah merah dimusnahkan di dalam badan

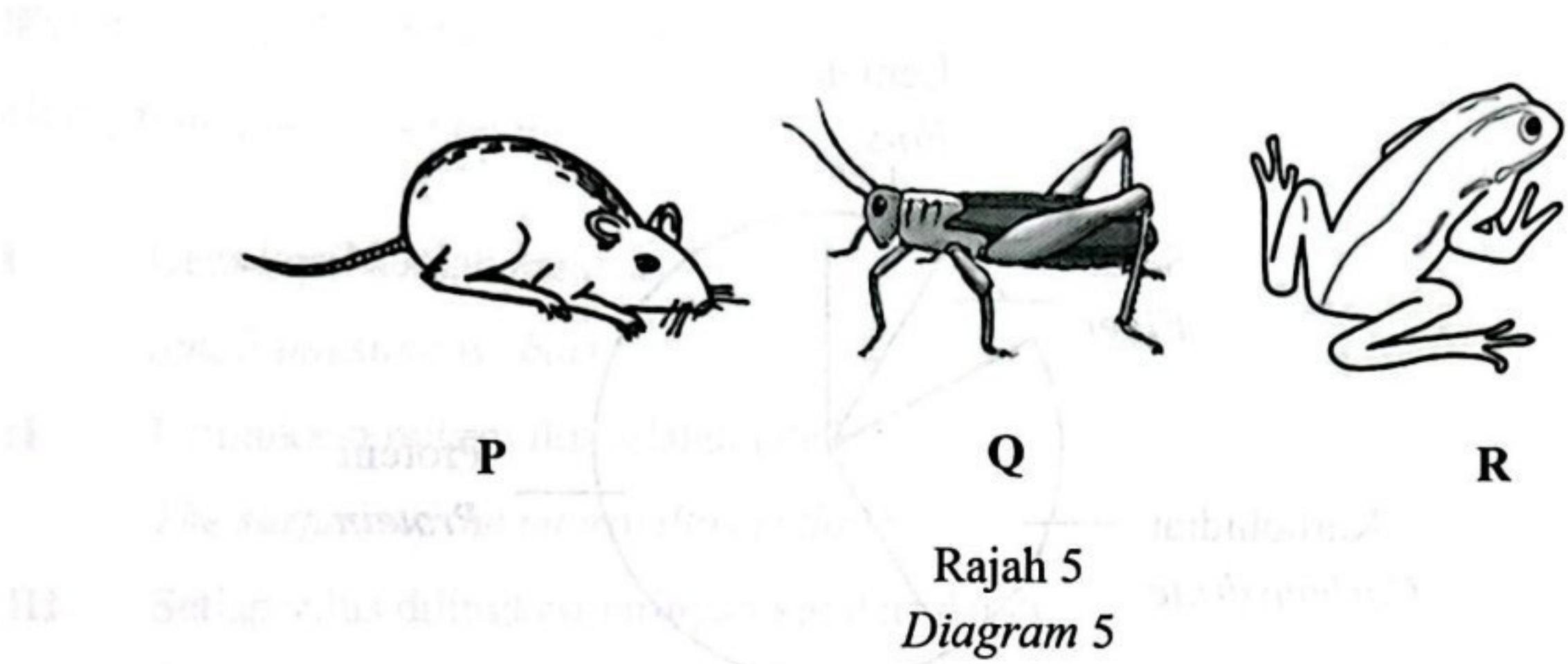
The red blood cells are destroyed in the body

D Lebih banyak karbon dioksida dihasilkan dalam badan

More carbon dioxide is produced in the body

12. Rajah 5 menunjukkan tiga jenis organisma yang berbeza.

Diagram 5 shows three different types of organisms.



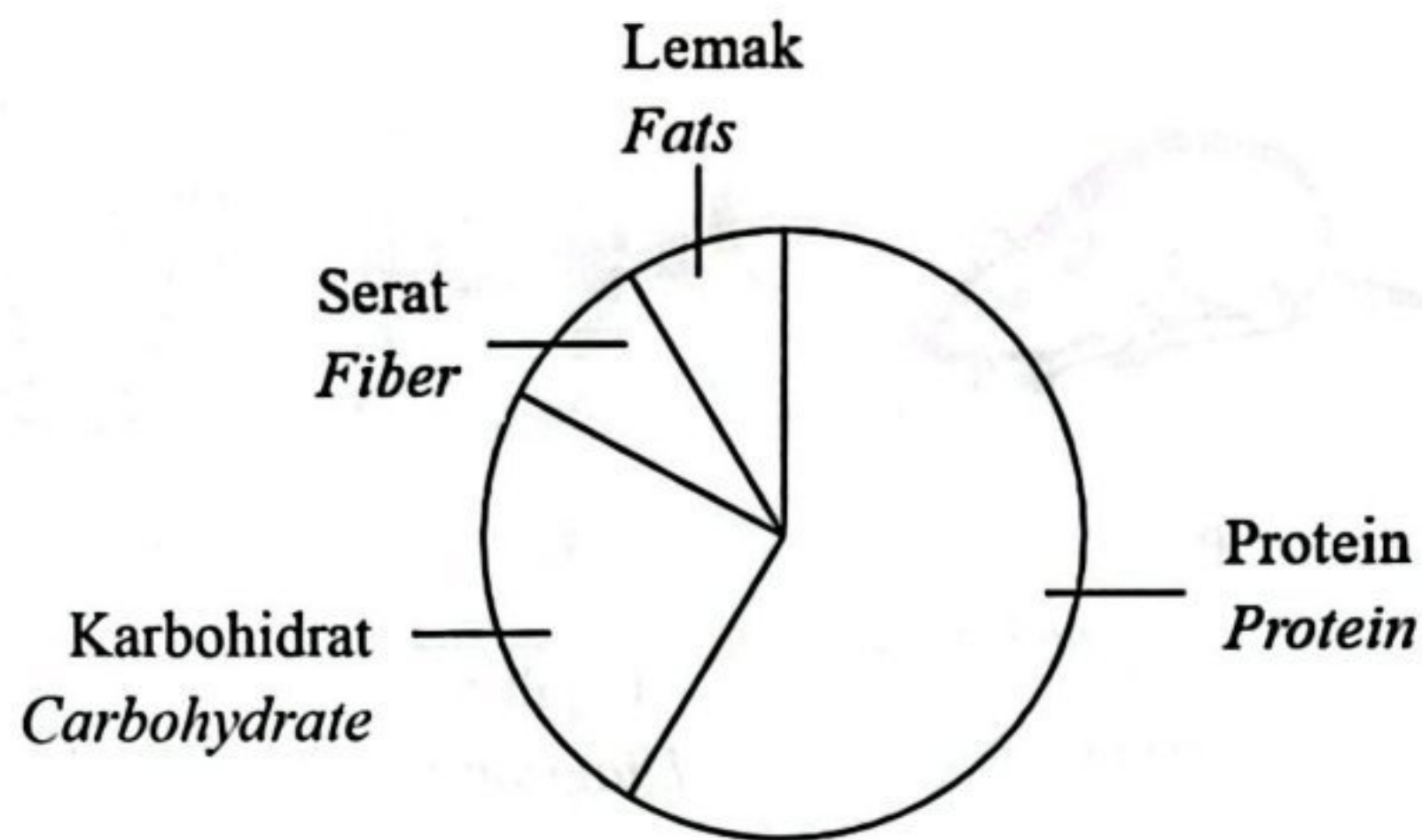
Apakah struktur respirasi bagi organisma P, Q dan R?

What is the respiratory structure for organism P, Q and R?

	P	Q	R
A	Kulit <i>Skin</i>	Trakeol <i>Tracheole</i>	Alveolus <i>Alveolus</i>
B	Alveolus <i>Alveolus</i>	Kulit <i>Skin</i>	Trakeol <i>Tracheole</i>
C	Alveolus <i>Alveolus</i>	Trakeol <i>Tracheole</i>	Kulit <i>Skin</i>
D	Trakeol <i>Tracheole</i>	Alveolus <i>Alveolus</i>	Kulit <i>Skin</i>

13. Rajah 6 menunjukkan peratus kandungan nutrien dalam sejenis makanan.

Diagram 6 shows the percentage of the nutrient contents of a food.



Rajah 6
Diagram 6

Antara individu berikut, siapakah yang paling sesuai mengambil makanan dalam Rajah 6?

Which of the following individuals is the most suitable to consume the food in Diagram 6?

- A Atlet
Athlete
- B Kerani
Clerk
- C Orang tua
Older person
- D Pesakit gout
Gout patient



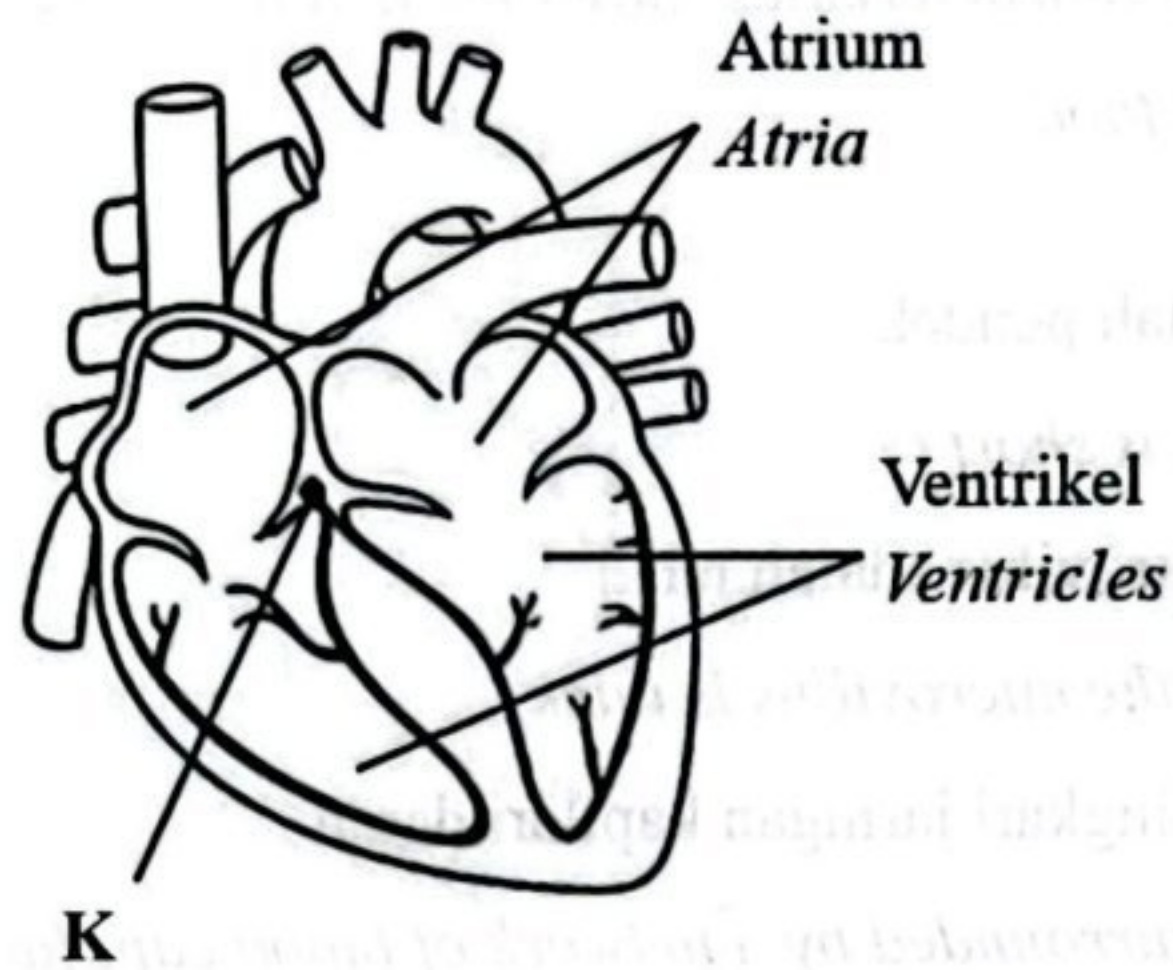
14. Antara berikut, ciri-ciri yang manakah menunjukkan penyesuaian usus kecil dalam penyerapan makanan tercerna?

Which of the following characteristics shows the adaptation of the small intestine in the absorption of digested food?

- I** Usus kecil adalah pendek
Small intestine is short
 - II** Permukaan mikrovilus adalah tebal
The surface of the microvillus is thick
 - III** Setiap vilus dilingkari jaringan kapilari darah
Each villus is surrounded by a network of blood capillaries
 - IV** Permukaan dalam dinding ileum mempunyai banyak vilus
The inner surface of ileum wall has many villi
- A** I dan II
I and II
 - B** I dan IV
I and IV
 - C** II dan III
II and III
 - D** III dan IV
III and IV

15. Rajah 7 menunjukkan struktur jantung manusia.

Diagram 7 shows the structure of the human heart.



Rajah 7
Diagram 7

Apakah struktur K?

What is the structure K?

- A Injap bikuspid
Bicuspid valve
- B Injap trikuspid
Tricuspid valve
- C Nodus sinoatrium
Sinoatrial node
- D Nodus atrioventrikel
Atrioventricular node

- Nanotechnology has opened a new era in cardiovascular medicine.*

A Menghalang pengecutan arteri

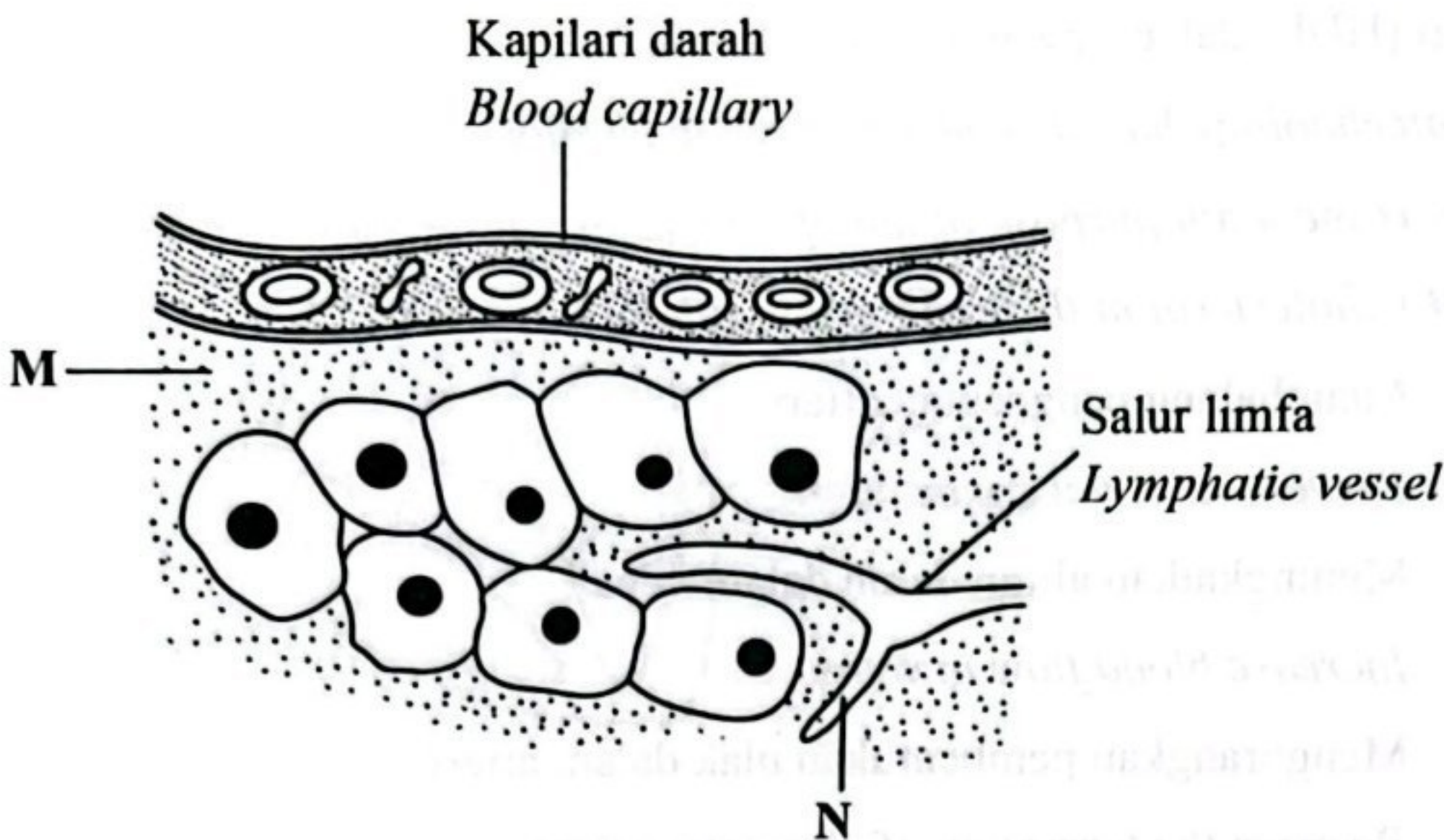
B Meningkatkan aliran darah dalam vena

C Mengurangkan pembentukan plak dalam arteri

D Meningkatkan penghasilan kolesterol lipoprotein ketumpatan rendah (LDL) dalam darah

17. Rajah 8 menunjukkan persekitaran dalam sel badan manusia.

Diagram 8 shows the internal environment in human body cells.



Rajah 8
Diagram 8

Antara berikut, yang manakah merupakan bahagian yang berlabel M dan N?

Which of the following are the parts labelled M and N?

	M	N
A	Darah Blood	Limfa Lymph
B	Darah Blood	Bendalir tisu Tissue fluid
C	Limfa Lymph	Bendalir tisu Tissue fluid
D	Bendalir tisu Tissue fluid	Limfa Lymph

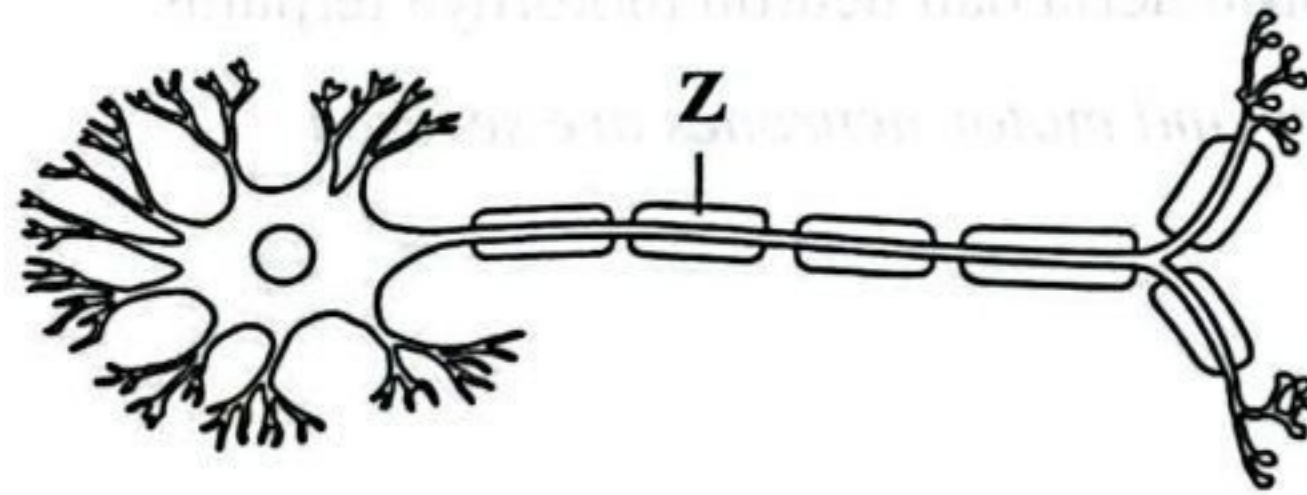
18. Antara berikut, sel darah yang manakah terlibat dalam barisan pertahanan ketiga?

Which of the following blood cells is involved in third line of defence?

- | | |
|----------|---------------------------------|
| A | Eritrosit
<i>Erythrocyte</i> |
| B | Monosit
<i>Monocyte</i> |
| C | Limfosit
<i>Lymphocyte</i> |
| D | Neutrofil
<i>Neutrophil</i> |

19. Rajah 9 menunjukkan sejenis neuron.

Diagram 9 shows a type of neurone.



Rajah 9
Diagram 9

Seorang pesakit didiagnosis mengalami kerosakan pada struktur **Z** di sepanjang neuronnya.

Apakah kesan kerosakan tersebut?

A patient is diagnosed with damage to structure Z along her neurons.

What is the effect of that damage?

- A** Kelajuan penghantaran impuls berkurang
The speed of impulse transmission is decreasing
- B** Penghantaran impuls menjadi semakin cepat
The transmission of impulse becomes faster
- C** Impuls akan dihantar ke arah bertentangan
Impulses will be transmit in the opposite direction
- D** Neurotransmitter tidak dapat dirembeskan ke dalam sinaps
Neurotransmitters cannot be secreted into the synapse

20. Seorang lelaki mengalami kecederaan pada lengannya dalam suatu kemalangan. Semasa di hospital, dia memberitahu doktor bahawa dia boleh menggerakkan tangannya tetapi tidak dapat merasa objek yang disentuh oleh tangannya.

Apakah yang mungkin menyebabkan keadaan ini?

A man injured his arm in an accident. At the hospital, he told the doctor that he can move his hand but he cannot feel the objects touched by his hand.

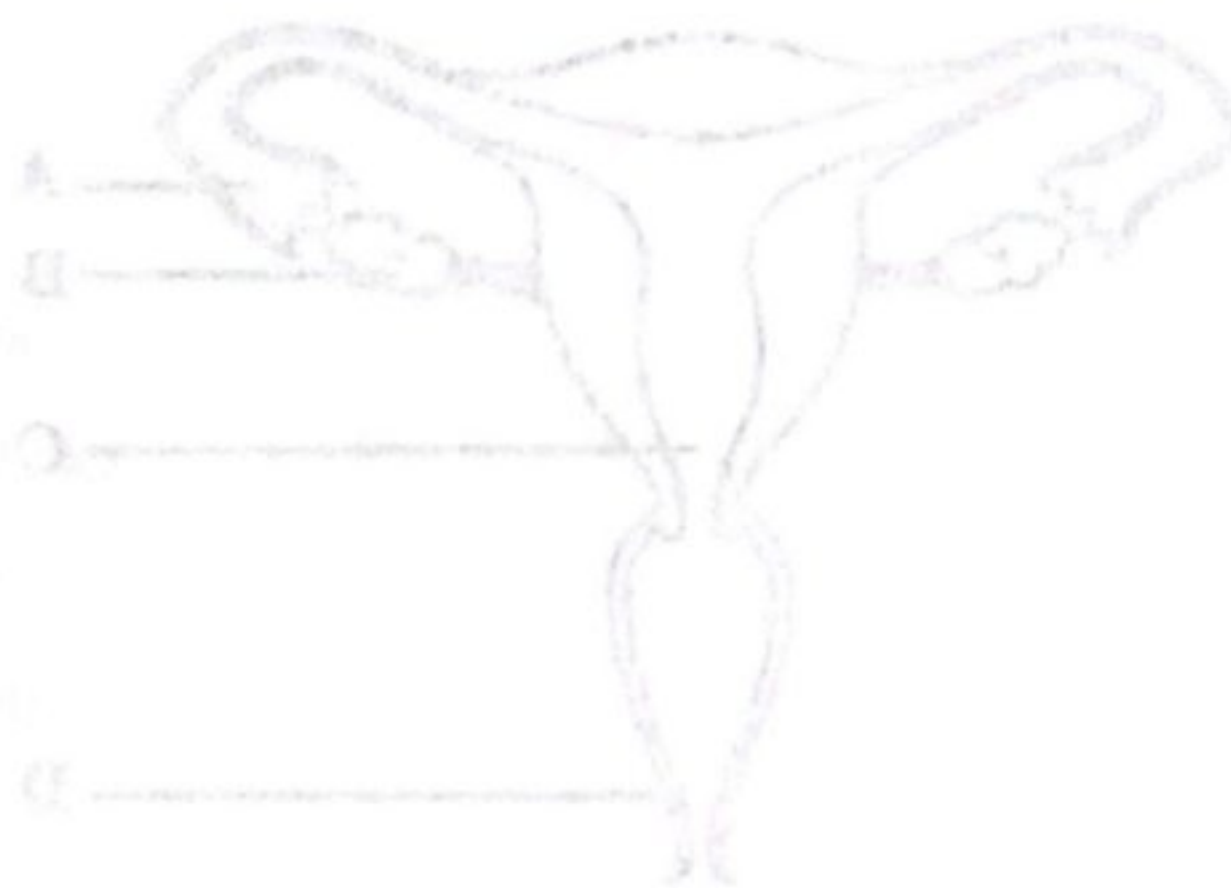
What could be the cause of this condition?

- A** Efektornya telah rosak
His effectors are damage
- B** Neuron derianya terputus
His sensory neurones are severed
- C** Neuron motornya terputus
His motor neurones are severed
- D** Kedua-dua neuron deria dan neuron motornya terputus
Both his sensory and motor neurones are severed

21. Tekanan separa karbon dioksida dalam seorang pelari jarak jauh meningkat sewaktu perlumbaan. Antara berikut, yang manakah punca berlakunya situasi ini?

The partial pressure of carbon dioxide in a long-distance runner increases during a race. Which of the following are the causes of this situation?

- I** Kadar ventilasi bertambah
Ventilation rate increases
- II** Kadar ventilasi berkurang
Ventilation rate decrease
- III** Asid karbonik dalam darah bertambah
Carbonic acid in the blood increases
- IV** Asid karbonik dalam darah berkurang
Carbonic acid in the blood decrease
- A** I dan II
I and II
- B** I dan IV
I and IV
- C** II dan III
II and III
- D** II dan IV
II and IV



22. Antara berikut, vertebra manakah yang bersendi dengan tulang rusuk?

Which of the following vertebrae articulates with the ribs?

A



B



C

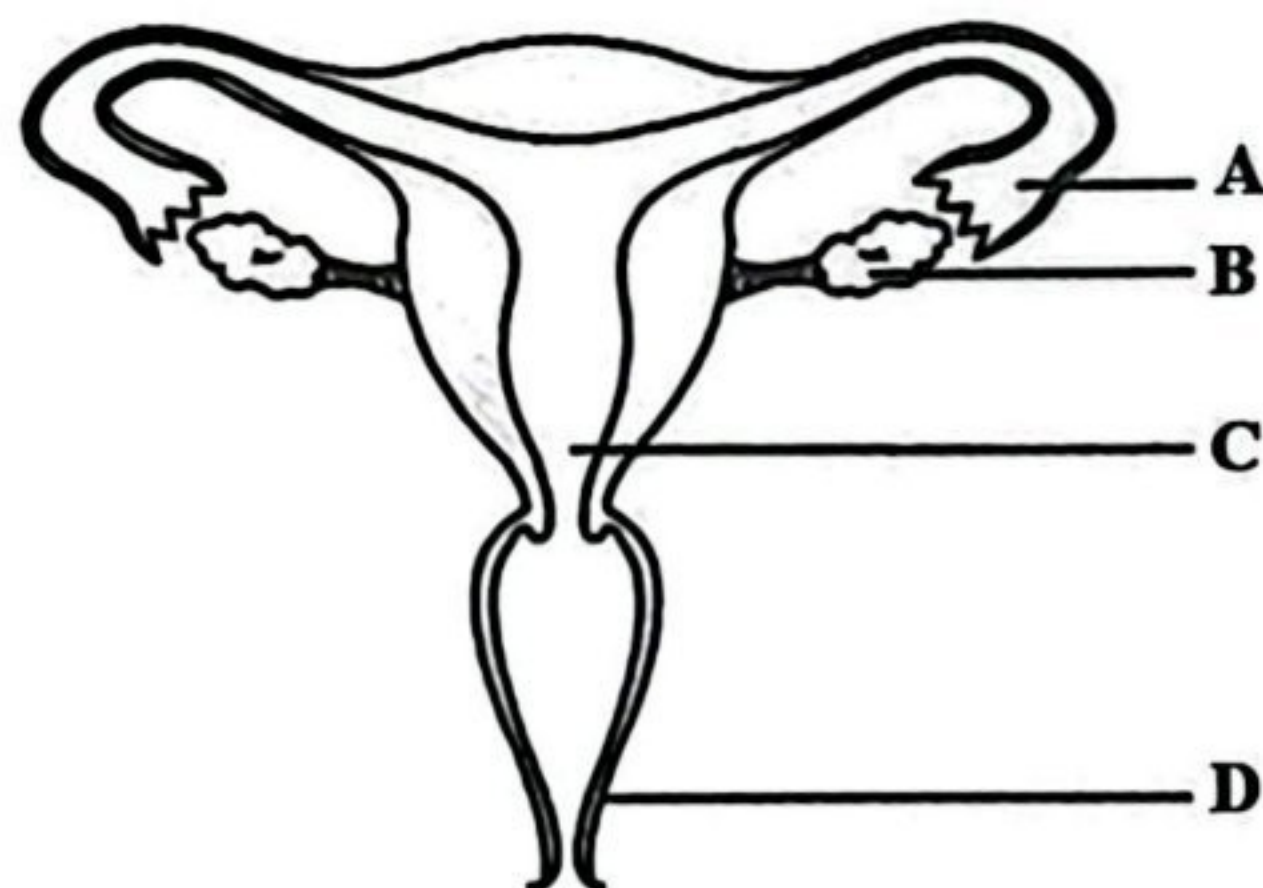


D



23. Rajah 10 menunjukkan sistem pembiakan perempuan.

Diagram 10 shows the female reproduction system.



Rajah 10
Diagram 10

Antara bahagian A, B, C dan D, di manakah ovulasi berlaku?

Which of the part A, B, C and D, where does ovulation occur?

24. Antara berikut, yang manakah benar tentang kembar siam?

Which of the following is true about conjoined twins?

A Jantina kedua-dua anak adalah tidak sama

The gender of both children are not the same

B Kembar siam terbentuk kerana zigot membahagi dengan sepenuhnya

Conjoined twins are formed because the zygote divides completely

C Kembar siam mempunyai kandungan genetik yang sama kerana terbentuk dari zigot yang sama

Conjoined twins are genetically identical because they are form from the same zygote

D Kembar siam terbentuk apabila dua ovum yang dibebaskan dari ovari disenyawakan oleh dua sperma yang berbeza

Conjoined twins are formed when two ova released from the ovary are fertilised by two different sperms

25. Antara yang berikut, tisu tumbuhan yang manakah mempunyai dinding sel yang ditebalkan oleh lignin untuk memberi sokongan dan pengukuhan kepada tumbuhan yang membesar?

Which of the following plant tissues have lignified cell walls provide support and strength to the growing plant?

A Tisu xilem

Xylem tissue

B Tisu floem

Phloem tissue

C Tisu parenkima

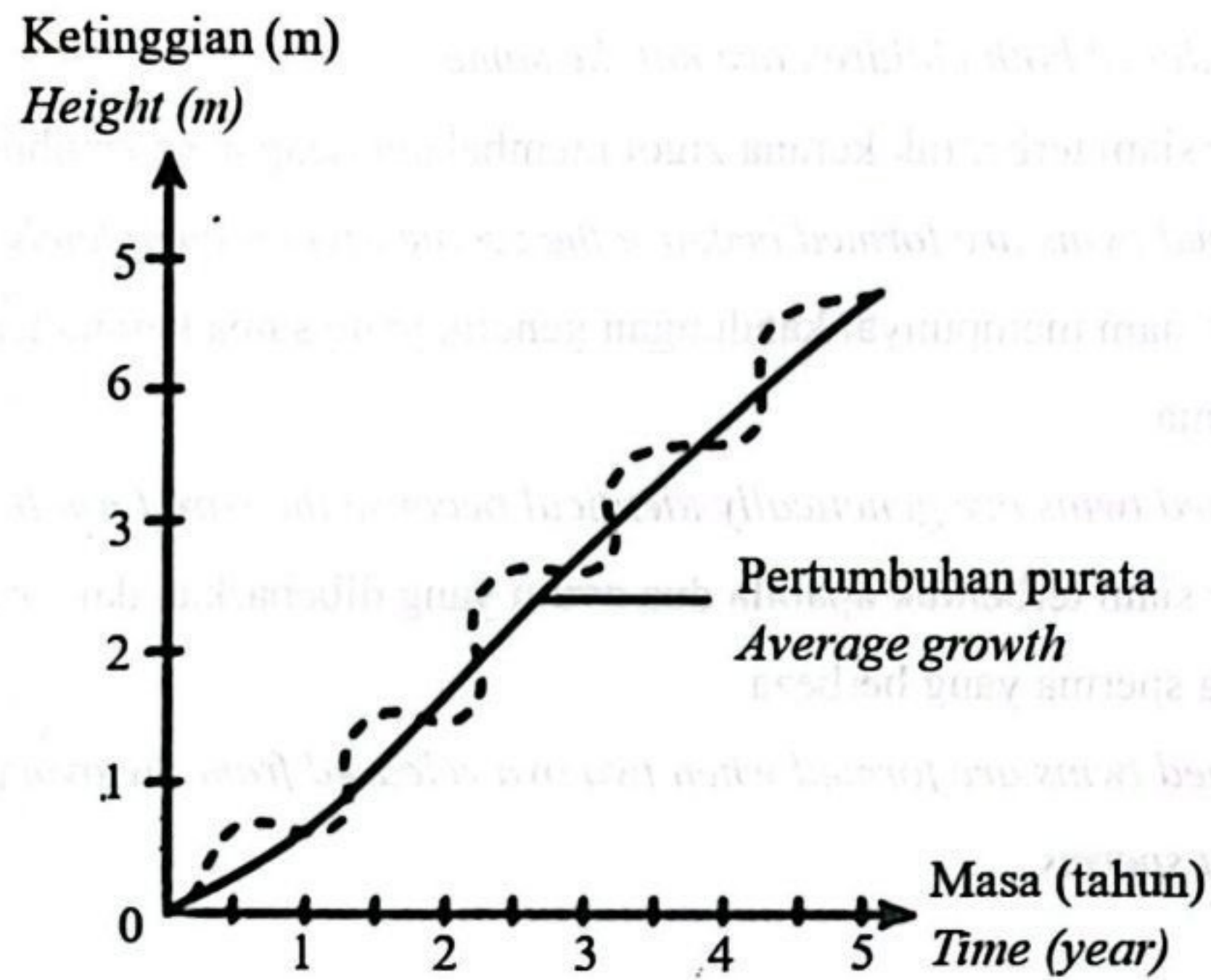
Parenchyma tissue

D Tisu kolenkima

Collenchyma tissue

26. Rajah 11 menunjukkan lengkung pertumbuhan bagi sejenis tumbuhan.

Diagram 11 shows the growth curves of a type of plant.



Rajah 11

Diagram 11

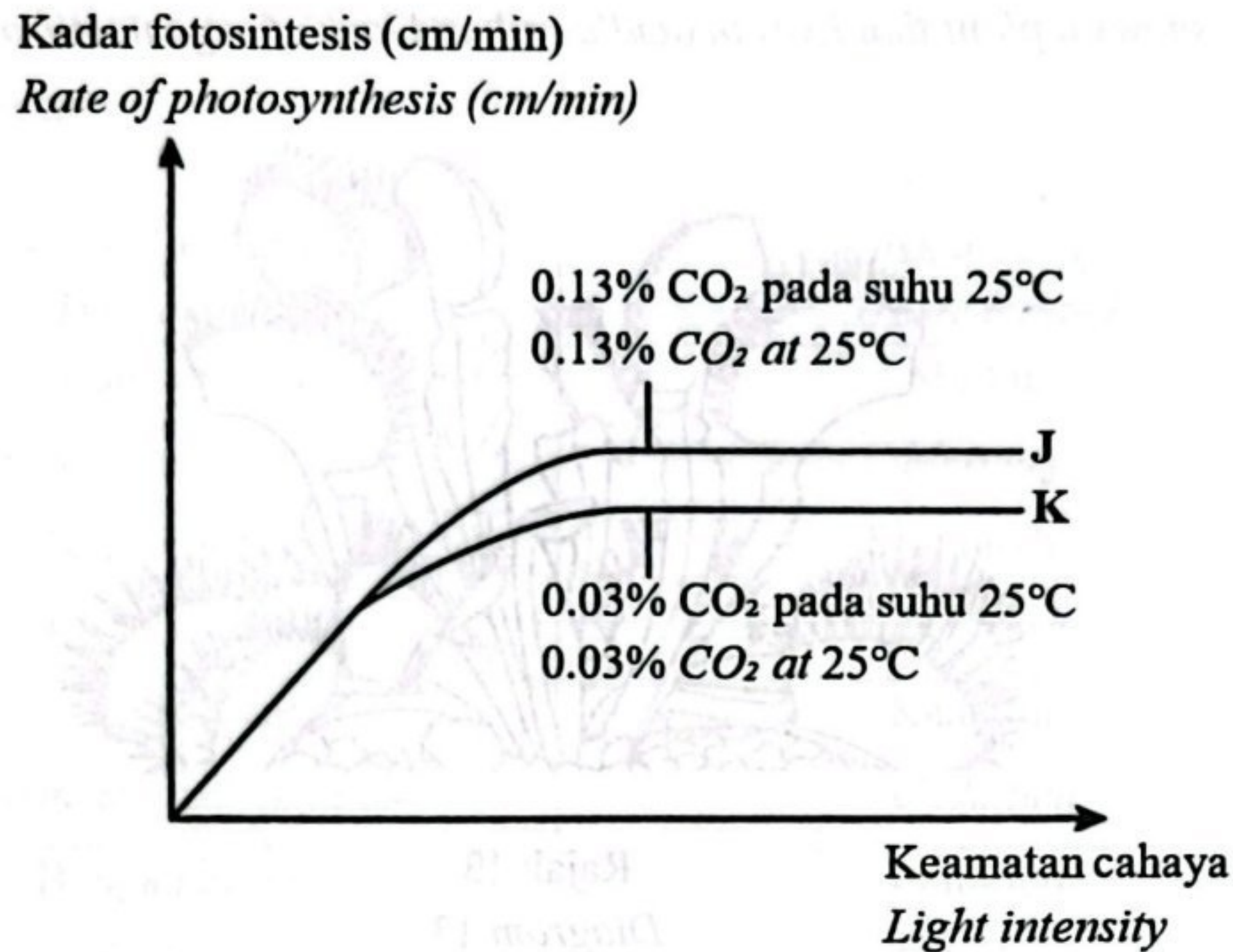
Apakah jenis tumbuhan itu?

What is the type of plant?

- A Tumbuhan saka
Perennial plant
- B Tumbuhan semusim
Annual plant
- C Tumbuhan dwimusim
Biennial plant

27. Rajah 12 menunjukkan graf kesan keamatan cahaya ke atas kadar fotosintesis.

Diagram 12 shows a graph of the effect of light intensity on the rate of photosynthesis.



Rajah 12
Diagram 12

Apakah kesimpulan yang boleh dibuat tentang kadar fotosintesis bagi lengkung J dan K?

What can be concluded about the rate of photosynthesis for curve J and K?

A Kadar fotosintesis tidak dipengaruhi oleh suhu

The rate of photosynthesis is not influenced by the temperature

B Kadar fotosintesis dihadkan oleh keamatan cahaya

The rate of photosynthesis is limited by the light intensity

C Kadar fotosintesis dihadkan oleh kepekatan karbon dioksida

The rate of photosynthesis is limited by the concentration of carbon dioxide

D Kadar fotosintesis tidak dipengaruhi oleh kepekatan karbon dioksida

The rate of photosynthesis is not influenced by the concentration of carbon dioxide

28. Rajah 13 menunjukkan sejenis tumbuhan yang hidup di kawasan tanah berasid dan kekurangan nitrogen organik.

Diagram 13 shows a plant that lives in acidic soil and lack of organic nitrogen.



Rajah 13
Diagram 13

Apakah jenis nutrisi tumbuhan tersebut?

What is the nutrition of the plants?

- A Parasit
Parasite
- B Epifit
Epiphyte
- C Karnivor
Carnivore
- D Saprofit
Saprophyte

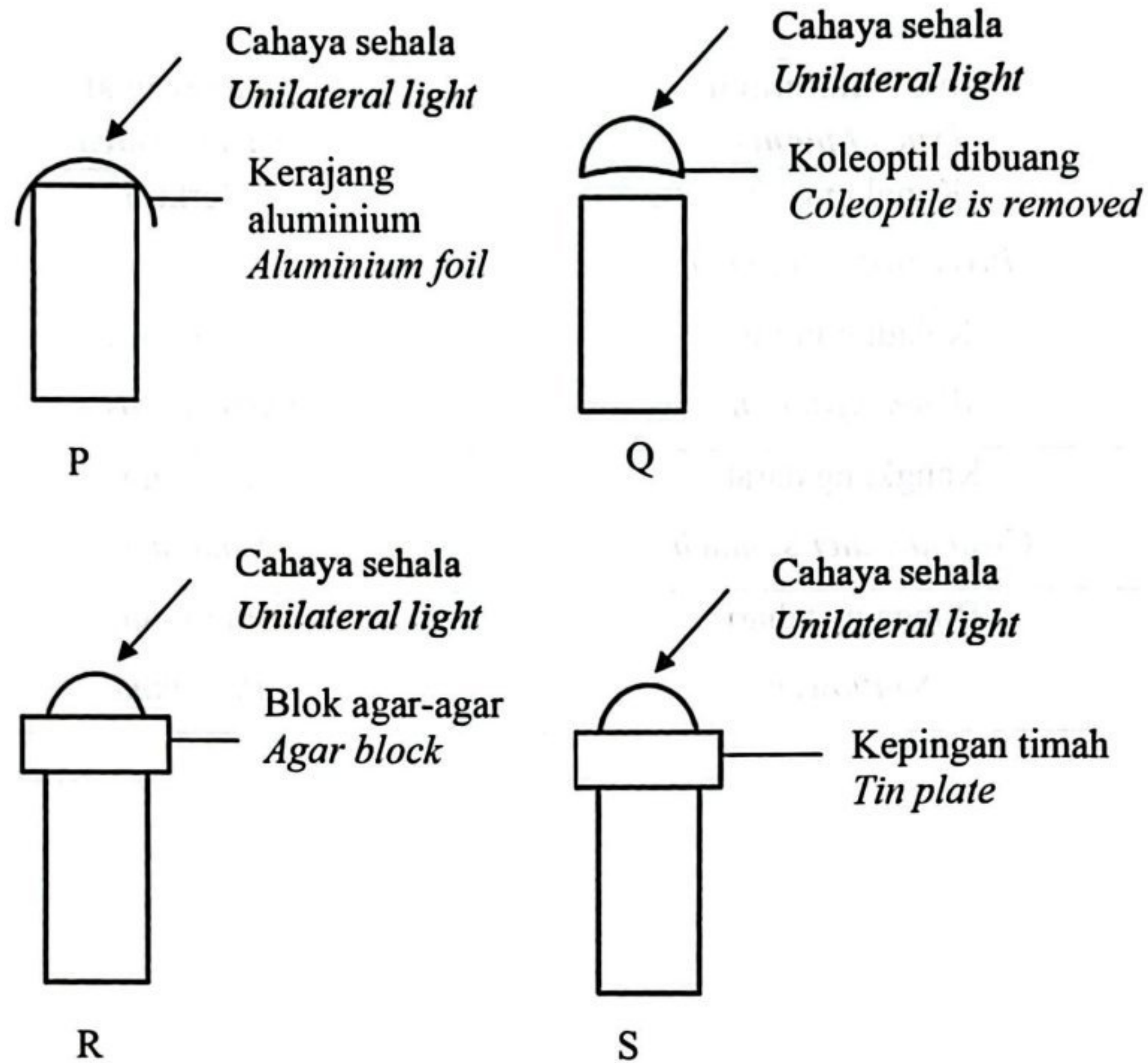
29. Antara berikut, padanan manakah yang betul bagi jenis tumbuhan dan sisa dirawat dalam fotoremediasi?

Which of the following matches is correct for type of plant and its waste treated in phtyoremediation?

	Jenis Tumbuhan <i>Type of plants</i>	Sisa dirawat <i>Waste treated</i>
A	Kangkung air <i>River water spinach</i>	Merkuri <i>Mercury</i>
B	Keladi bunting <i>Water hyacinth</i>	Sisa nuklear <i>Nuclear waste</i>
C	Kangkung darat <i>Ground water spinach</i>	Kadmium <i>Cadmium</i>
D	Bunga matahari <i>Sunflower</i>	Plumbum <i>Plumbum</i>

30. Rajah 14 menunjukkan empat koleoptil P, Q, R dan S yang didedahkan pada cahaya matahari pada satu arah.

Diagram 14 shows four coleoptiles P, Q, R and S that are exposed to sunlight from one direction.



Rajah 14
Diagram 14

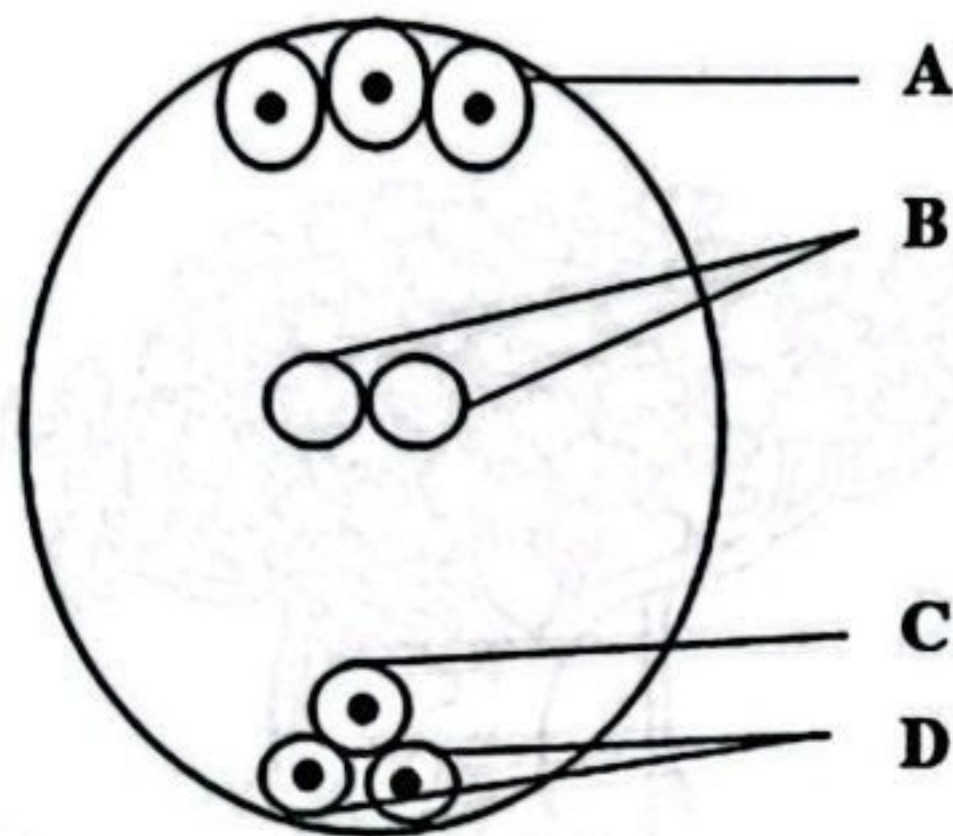
Antara koleoptil P, Q, R dan S yang manakah akan tumbuh ke arah cahaya selepas dua hari?

Which of the coleoptiles P, Q, R and S will move towards light after two days?

- A P sahaja
P only
- B R Sahaja
R only
- C P dan R sahaja
P and R only
- D P, Q dan S sahaja
P, Q and S only

31. Rajah 15 menunjukkan pundi embrio.

Diagram 15 shows an embryo sac.



Rajah 15
Diagram 15

Antara bahagian berlabel A, B, C dan D, yang manakah akan bercantum dengan gamet jantan untuk membentuk zigot?

Which of the labelled parts A, B, C and D will fuse with male gamete to form a zygote?

32. Rajah 16 menunjukkan sejenis tumbuhan yang hidup di kawasan pertembungan air tawar dan air laut.

Diagram 16 shows a type of plant that lives in areas where fresh water and sea water meets.



Rajah 16
Diagram 16

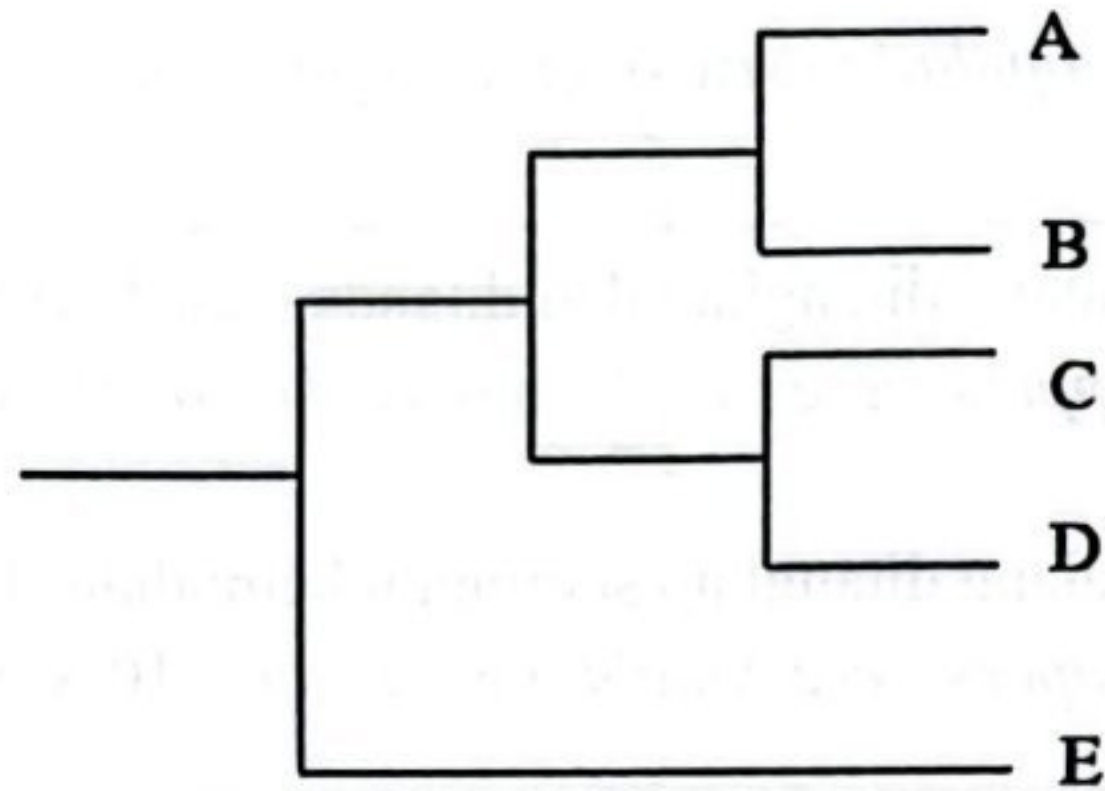
Apakah jenis tumbuhan dalam Rajah 16?

What is the type of plant in Diagram 16?

- A Xerofit
Xerophyte
- B Halofit
Halophyte
- C Mesofit
Mesophyte
- D Hidrofit
Hydrophyte

33. Rajah 17 menunjukkan pokok filogeni.

Diagram 17 shows a phylogeny tree.



Rajah 17

Diagram 17

Antara berikut, spesies yang manakah paling berhubung rapat?

Which of the following species is most closely related?

A A dan E

A and E

B B dan C

B and C

C C dan D

C and D

D D dan E

D and E

34. Maklumat berikut menunjukkan keputusan eksperimen yang dijalankan oleh sekumpulan murid untuk menganggarkan saiz populasi belalang di padang sekolah.

The following information shows the results of an experiment conducted by a group of students to estimate the population size of grasshoppers in school field.

- 40 ekor belalang ditangkap dan ditanda pada hari pertama.
40 grasshoppers were caught and marked on the first day.
- 20 ekor belalang ditangkap seminggu kemudian, 10 adalah bertanda.
20 grasshoppers were caught a week later, 10 were marked.

Apakah saiz populasi belalang di padang sekolah tersebut?

What is the population size of grasshoppers in the school field?

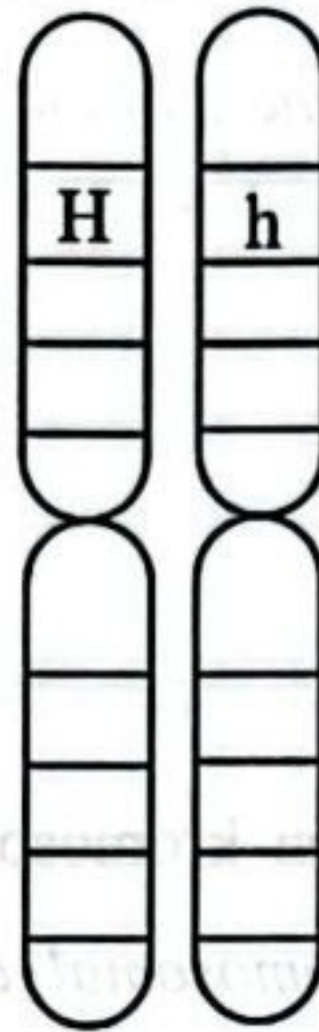
- A 5
- B 6
- C 20
- D 80

35. Sabun eko-enzim adalah satu produk teknologi hijau yang menggunakan kulit buah lemon dan oren. Antara berikut, yang manakah menepati kriteria teknologi hijau dalam pembuatan produk tersebut?

Eco-enzyme detergent is a green technology product that used lemon and orange peels. Which of the following is suitable with the green technology criteria in producing the product?

- A Menjimatkan tenaga dan sumber asli
Efficient use of energy and natural resources
- B Meminimumkan degradasi alam sekitar
Can minimise environmental degradation
- C Mempunyai pembebasan gas rumah hijau yang rendah dan sifar
Has low or zero release of greenhouse gases
- D Menggalakkan penggunaan sumber-sumber yang tidak boleh diperbaharui
Encourage the usage of non-renewable resources

36. Rajah 18 menunjukkan sepasang kromosom homolog. Abjad mewakili gen dalam kromosom.
 Diagram 18 shows a pair of homologous chromosomes. The alphabets represent the genes in the chromosomes.



Rajah 18
 Diagram 18

Apakah yang diwakili oleh h?

What is represented by h?

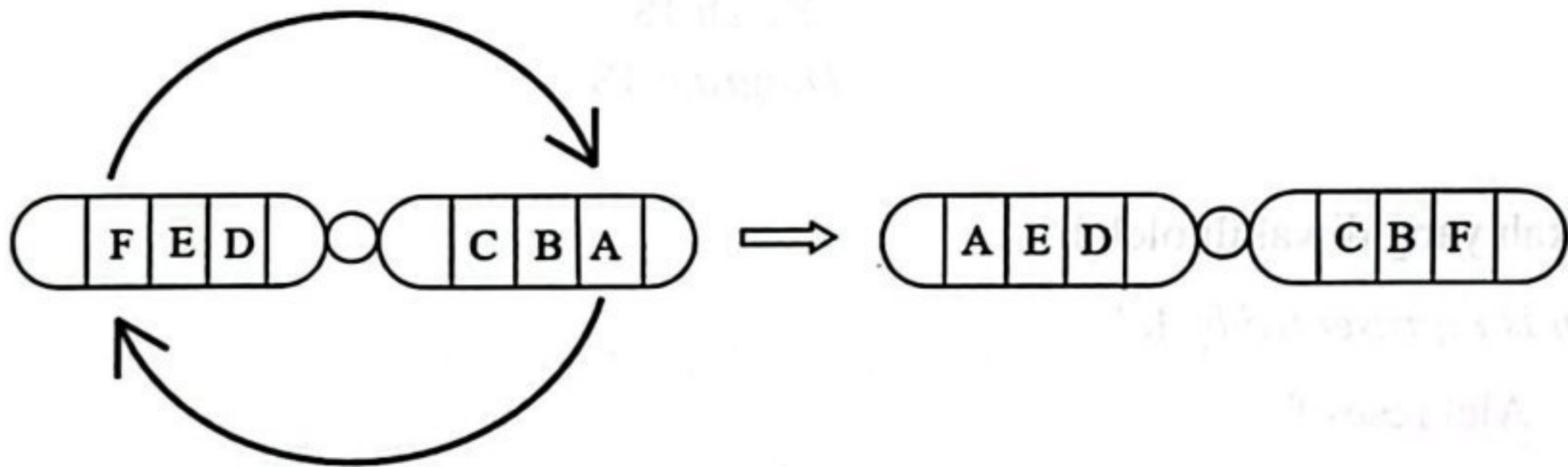
- A Alel resesif
Recessive allele
- B Alel dominan
Dominant allele
- C Trait dominan
Dominant trait
- D Trait resesif
Recessive trait

37. Seorang lelaki hemofilia berkahwin dengan seorang perempuan yang heterozigot hemofilia. Jika pasangan tersebut mempunyai anak perempuan, berapakah kebarangkalian anak perempuannya penghidap hemofilia?

A man who is haemophilic marries a woman who is heterozygous for haemophilia. If the couple has a daughter, what are the chances of the couple to have a haemophilic daughter?

- A 0.25
- B 0.5
- C 0.75
- D 1.00

38. Rajah 19 menunjukkan keadaan aberasi kromosom yang menyebabkan mutasi kromosom. *Diagram 19 shows condition of chromosomal aberration that can cause chromosomal mutation.*



Rajah 19
Diagram 19

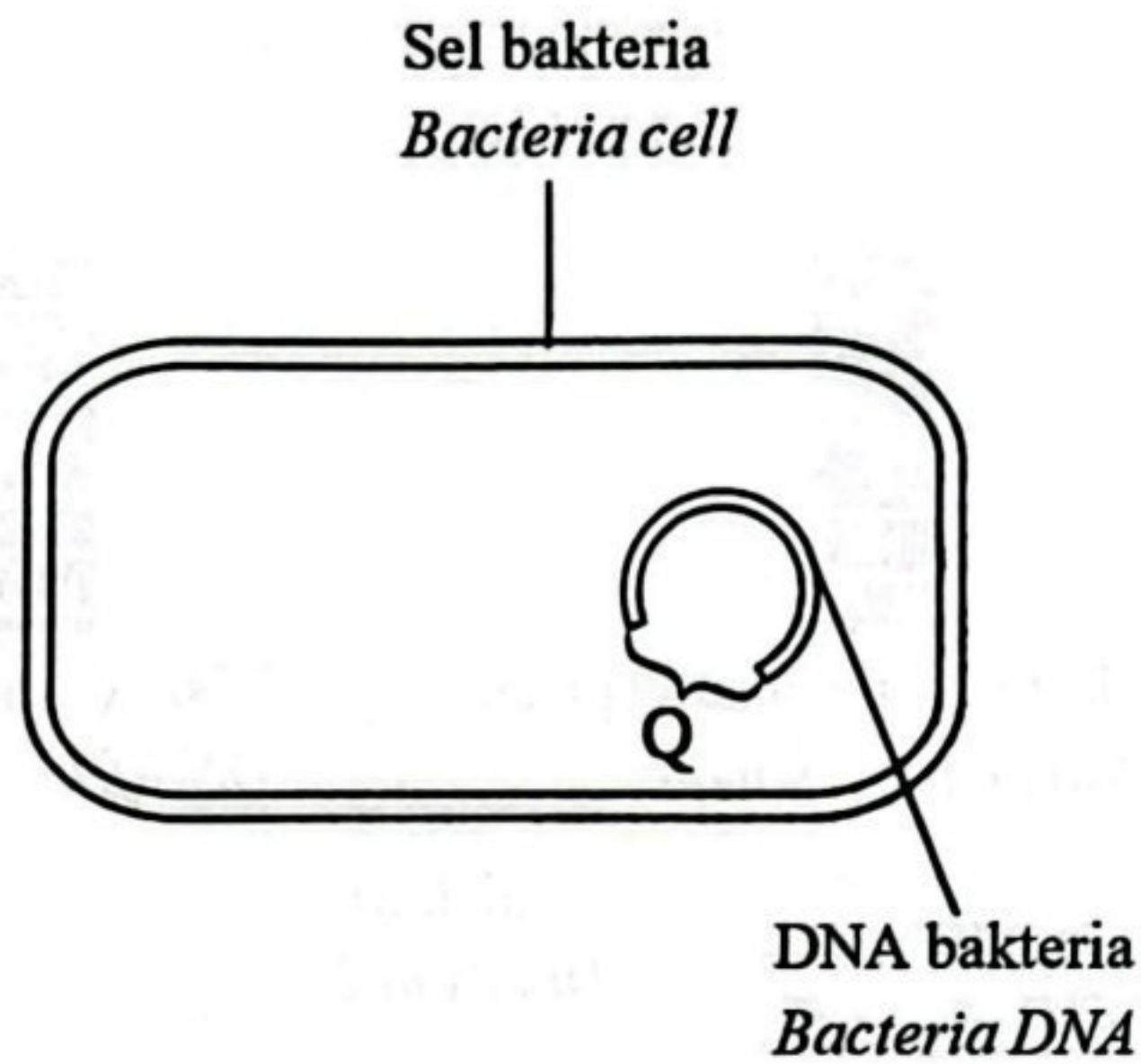
Apakah jenis perubahan struktur kromosom yang berlaku?

What is the type of chromosomal aberration occurs?

- A Translokasi
Translocation
- B Pelenyapan
Deletion
- C Penggandaan
Duplication
- D Penyongsangan
Inversion

39. Rajah 20 menunjukkan satu bakteria yang digunakan untuk menghasilkan insulin manusia.

Diagram 20 shows a bacterium that is used to produce human insulin.



Rajah 20
Diagram 20

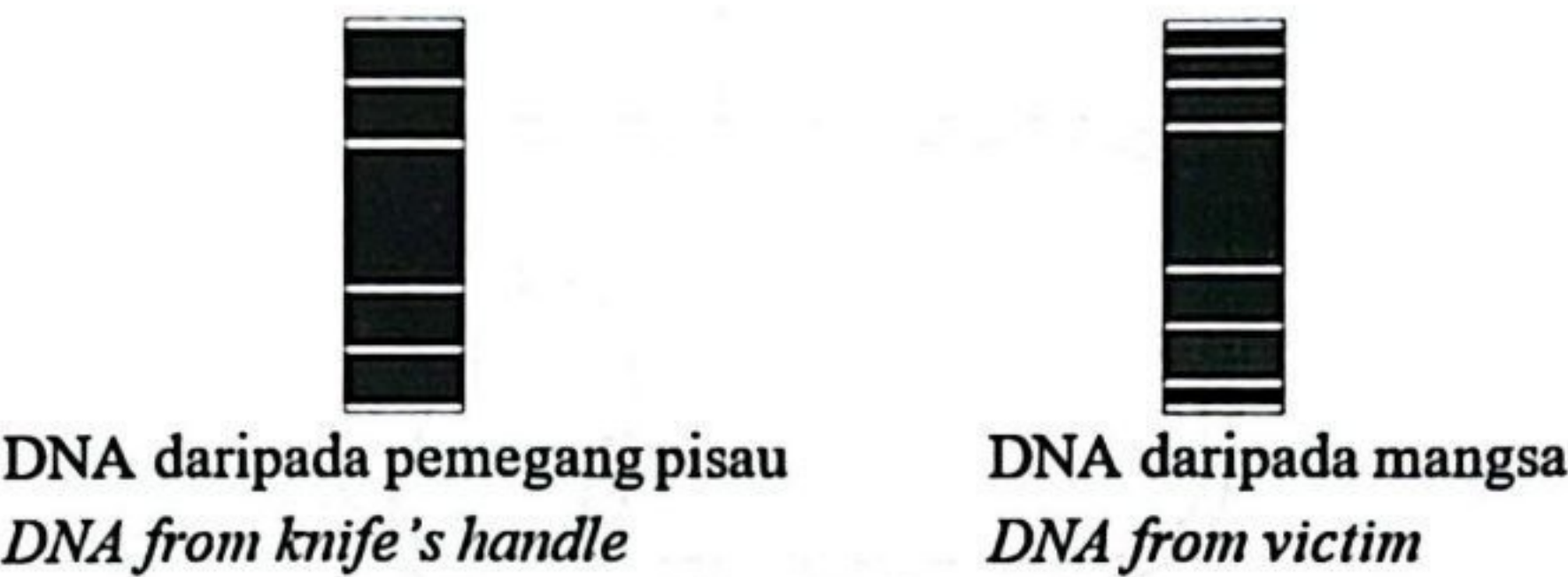
Apakah yang disisipkan ke dalam ruang Q?

What is inserted into gap Q?

- A Gen insulin manusia
Human insulin gene
- B DNA daripada bakteria lain
DNA from another bacterium
- C Sel daripada pankreas manusia
Cells from a human pancreas
- D Satu gen daripada manusia yang sihat
A gene from a healthy human

40. Rajah 21 menunjukkan profil DNA yang diekstrak daripada sampel pada pemegang pisau dan mangsa dalam satu kes pembunuhan.

Diagram 21 shows DNA profiles extracted from the knife's holder and the victim in a murder case.



Rajah 21
Diagram 21

Antara berikut, yang manakah mungkin DNA suspek dalam kes pembunuhan itu?
Which of the following is most likely DNA of the suspect in the murder case?



KERTAS SOALAN TAMAT
END OF QUESTION PAPER