4551/1
BIOLOGI
Kertas 1
Nov 2022
1 ¼ jam

MAJLIS PENGETUA SEKOLAH MALAYSIA
NEGERI SEMBILAN

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PROGRAM PENINGKATAN AKADEMIK TINGKATAN 5
SEKOLAH-SEKOLAH NEGERI SEMBILAN 2022

BIOLOGI
Kertas 1
4551/1
Satu jam lima belas minit

JANGAN BUKA KERTAS SOALAN INI SEHINGGA DIBERITAHU

1. Kertas soalan ini adalah dalam dwibahasa.

2. Soalan dalam bahasa Melayu mendahului soalan yang sepadan dalam bahasa Inggeris

3. Calon dikehendaki membaca maklumat di halaman belakang kertas soalan ini.

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

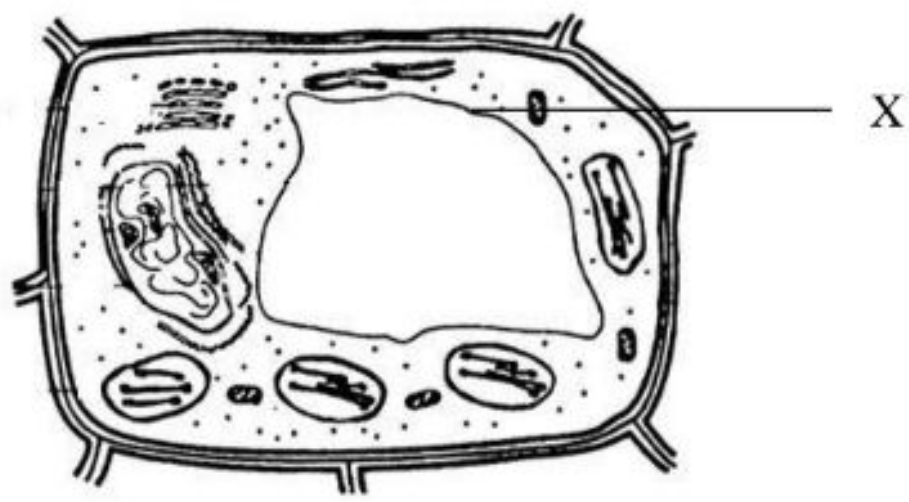
1. Maklumat berikut adalah tentang bidang kajian dalam Biologi.
The following information is about a field of study in Biology.

Kajian mengenai interaksi antara organisma dan persekitarannya. *Study of the interactions between organisms and their environment.*

Apakah bidang kajian itu?
What is the field of study?

A Botani / *Botany*
B Genetik / *Genetics*
C Ekologi / *Ecology*
D Fisiologi / *Physiology*

2. Rajah 1 menunjukkan struktur suatu sel tumbuhan.
Diagram 1 *shows the structure of a plant cell.*

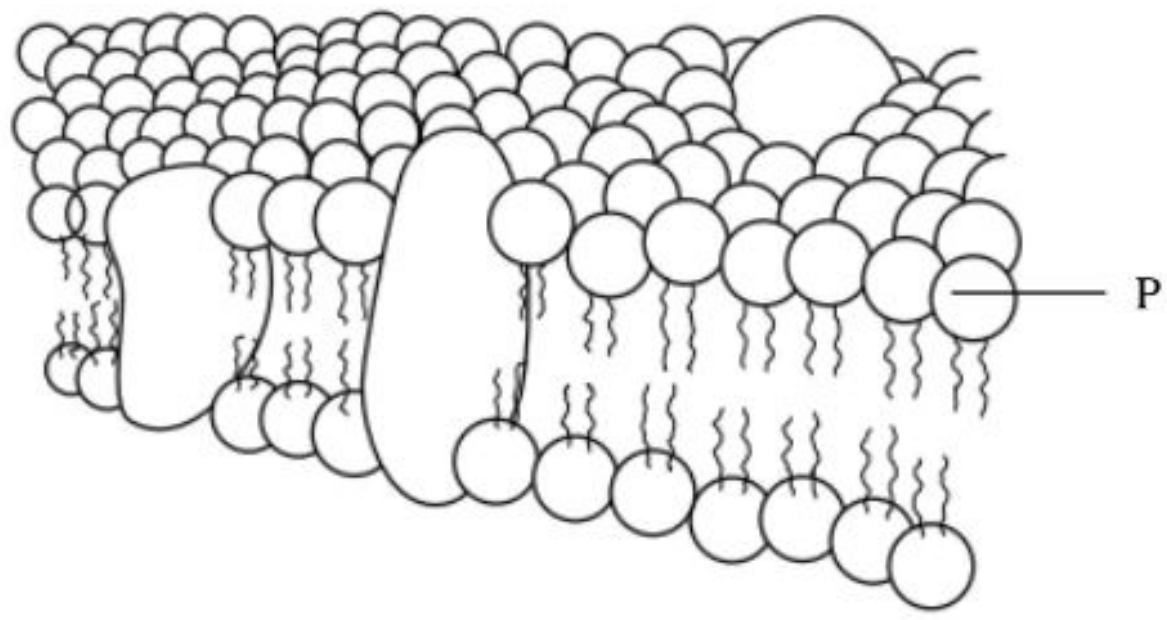


Rajah 1 / *Diagram* 1

Antara berikut, yang manakah benar tentang komponen X?
Which of the following is true about component X?

A Dikelilingi oleh membran tonoplas
Surrounded by the tonoplast membrane
B Terdiri daripada dua lapisan membran
Consists of two layers of membrane
C Dibina daripada gentian selulosa
Made from cellulose fibre

3. Rajah 2 menunjukkan struktur membran plasma.
Diagram 2 shows the structure of the plasma membrane.



Rajah 2 / *Diagram 2*

Antara berikut, yang manakah ciri P?
Which of the following is the characteristic of P?

A Menyerap air / *Absorbs water*
B Tertarik kepada air / *Attracted to water*
C Tidak tertarik kepada air / *Repels water*

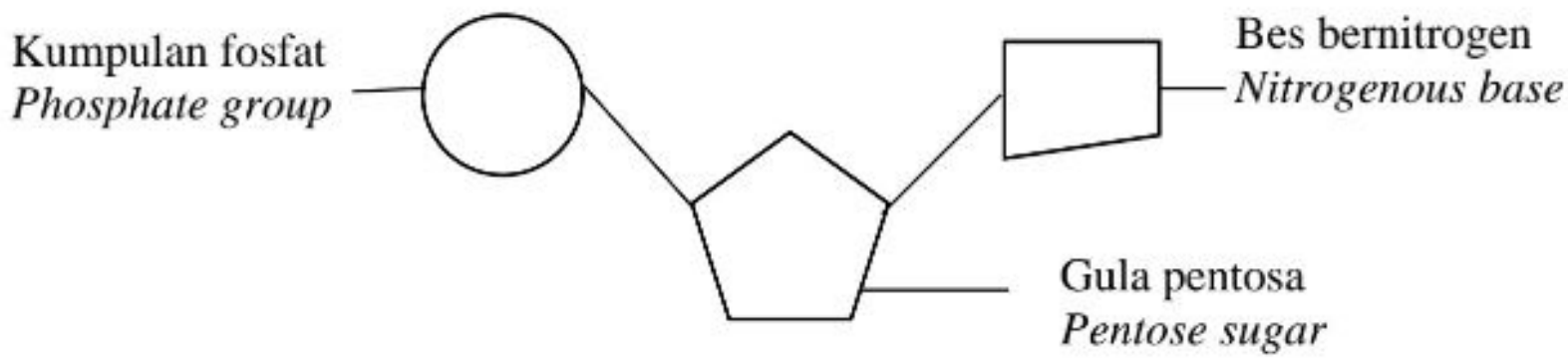
4. Maklumat berikut adalah tentang keadaan kesihatan seorang kanak-kanak.
The following information is about the health of a child.

- Kehilangan air yang banyak / *Loss of water*
- Cirit-birit / *Diarrhoea*

Apakah bahan yang boleh membantunya kembali sembuh?
What is the substance that can help her to recover?

A Air osmosis berbalik
Reverse osmosis water
B Minuman isotonik
Isotonic drinks
C Garam penghidratan oral
Oral rehydration salts
D Air suling
Distilled water

5. Rajah 3 menunjukkan satu nukleotida.
Diagram 3 shows a nucleotide.



Rajah 3 / *Diagram 3*

Apakah jenis gula pentosa dan bes bernitrogen bagi RNA?
What are the types of pentose sugar and nitrogenous bases for RNA?

	Gula pentose ***Pentose sugar***	**Bes bernitrogen** ***Nitrogenous base***
A	Gula deoksiribosa *Deoxyribose sugar*	Adenina, guanina, timina dan sitosina *Adenine, guanine, thymine, and cytosine*
B	Gula ribosa *Ribose sugar*	Adenina, guanina, sitosina dan urasil *Adenine, guanine, cytosine, and uracil*
C	Gula deoksiribosa *Deoxyribose sugar*	Adenina, guanina, sitosina dan urasil *Adenine, guanine, cytosine, and uracil*
D	Gula ribosa *Ribose sugar*	Adenina, guanina, timina dan sitosina *Adenine, guanine, thymine, and cytosine*

6. Rajah 4 menunjukkan proses penguraian suatu molekul kompleks oleh enzim.
Diagram 4 shows the breaking down of a complex molecule by an enzyme.

Rajah 4 / *Diagram 4*

Antara yang berikut, yang manakah kesimpulan daripada Rajah 4?
Which of the following can be deduced from Diagram 4?

I Enzim bertindak dengan pantas
Enzyme acts rapidly

II Tindakan enzim adalah spesifik
The reaction of enzyme is specific

III Enzim diperlukan dalam kuantiti yang kecil
Enzyme is only required in small quantities

IV Struktur enzim kekal tidak berubah pada akhir tindak balas
The structure of enzyme remains unchanged at the end of the reaction

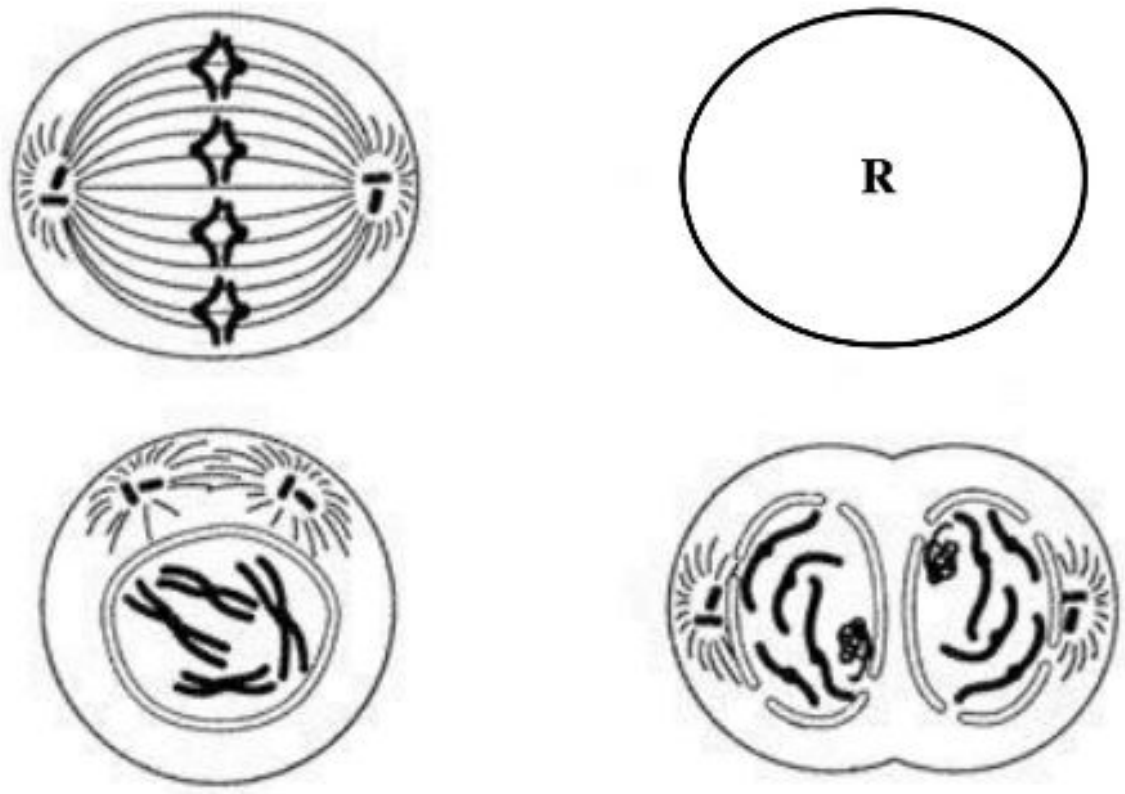
A I dan II / *I and II*

B I dan III / *I and III*

C II dan IV / *II and IV*

D III dan IV / *III and IV*

7. Rajah 5 menunjukkan peringkat-peringkat dalam mitosis.
Diagram 5 shows stages in mitosis.



Rajah 5 / *Diagram 5*

Apakah yang berlaku semasa peringkat R?
What happens during stage R?

A Kromosom tersusun dalam satu barisan di satah khatulistiwa
The chromosomes are aligned in a single row at the equatorial plane.

B Sentriol berpindah ke kutub bertentangan dan gentian gelendong mula terbentuk
The centriole moves to the opposite poles and spindle fibres start to form

C Gentian gelendong memendek, mengecut dan kromatid kembar terpisah dan tertarik ke kutub sel yang bertentangan
Spindle fibres shorten, contract and the sister chromatids separate and pulled to the opposite pole

D Apabila sampai di kutub bertentangan, kromatid kini dikenali sebagai kromosom anak
When the chromatids are at the opposite poles, they are now called the daughter chromosomes

8. Persamaan berikut menunjukkan sejenis fermentasi yang berlaku di dalam otot manusia.
The following equation shows a type of fermentation that occurs in human muscle cells.

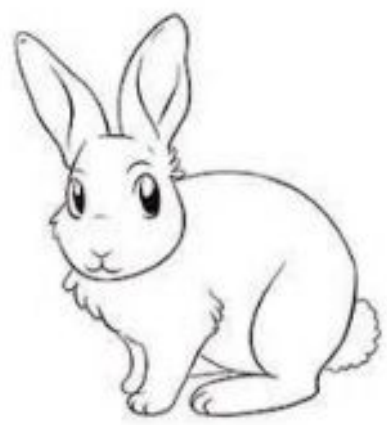
Glukosa / *Glucose* ⟶ **K** ✚ Tenaga / *Energy*

Rajah 6 / *Diagram 6*

Apakah K dan jumlah tenaga yang dibebaskan?
What are K and total energy being released?

	K	Tenaga / *Energy* (kJ)
A	Asid laktik / *Lactic acid*	150
B	Etanol / *Ethanol*	150
C	Asid laktik / *Lactic acid*	210
D	Etanol / *Ethanol*	210

9. Rajah 7 menunjukkan dua organisma P dan Q.
Diagram 7 shows two organisms P dan Q.

	
P	Q

Antara berikut, yang manakah menunjukkan struktur respirasi yang betul bagi organisma-organisma tersebut?
Which of the following shows the correct respiratory structure for the organisms?

	P	Q
A	Trakeol / *Tracheole*	Kulit / *Skin*
B	Peparu / *Lungs*	Kulit / *Skin*
C	Peparu / *Lungs*	Trakeol / *Tracheole*
D	Trakeol / *Tracheole*	Peparu / *Lungs*

10. Pernyataan di bawah menerangkan pengubahsuaian struktur dan fungsi kelenjar gaster.
The following statements describe the modifications to the structure and function of the gastric glands.

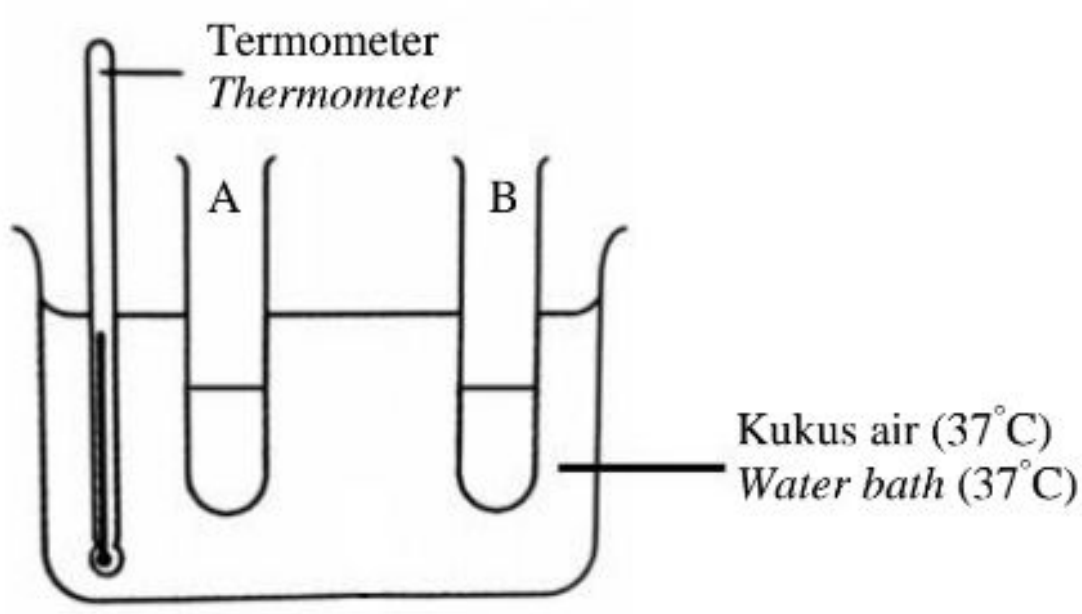
> Permukaan dalam dinding perut dilapisi oleh sel epitelium yang mengalami pengubahsuaian struktur dan fungsi membentuk sel utama, sel parietal dan sel mukus.
> *The inner surface of the abdominal wall is lined by epithelial cells that undergo structural and functional modifications forming primary cells, parietal cells and mucus cells.*

Antara berikut, yang manakah pernyataan yang benar tentang sel epitelium tersebut dalam pencernaan protein di perut?
Which of the following statements is true about the epithelial cells in the digestion of protein in the stomach?

I Sel utama merembeskan kaseinogen
Primary cells secrete caseinogen
II Sel utama merembeskan pepsinogen
Primary cells secrete pepsinogen
III Sel mukus merembeskan asid sulfurik
Mucus cells secrete sulphuric acid
IV Sel parietal merembeskan asid hidroklorik
Parietal cells secrete hidrochloric acid

A I dan II / *I and II*
B I dan III / *I and III*
C II dan IV / *II and IV*
D III dan IV / *III and IV*

11. Rajah 8 menunjukkan eksperimen untuk mengkaji tindakan lipase terhadap lipid.
Diagram 8 shows an experiment to study the reaction of lipase on lipids.



Rajah 8 / *Diagram 8*

Jadual 1 menunjukkan kandungan dalam tabung uji A dan B
Table 1 shows the content in test tube A and B

Tabung uji A *Test tube A*	Tabung uji B *Test tube B*
• 2 ml minyak masak *2 ml cooking oil* • 1 ml larutan natrium karbonat 0.2M *1 ml 0.2M sodium carbonate solution* • 1 ml pencair pencuci pinggan mangkuk *1 ml dishwashing liquid* • 3 titis penunjuk fenolftalein *3 drops of phenolphthalein indicator* • 1 ml enzim lipase *1 ml enzyme lipase*	• 2 ml minyak masak *2 ml cooking oil* • 1 ml larutan natrium karbonat 0.2M *1 ml 0.2M sodium carbonate solution* • 1 ml pencair pencuci pinggan mangkuk *1 ml dishwashing liquid* • 3 titis penunjuk fenolftalein *3 drops of phenolphthalein indicator* • 1 ml air suling *1 ml distilled water*

Antara berikut, yang manakah menerangkan pemerhatian eksperimen dengan betul?
Which of the following correctly describe the observation of the experiment?

A Warna merah jambu penunjuk fenolftalein dalam tabung uji A bertukar menjadi tidak bewarna.
The pink colour of phenolphthalein indicator in test tube A turns colourless.

B Warna merah jambu penunjuk fenoltalein dalam tabung uji A kekal tidak berubah
The pink colour of phenolphthalein indicator in test tube A remains unchanged.

C Warna merah jambu larutan fenolftaleindalam tabung uji B bertukar kepada warna merah bata selepas beberapa jam.
The pink colour of phenolphthalein indicator in test tube B turns brick red after a few hours.

12. Jadual 2 menunjukkan kumpulan darah bagi empat individu serta jenis kumpulan darah yang diterima melalui pemindahan darah.
Table 2 shows the blood groups of four individuals and the blood type received in a blood transfusion.

Individu ***Individual***	**Kumpulan darah** ***Blood group***	**Kumpulan darah yang diterima dalam pemindahan darah** ***Blood type received in a blood transfusion***
P	A	O
Q	B	AB
R	AB	B
S	O	AB

Jadual 2 / *Table 2*

Antara individu berikut, yang manakah tidak menghadapi risiko pengaglutinan?
Which of the following individual are not at risk from agglutination?

A P dan Q / *P and Q*

B P dan R / *P and R*

C Q dan S / *Q and S*

D R dan S / *R and S*

13. Pernyataan berikut adalah mengenai penyakit kardiovaskular yang berkaitan dengan sistem peredaran darah manusia.
The following statements are about the cardiovascular diseases related to the human circulatory system.

	Penyakit kardiovaskular *Cardiovascular diseases*	***Penerangan*** *Description*
I	Strok *Stroke*	Darah beku yang menyekat aliran darah ke otak *Blood clots that clog blood flow to the brain*
II	Penginfarkan miokardium *Myocardial infarction*	Kekurangan bekalan oksigen ke otot jantung kerana arteri koronari tersumbat sepenuhnya *Lack of oxygen supply to the heart muscles because the coronary arteries is completely clogged*
III	Arterosklerosis *Atherosclerosis*	Kalsium mengeras pada plak menyebabkan arteri hilang kekenyalan *Calcium hardens on plaque causing the arteries to lose elasticity*
IV	Arteriosklerosis *Arteriosclerosis*	Pembentukan dan pemendapan plak pada dinding dalam arteri yang menyebabkan lumen salur darah sempit dan tersumbat. *The formation and deposition of plaques on the inner walls of arteries that cause the lumen of blood vessels to narrow and clog.*

Penyakit manakah yang dipadankan dengan penerangan yang betul?
Which disease is match to the description correctly?

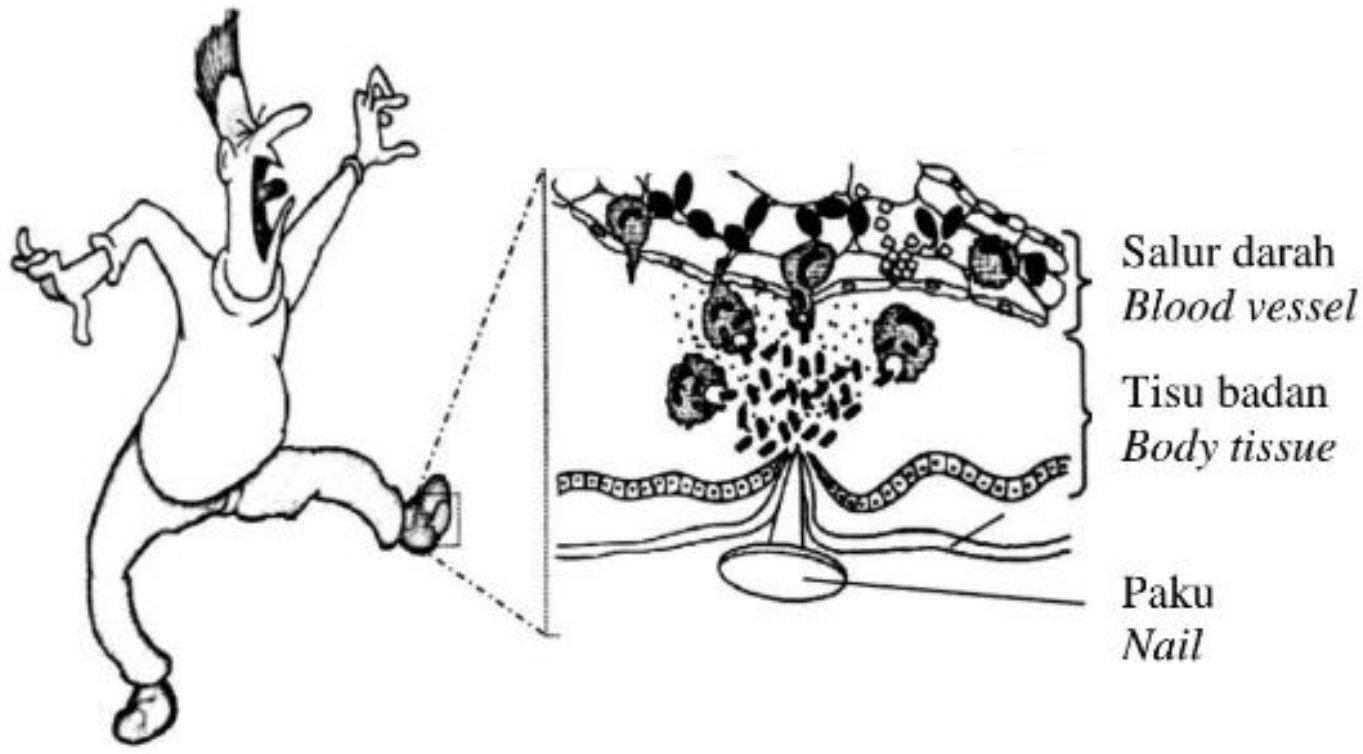
A I dan II / *I and II*

B I dan III / *I and III*

C II dan IV / *II and IV*

D III dan IV / *III and IV*

14. Rajah 9 menunjukkan seorang lelaki terpijak sebatang paku dan berdarah.
Diagram 9 shows a man who stepped on a nail and bleed.



Rajah 9 / *Diagram 9*

Maklumat berikut menerangkan gerak balas keradangan yang berlaku pada tisu tapak kaki yang membengkak.
The following information describe the inflammatory response that occur at the swollen tissue of the foot.

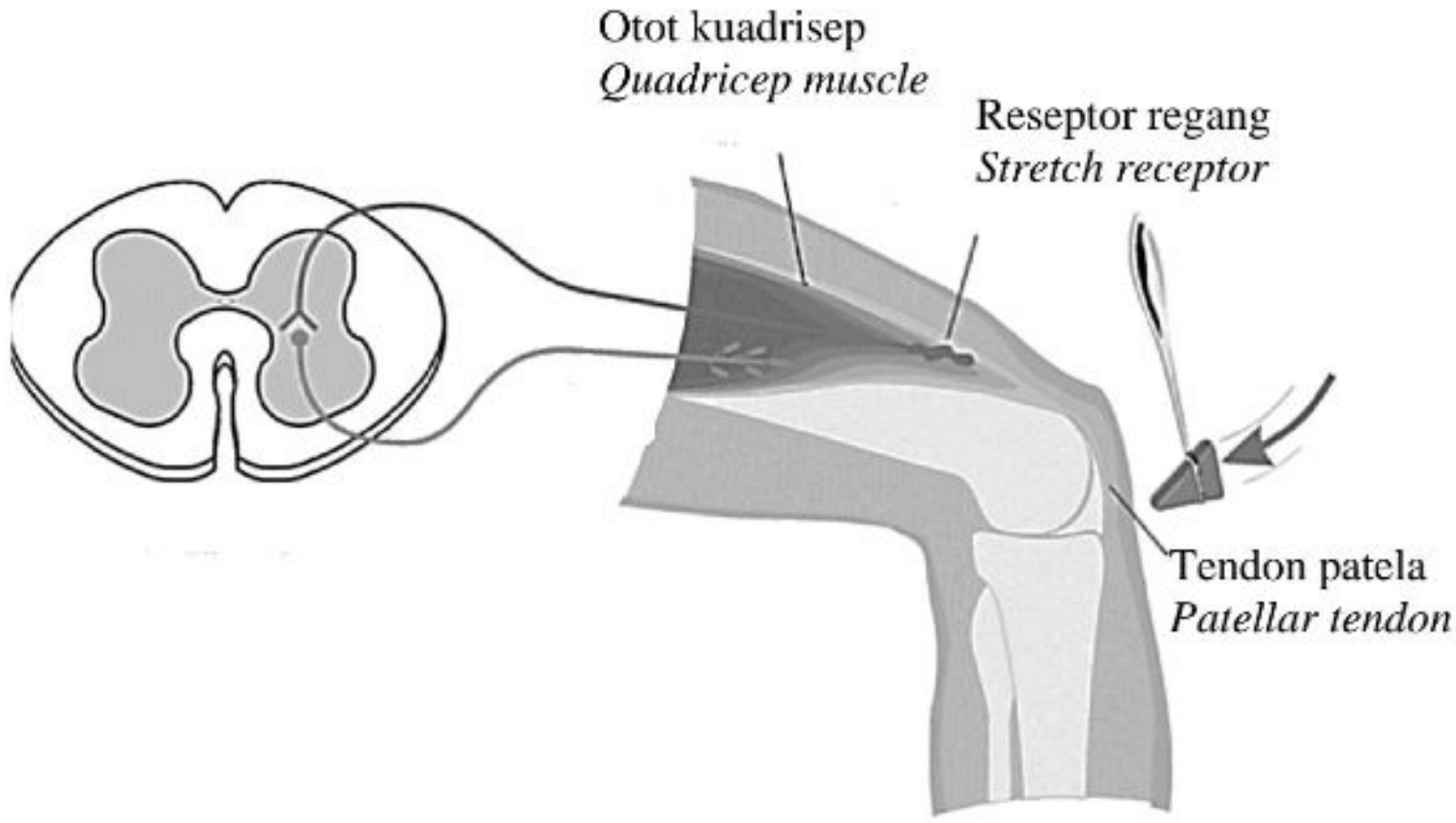
P	Tisu yang membengkak membebaskan histamin yang merangsang gerak balas keradangan serta merta *The swollen tissue releases histamine which stimulates the inflammatory response immediately*
Q	Mekanisme pembekuan darah dicetuskan *The mechanism of blood clotting is triggered*
R	Histamin menyebabkan pengembangan salur darah bagi membolehkan aliran darah yang lebih banyak ke kawasan jangkitan. *Histamine causes the blood vessels to expand for more blood flow to the infected area.*
S	Sel fagosit menjalankan fagositosis *Phagocytes undergo phagocytosis*
T	Sel fagosit dan faktor pembeku berkumpul di kawasan jangkitan *Phagocytes and clotting factors accumulate in the infected area*

Antara yang berikut, urutan yang manakah betul?
Which of the following is the correct sequence?

A P, Q, R, S, T **C** P, S, R, T, Q

B P, R, T, Q, S **D** Q, R, S, T, P

15. Rajah 10 menunjukkan ujian keberkesanan sistem saraf.
Diagram 10 shows a test of the effectiveness of the nervous system.



Rajah 10 / *Diagram 10*

Antara neuron berikut, yang manakah terlibat dalam tindakan refleks semasa ujian tersebut?
Which of the following neurons are involved in the reflex action during the test?

A Neuron deria sahaja
Sensory neuron only

B Neuron geganti sahaja
Interneuron only

C Neuron deria dan neuron motor
Sensory neuron and motor neuron

D Neuron geganti dan neuron motor
Interneuron and motor neuron

16. Dalam situasi "lawan atau lari" hipotalamus menghantar impuls saraf secara terus ke medula adrenal dan merangsang perembesan hormon.
In a "fight or flight situation" the hypothalamus sends nerve impulses directly to the medulla adrenal and stimulate the secretion of hormones.

I	Dopamin-tekanan darah meningkat *Dopamine- blood pressure increase*
II	Tiroksina- kadar respirasi bertambah *Thyroxine - increase respiration rate*
III	Noradrenalina-aktiviti metabolisme meningkat *Noradrenaline - increase the metabolic activity*
IV	Adrenalina - kadar denyutan jantung meningkat *Adrenaline - increase heart rate*

Hormon manakah yang dipadankan dengan tindakannya yang betul semasa situasi "lawan atau lari"?
Which hormone is correctly matched to its action during a "fight or flight" situation?

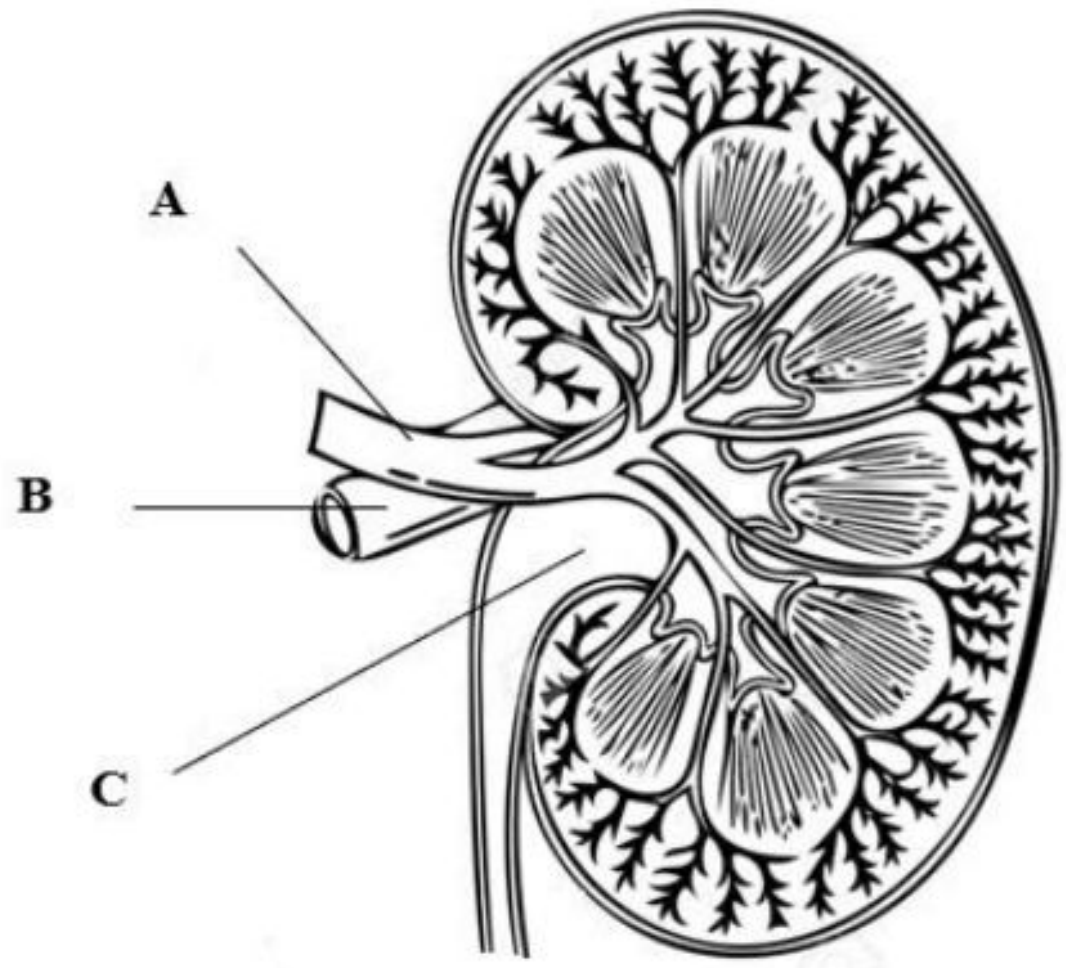
A I dan II / *I and II*

B I dan III / *I and III*

C II dan IV / *II and IV*

D III dan IV / *III and IV*

17. Rajah 11 menunjukkan keratan memanjang ginjal manusia.
Diagram 11 shows the longitudinal section of human kidney.

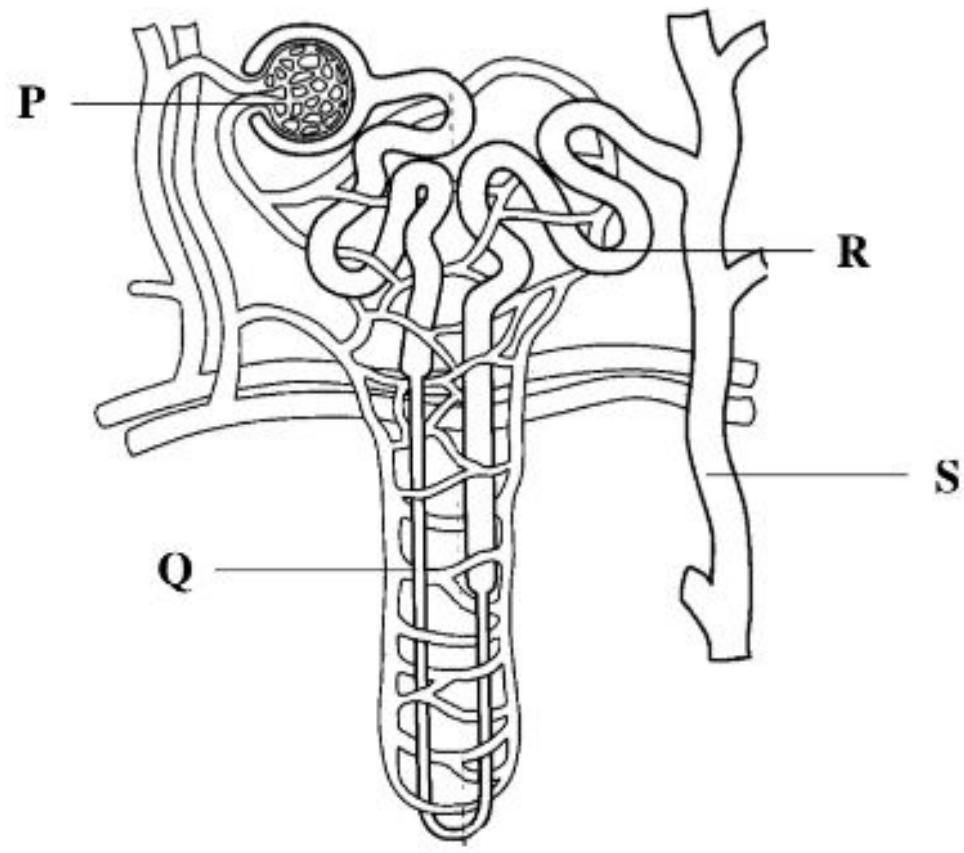


Rajah 11 / *Diagram* 11

Antara bahagian berlabel **A, B** dan **C**, yang manakah dipadankan dengan betul kepada fungsinya?
Which of the parts labelled **A, B** *or* **C** *is matched correctly to its function?*

	Fungsi / *Function*
A	Mengangkut darah terdeoksigen dari ginjal kembali ke jantung *Carries deoxygenated blood from the kidneys back to the heart*
B	Mengangkut darah beroksigen dari jantung ke ginjal. *Carries oxygenated blood from the heart to the kidneys.*
C	Menyalurkan air kencing ke dalam pundi kencing *Flows the urine into the urinary bladder*

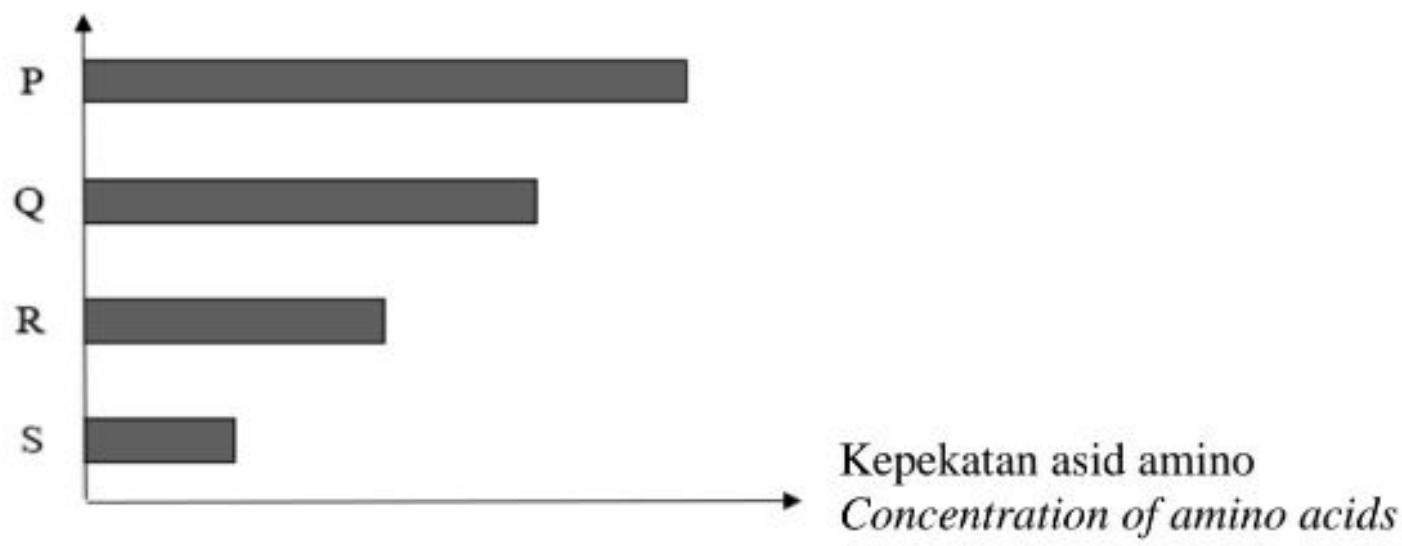
18. Rajah 12 menunjukkan struktur satu nefron dalam ginjal manusia.
Diagram 12 shows structure of a nephron in human kidney.



Rajah 12 / *Diagram* 12

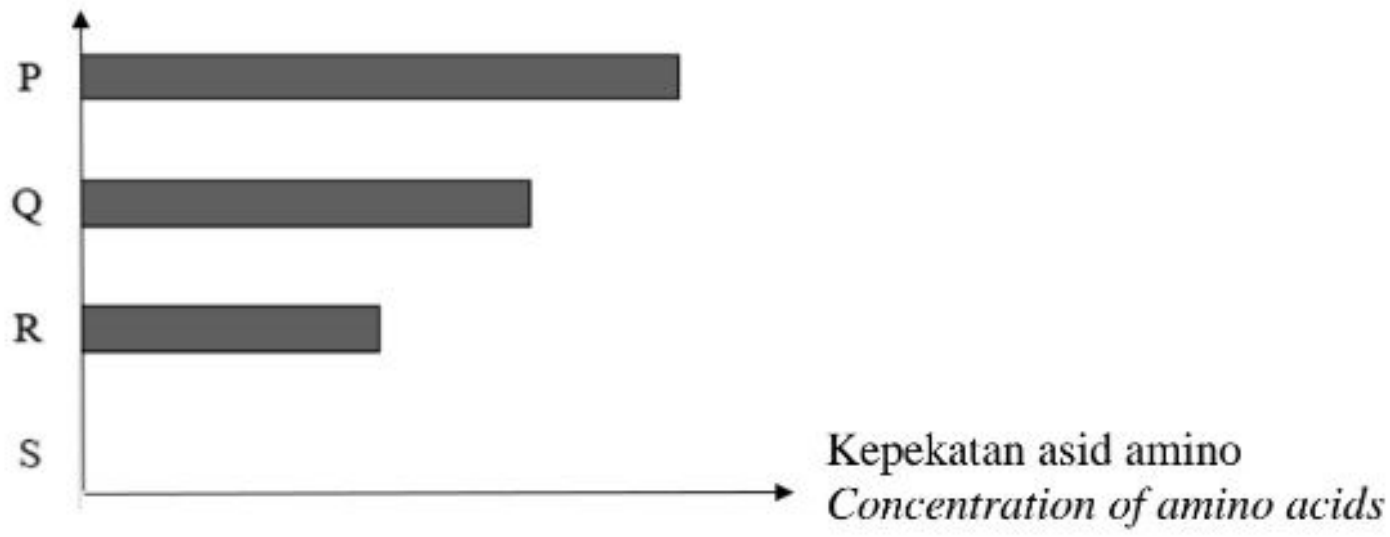
Antara carta palang berikut, yang manakah mewakili kepekatan asid amino di bahagian **P, Q, R** dan **S**?
Which of the following bar chart represents the amino acid concentration at the parts labelled **P, Q, R** *or* **S**?

A



B

Bahagian nefron
Part of nefron

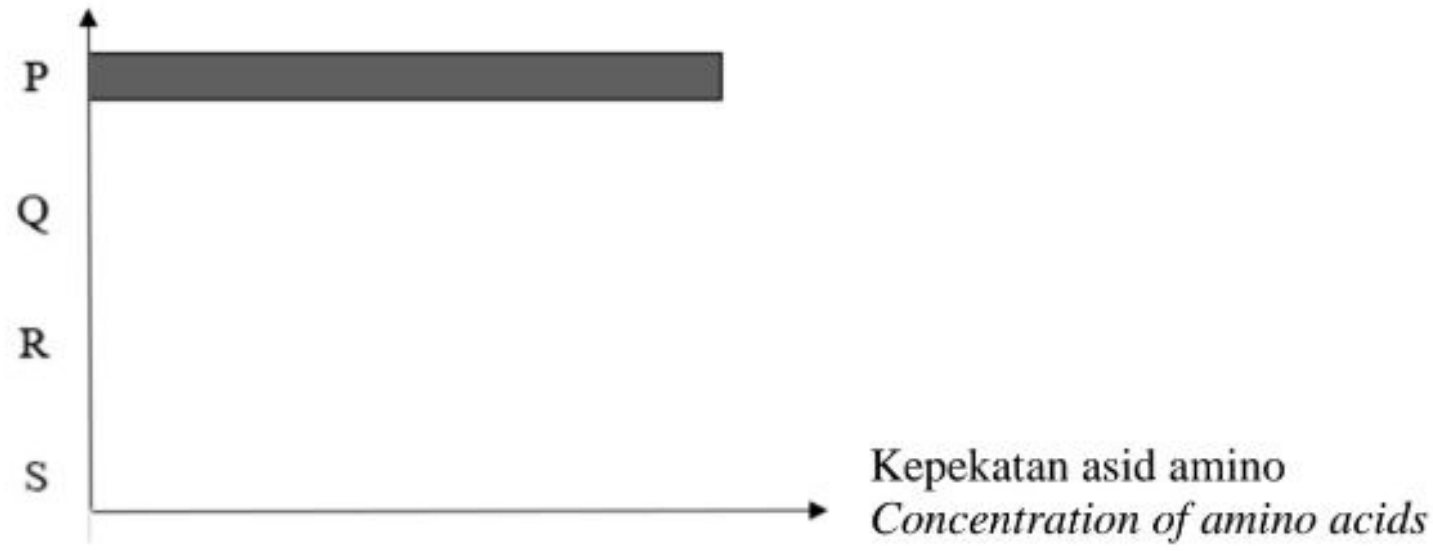


C

Bahagian nefron
Part of nefron

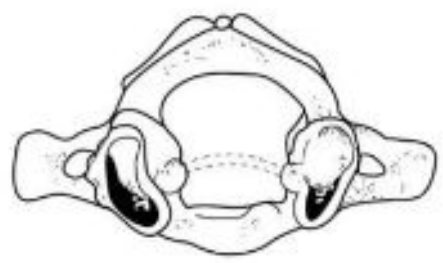
D

Bahagian nefron
Part of nefron

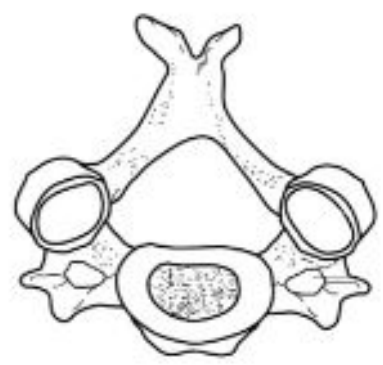


19. Antara berikut, vertebra yang manakah bersendi dengan tengkorak?
Which of the following vertebrae articulate with the skull?

A

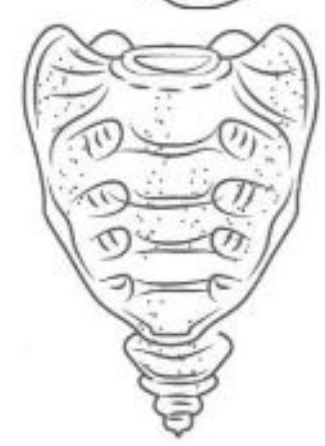


B



C

D



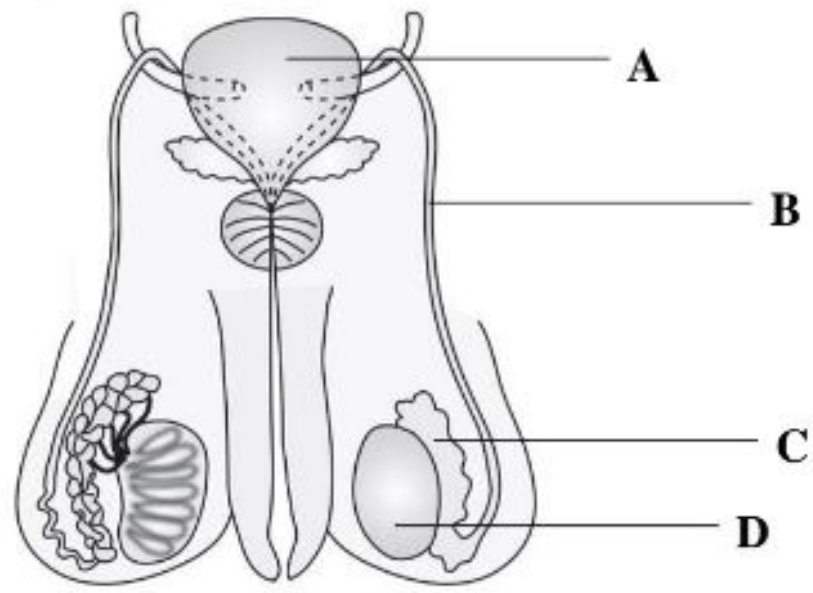
20. Maklumat berikut adalah mengenai isu kesihatan sistem rangka manusia.
The following is the information on the health issues of the human skeletal system.

- Pengambilan ubat untuk mengurangkan keradangan
  Consumption of medicine to reduce inflammation
- Disebabkan kekurangan bendalir sinovia dan kehausan rawan
  Caused by decreased synovial fluid and wear and tear of cartilage

Apakah penyakit berkenaan dengan maklumat di atas?
What is the disorder related to the disorder?

A Osteoporosis / *Osteoporosis*
B Osteoartritis / *Osteoarthritis*
C Skoliosis / *Scoliosis*
D Gout / *Gout*

21. Rajah 13 menunjukkan sistem pembiakan lelaki.
Diagram 13 shows the male reproductive system.



Rajah / *Diagram* 13

Antara bahagian berlabel **A, B, C** dan **D**, yang manakah menghasilkan sperma?
Which of the parts labelled **A, B, C** *or* **D** *produces sperms?*

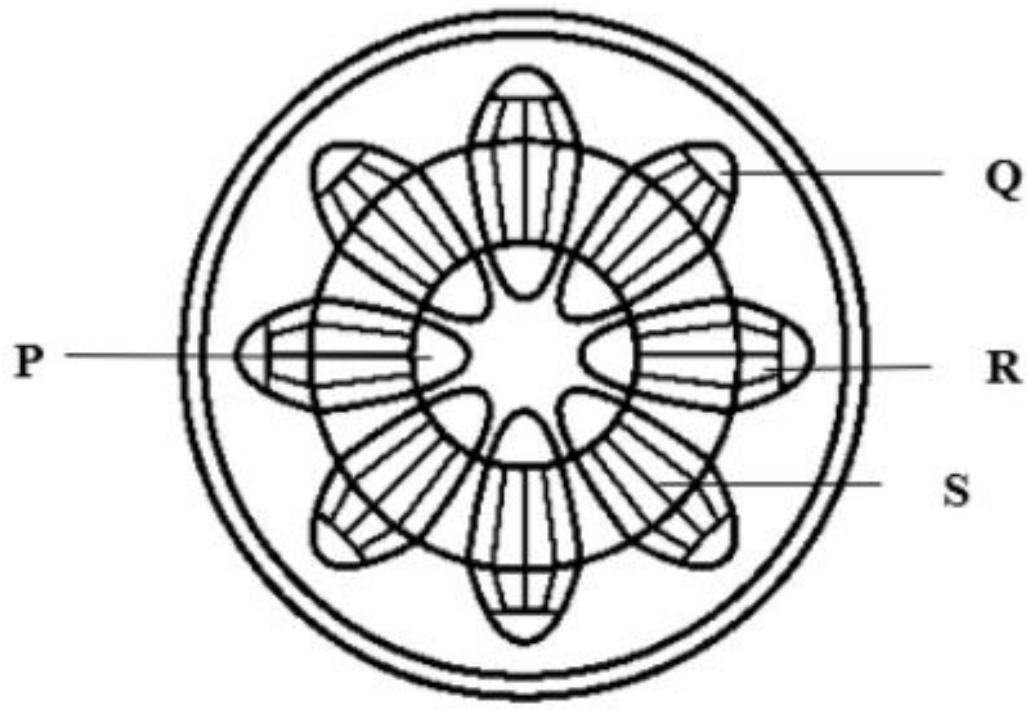
22. Maklumat berikut adalah mengenai sistem pembiakan perempuan.
The following information is about the female reproductive system

> Seorang wanita membebaskan dua oosit sekunder dari ovari semasa satu kitar haid.
> *A woman released two secondary oocytes from the ovary during menstrual cycle.*

Apakah jenis kembar yang mungkin dihasilkan sekiranya berlaku persenyawaan?
What type of twins are most likely to be produced if fertilisation occurs?

A Kembar siam / *Siamese twins*
B Kembar seiras / *Identical twins*
C Kembar tidak seiras / *Fraternal twins*

23. Rajah 14 menunjukkan satu batang eudikot yang matang.
Diagram 14 shows a mature eudicot stem.



Rajah 14 / *Diagram* 14

Antara bahagian berlabel **P, Q, R** dan **S**, yang manakah dihasilkan semasa pertumbuhan sekunder?
*Which of the labelled parts **P, Q, R or S** are produced during secondary growth?*

A P, Q dan R / *P, Q and R*
B Q, R dan S / *Q, R and S*
C P dan Q / *P and Q*
D R dan S / *R and S*

24. Apakah kepentingan transpirasi kepada tumbuhan?
What is the importance of transpiration to plants?

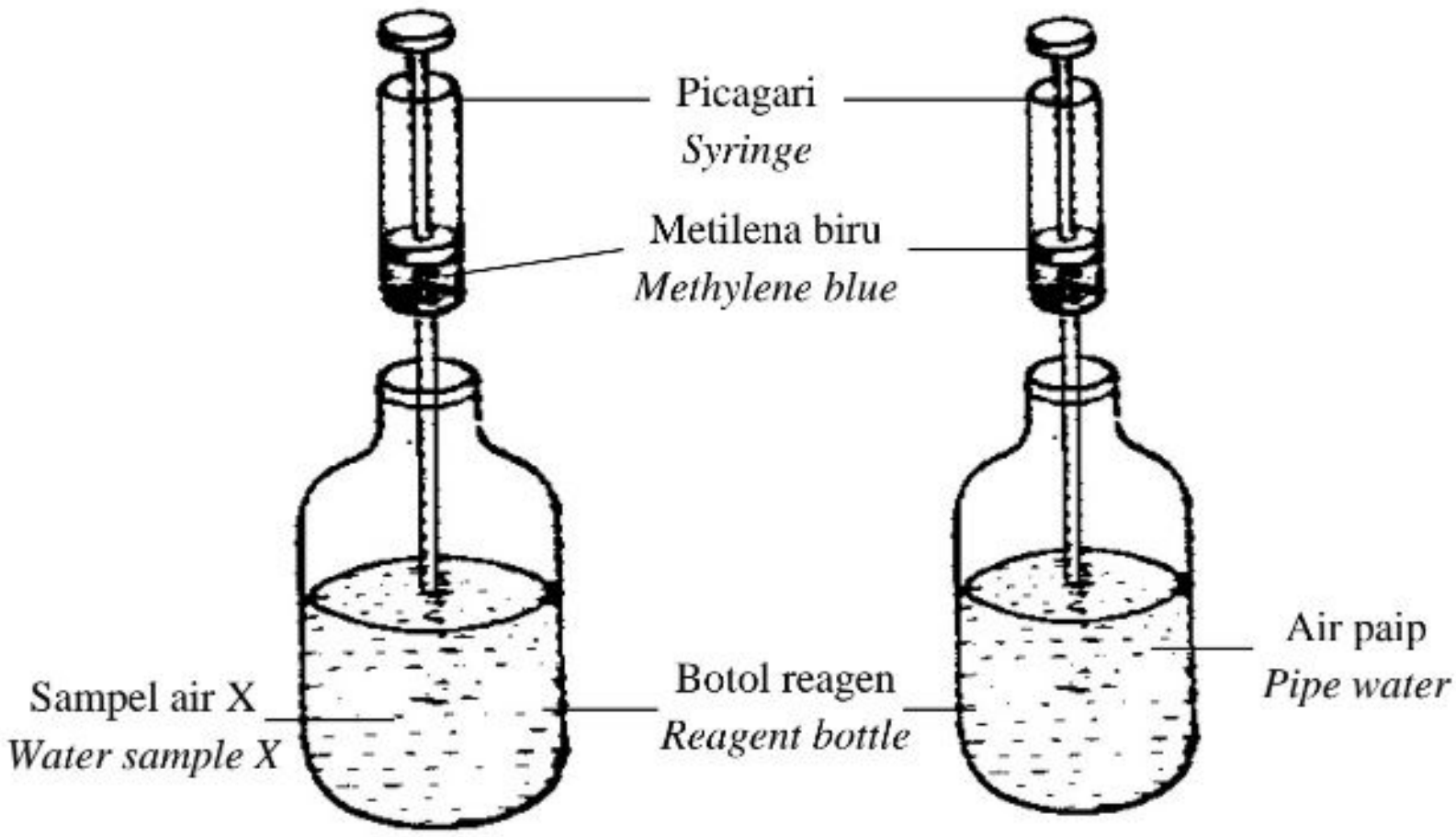
A Membantu untuk menyerap karbon dioksida.
Helps to absorb carbon dioxide.

B Membantu untuk membebaskan oksigen daripada tumbuhan.
Helps to release oxygen from the plant.

C Membantu untuk mengangkut garam mineral dari akar ke daun.
Helps to transport mineral salts from the roots to the leaves.

D Membantu untuk mengangkut nutrien dari daun ke semua bahagian tumbuhan.
Helps to carry nutrients from the leaves to all parts of the plant.

25. Rajah 15 menunjukkan satu eksperimen untuk mengkaji tahap pencemaran sampel air X dan air paip menggunakan larutan metilena biru 0.1% sebagai penunjuk.
Diagram 15 shows an experiment to investigate the level of pollution in water sample X and pipe water using 0.1% methylene blue solution as an indicator.



Rajah 15 / *Diagram* 15

Warna larutan metilena biru dalam sampel air X luntur dengan cepat berbanding air paip. Apakah kesimpulan daripada pemerhatian tersebut?
The colour of methylene blue solution in water sample X decolourised rapidly compared to the pipe water. What is the conclusion drawn from this observation?

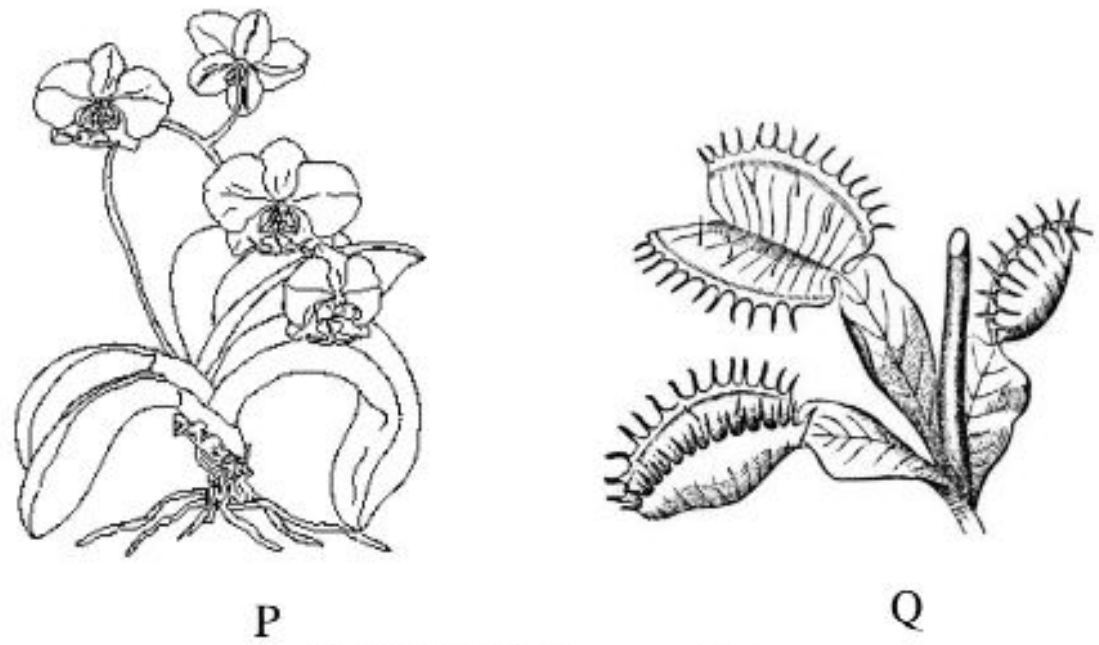
A Sampel air X mengandungi aras oksigen terlarut yang tinggi
Water sample X contains a high level of dissolved oxygen

B Sampel air X mengandungi keperluan oksigen biokimia (BOD) yang rendah
Water sample X has a low biochemical oxygen demand (BOD)

C Karbon dioksida terlarut di dalam sampel air X adalah rendah.
The dissolved carbon dioxide in water sample X is low.

D Terdapat banyak mikroorganisma di dalam sampel air X
A large number of microorganisms present in water sample X

26. Rajah 16 menunjukkan dua jenis penyesuaian tumbuhan, P dan Q, untuk mendapatkan nutrisi.
Diagram 16 shows two types of adaptations in plants, P and Q, to obtain nutrients.



P Q

Rajah 16 / *Diagram* 16

Apakah jenis tumbuhan P dan Q?
What are the types for plants P and Q?

	P	Q
A	Parasit *Parasitic*	Karnivor *Carnivorous*
B	Epifit *Epiphytic*	Karnivor *Carnivorous*
C	Saprofit *Saphrophytic*	Karnivor *Carnivorous*
D	Karnivor *Carnivorous*	Epifit *Epiphytic*

27. Antara ciri-ciri penyesuaian berikut, yang manakah paling berkesan untuk tumbuhan xerofit?
Which of the following adaptive features is the most effective for xerophytes?

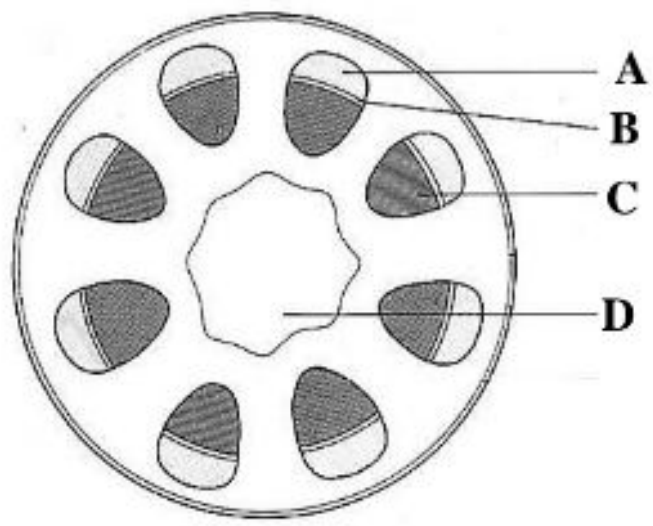
A Banyak ruang udara dalam tisu
Lots of air spaces in the tissue

B Kebolehan menggugurkan daun
Ability to shed their leaves

C Pneumatofor halus dan menegak
Thin and vertical pneumatophores

D Akar yang panjang menembusi jauh ke dalam tanah
Long roots penetrate deep into the soil

28. Rajah 16 menunjukkan keratan rentas batang eudikot.
Diagram 16 shows the cross section of a eudicot stem.



Rajah 16/*Diagram 16*

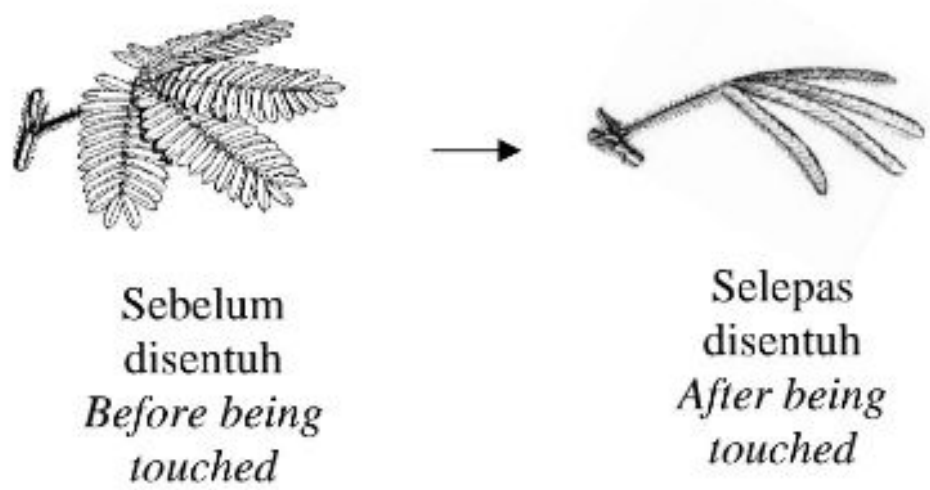
Antara struktur **A, B, C** dan **D**, yang manakah penting untuk sokongan?
Which of the following structures, **A, B, C** *or* **D**, *is important for support?*

29. Satu eksperimen telah dijalankan untuk mengkaji kesan faktor persekitaran ke atas kadar transpirasi. Keputusan yang diperoleh menunjukkan kadar transpirasi adalah 0.3 cms^{-1}. Antara keadaan berikut, yang manakah akan mengubah kadar transpirasi kepada 0.1 cms^{-1}?
An experiment is conducted to study the effects of environmental factors on the rate of transpiration. The result obtained showed that the rate of transpiration is 0.3 cms^{-1}. Which of the following conditions will change the rate of transpiration to 0.1 cms^{-1}?

I Mengurangkan kadar pergerakan udara
Decrease the rate of air movement
II Meningkatkan kelembapan udara
Increase in air humidity
III Meningkatkan suhu
Increase in temperature
IV Meningkatkan keamatan cahaya
Increase in light intensity

A I dan II
I and II
B I dan III
I and III
C II dan IV
II and IV
D III dan IV
III and IV

30. Rajah 17 menunjukkan sejenis gerak balas oleh pokok semalu.
Diagram 17 shows a type of response from a mimosa plant.



Rajah 17/*Diagram 17*

Apakah jenis gerak balas yang ditunjukkan?
What is the type of response shown?

A Fotonasti
Photonasty

B Seismonasti
Seismonasty

C Niktinasti
Nyctinasty

D Termonasti
Thermonasty

31. Antara pernyataan berikut, yang manakah benar mengenai virus?
Which of the following statements is true about virus?

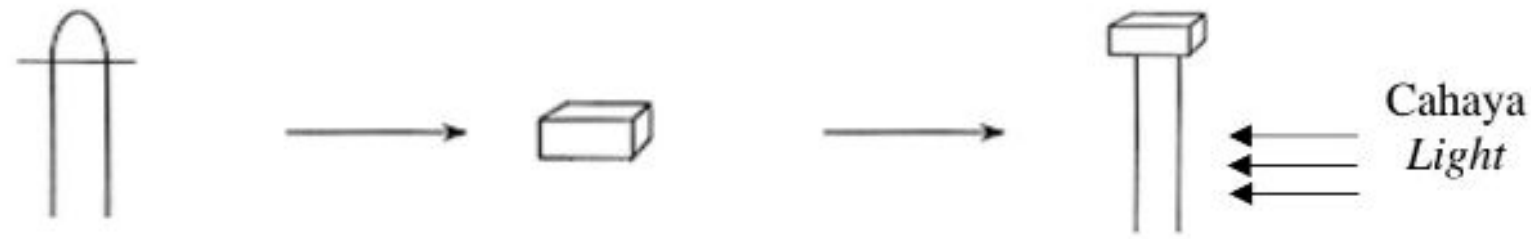
A Ia merupakan organisma prokariot
It is a prokaryotic organism

B Ia tidak aktif di luar badan perumah
It is inactive outside the host

C Ia boleh dilihat di bawah mikroskop cahaya
It can be observed under a light microscope

D Ia menyuntik kapsid ke dalam sel perumah
It injected capsid into the host cell

32. Rajah 18 menunjukkan satu eksperimen untuk mengkaji kesan kepekatan auksin terhadap fototropisme.
Diagram 18 shows an experiment to study the effect of auxin concentration on phototropism.

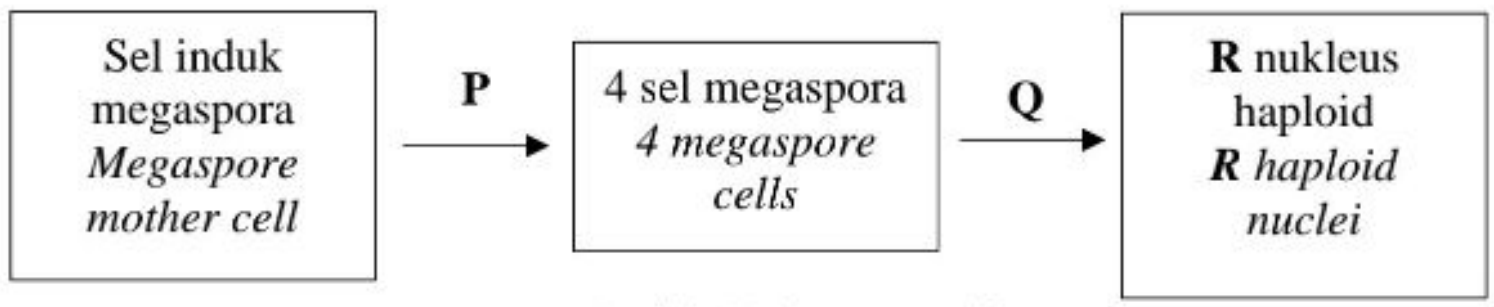


Rajah 18/*Diagram 18*

Ke arah manakah pertumbuhan pucuk akan berlaku?
To which direction will the shoot grow?

A Ke arah cahaya/*Towards the light*
B Menjauhi cahaya/*Away from the light*
C Ke atas/*Upwards*
D Tiada perubahan/*No changes*

33. Rajah 19 menunjukkan peringkat perkembangan pundi embrio dalam ovul tumbuhan berbunga.
Diagram 19 shows the stages of an embryo sac development in the ovule of a flowering plant.

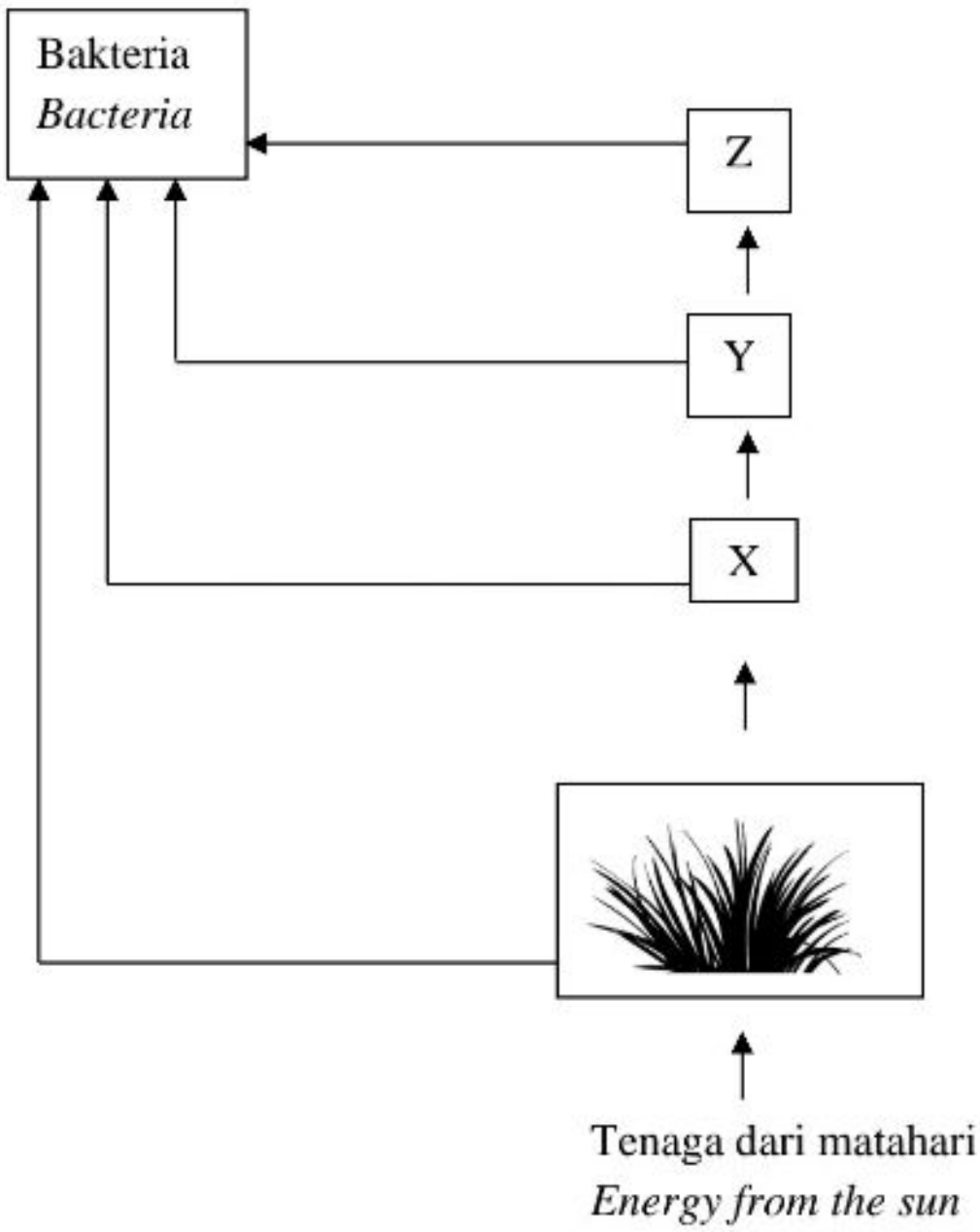


Rajah 19/*Diagram 19*

Apakah P, Q dan R?
What are P, Q and R?

	P	Q	R
A	Meiosis	Mitosis	4
B	Meiosis	Mitosis	8
C	Mitosis	Meiosis	4
D	Mitosis	Meiosis	8

34. Rajah 20 menunjukkan aliran tenaga dalam satu ekosistem.
Diagram 20 shows the energy flow in an ecosystem.

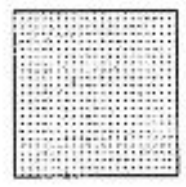
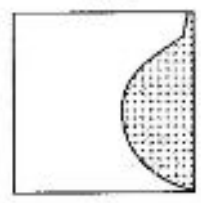
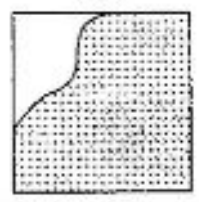
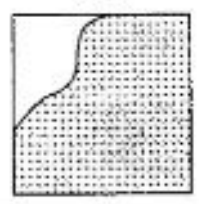
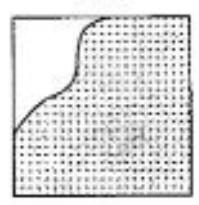


Rajah 20 / *Diagram* 20

Antara berikut, yang manakah mewakili karnivor?
Which of the following represent carnivores?

A X dan Y / *X and Y*
B X dan Z / *X and Z*
C Y dan Z / *Y and Z*
D Z sahaja / *Z only*

35. Rajah 21 menunjukkan lima kuadrat 1m x 1m yang dilitupi oleh *Imperata cylindrica* di padang sekolah.
Diagram 21 shows five quadrats 1m x 1m covered with Imperata cylindrica in a school field.

Kuadrat *Quadrat*	Luas dilitupi oleh *Imperata cylindrica* (m^2) *Area covered with Imperata cylindrica (m^2)*
1	1.0 
2	0.3 
3	0.8 
4	0.5 
5	0.7 

Rajah 20 / *Diagram* 20

Berapakah peratus litupan *Imperata cylindrica* bagi semua kuadrat?
What is the percentage coverage of Imperata cylindrica for all the quadrats?

A 3·3%

B 33.0%

C 6·6%

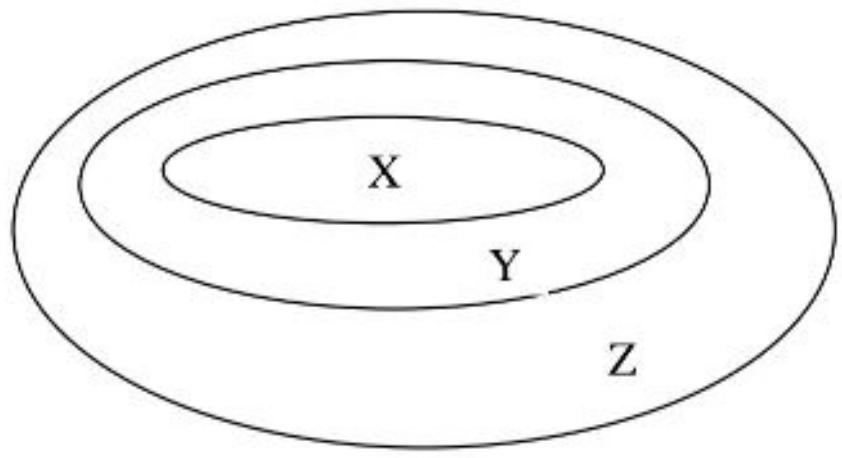
D 66.0%

36. Teknologi hijau mendorong masyarakat mempraktikkan amalan melestarikan alam sekitar.
Di antara berikut, yang manakah amalan yang berkonsepkan teknologi hijau?
Green technology helps the society to practice ways to sustain the environment.
Which of the following are the practices using the concept of green technology?

I	Kawalan biologi *Biological control*
II	Penjimatan penggunaan air *Save the usage of water*
III	Menghasilkan baja foliar daripada sisa dapur *Produce the foliar fertiliser from the kitchen waste*
IV	Menghasilkan biogas daripada sisa pepejal organik *Produce biogas from organic solid waste*

A I dan II / *I and II*
B I dan III / *I and III*
C II dan IV / *II and IV*
D III dan IV / *III and IV*

37. Rajah 24 menunjukkan hubungan di antara DNA, gen dan kromosom.
Diagram 24 shows the relationship between DNA, gene and chromosome.

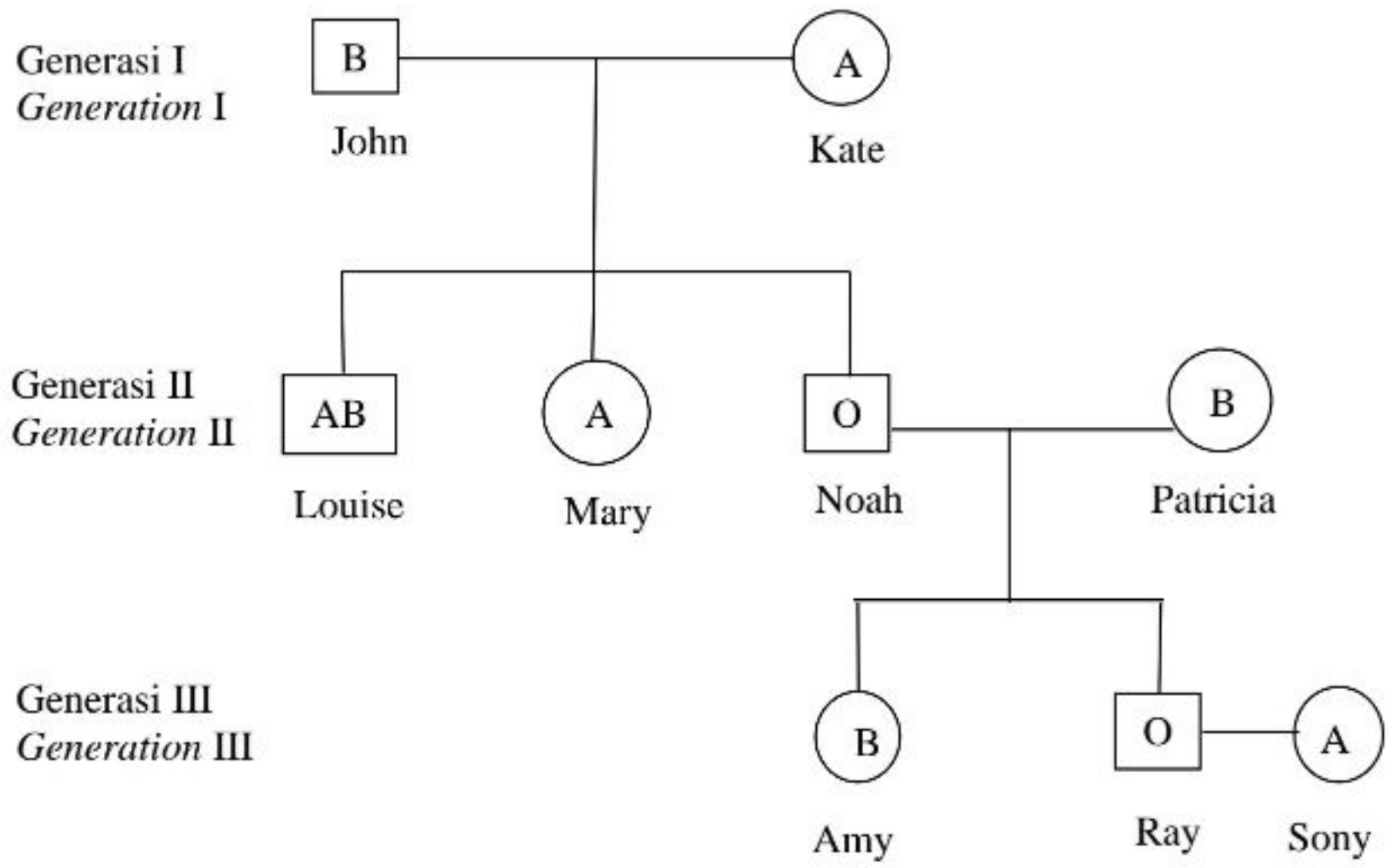


Rajah 20 / *Diagram* 20

Apakah yang diwakili oleh X, Y dan Z?
What do X, Y and Z represent?

	X	Y	Z
A	DNA / *DNA*	Kromosom *Chromosome*	Gen / *Gene*
B	Kromosom *Chromosome*	Gen / *Gene*	DNA / *DNA*
C	Gen / *Gene*	DNA / *DNA*	Kromosom *Chromosome*
D	DNA / *DNA*	Gen / *Gene*	Kromosom *Chromosome*

38. Rajah 23 menunjukkan pewarisan kumpulan darah di dalam sebuah keluarga.
Diagram 23 shows inheritance of blood group in a family.

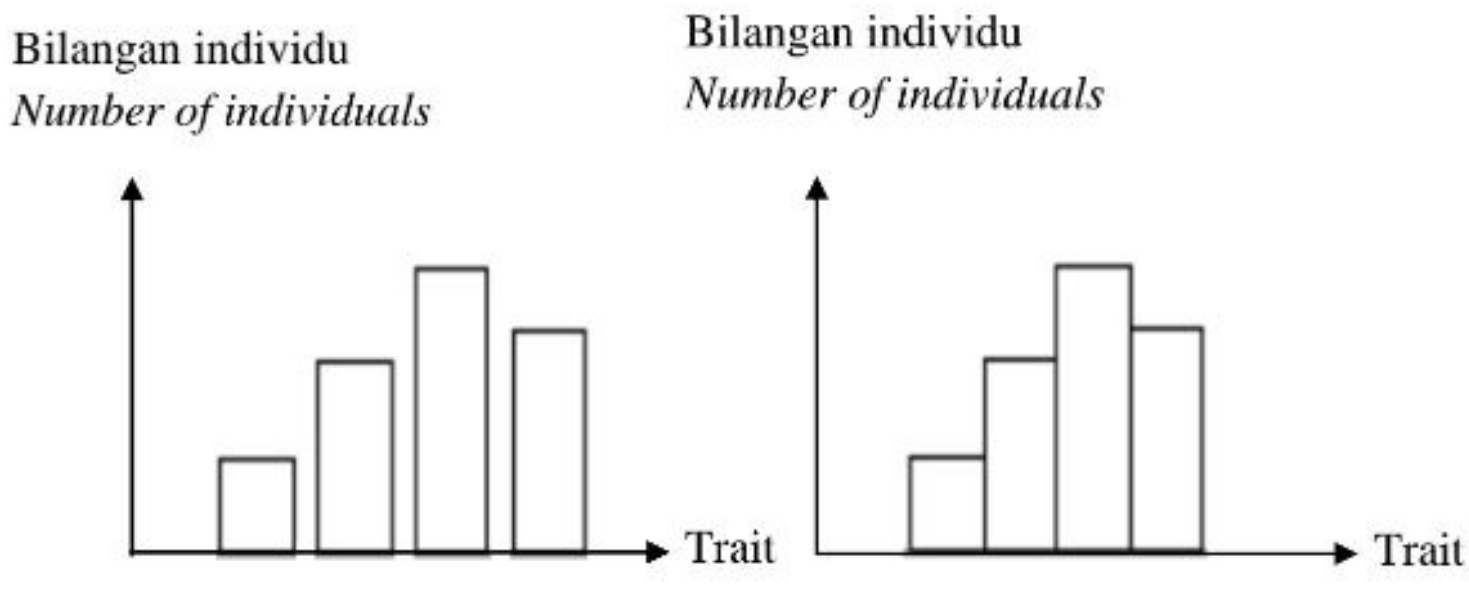


Rajah 20 / *Diagram* 20

Antara individu berikut, yang manakah boleh menderma darah kepada Patricia?
Which of the following individual can donate blood to Patricia?

A Noah dan Mary / *Noah and Mary*
B Amy, Ray dan Kate / *Amy, Ray and Kate*
C John, Noah, Amy dan Ray / *John, Noah, Amy, and Ray*

39. Rajah 25 menunjukkan graf untuk variasi K dan L.
Diagram 25 shows graphs of variation K and L.



Rajah 25 / *Diagram* 25

Berdasarkan graf, yang manakah dapat menerangkan K dan L?
Based on the graph, which can describe K and L?

	K	L
A	Dikawal oleh beberapa gen daripada beberapa pasangan alel *Controlled by several genes with several pairs of alleles*	Dikawal oleh gen tunggal dengan dua atau lebih alel. *Controlled by a single gene with two or more alleles.*
B	Kumpulan darah dan bentuk cuping telinga *Blood group and shape of ear lobe*	Warna kulit dan ketinggian *Skin colour and height*
C	Variasi kualitatif *Qualitative variation*	Variasi kuantitatif *Quantitive variation*
D	Taburan normal *Normal distribution*	Taburan diskrit *Discrete distribution*

40. Rajah 26 menunjukkan dua profil DNA daripada sampel darah yang diambil dari kawasan kejadian jenayah.
Diagram 26 shows two DNA profiles from the blood samples taken at the crime scene.

DNA dari bahan bukti
DNA from evidence

DNA dari mangsa
DNA from the victim

Rajah 26 / *Diagram* 26

Berdasarkan keputusan di atas, yang manakah kemungkinan menunjukkan profil DNA penjenayah?
Based on the result above, which of the following probably shows the DNA profile of the criminal?

A

B

C

D

KERTAS SOALAN TAMAT

MAKLUMAT UNTUK CALON
INFORMATION FOR CANDIDATES

1. Kertas soalan ini mengandungi **40** soalan.
   This question paper consists of **40** *questions.*

2. Jawab **semua** soalan.
   Answer **all** *questions.*

3. Tiap-tiap soalan diikuti oleh empat pilihan jawapan, iaitu **A**, **B**, **C** dan **D** atau tiga pilihan jawapan **A**, **B** dan **C**. Bagi setiap soalan, pilih **satu** jawapan sahaja.
   Hitamkan jawapan anda pada kertas jawapan objektif yang disediakan.
   Each question is followed by four alternative answers, **A**, **B**, **C** *and* **D** *or three alternative answers,* **A**, **B** *and* **C**. *For each question, choose* **one** *answer only.*
   Blacken your answer on the objective answer sheet provided.

4. Jika anda hendak menukar jawapan, padamkan tanda yang telah dibuat.
   Kemudian hitamkan jawapan yang baru.
   If you wish to change your answer, erase the blackened mark that you have made.
   Then blacken the new answer.

5. Rajah yang mengiringi soalan tidak dilukis mengikut skala kecuali dinyatakan.
   The diagrams in the questions are not drawn to scale unless stated.

6. Anda dibenarkan menggunakan kalkulator saintifik.
   You may use a scientific calculator.