

Nama :-----

Kelas :-----

**SULIT**

4551/1

4551/1

Biologi

Kertas 1

September

2014

1¼ jam



**MAKTAB RENDAH SAINS MARA**

**PEPERIKSAAN SIJIL PENDIDIKAN MRSMA 2014**

**BIOLOGI**

**Kertas 1**

Satu jam lima belas minit

**JANGAN BUKA KERTAS SOALAN INI SEHINGGA DIBERITAHU**

1. *Kertas soalan ini adalah dalam dwibahasa*
2. *Soalan dalam bahasa Inggeris mendahului soalan yang sepadan dalam bahasa Melayu.*
3. *Calon dikehendaki membaca maklumat di halaman belakang buku soalan.*

Kertas soalan ini mengandungi 35 halaman bercetak dan 1 halaman tidak bercetak

[Lihat sebelah  
**SULIT**

**INFORMATION FOR CANDIDATES**  
**MAKLUMAT UNTUK CALON**

1. This question paper consists of **50** questions  
*Kertas soalan ini mengandungi 50 soalan.*
2. Answer **all** questions.  
*Jawab semua soalan.*
3. Answer each question by blackening the correct space on the objective answer sheet.  
*Jawab dengan menghitamkan ruang yang betul pada kertas jawapan objektif.*
4. Blacken only **one** space for each question.  
*Hitamkan satu ruang sahaja bagi setiap soalan.*
5. If you wish to change your answer, erase the blackened mark that you have made. Then blacken the space for the new answer.  
*Sekiranya anda hendak menukar jawapan, padamkan tanda yang telah dibuat. Kemudian hitamkan jawapan yang baru.*
6. The diagrams in the questions provided are not drawn to scale unless stated.  
*Rajah yang mengiringi soalan tidak dilukis mengikut skala kecuali dinyatakan.*
7. You may use a non-programmable scientific calculator.  
*Anda dibenarkan menggunakan kalkulator saintifik yang tidak boleh diprogram*

1. Diagram 1 shows a structure of a unicellular organism.  
Rajah 1 menunjukkan struktur satu organisma unisel.

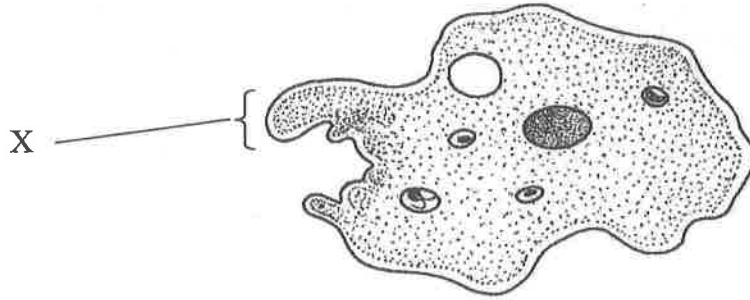


Diagram 1  
Rajah 1

What is structure X?  
Apakah struktur X?

- |                        |                                 |
|------------------------|---------------------------------|
| A. Cilia<br>Silia      | C. Vacuole<br>Vakuol            |
| B. Flagella<br>Flagela | D. Pseudopodium<br>Pseudopodium |
2. Diagram 2 shows the cell organisation in a multicellular organism.  
Rajah 2 menunjukkan organisasi sel dalam organisma multisel.



Diagram 2  
Rajah 2

Which part of the body can be represented by R?  
Bahagian badan yang manakah boleh diwakili oleh R?

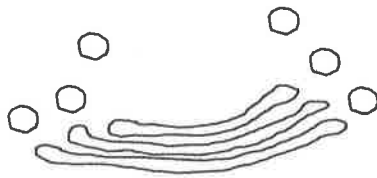
- |                     |                            |
|---------------------|----------------------------|
| A. Blood<br>Darah   | C. Kidney<br>Ginjal        |
| B. Tendon<br>Tendon | D. Epithelium<br>Epitelium |

3. The following information refers to organelle K.  
*Maklumat berikut merujuk kepada organel K.*

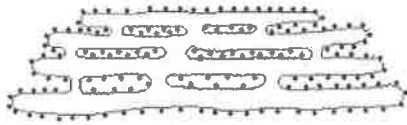
- Found abundantly in the liver cell  
*Dijumpai dengan banyak dalam sel hati*
- Involve in detoxification of drugs  
*Terlibat dalam proses penyahtoksikan dadah*

Which of the following is organelle K?  
*Antara berikut, manakah organel K?*

A.



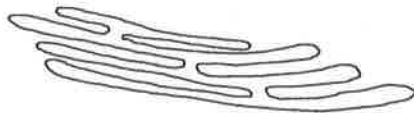
B.



C.



D.



4. Which of the following substance is transported across plasma membrane by simple diffusion?

*Antara berikut, bahan manakah diangkut merentasi membran plasma secara resapan ringkas?*

- A. Glucose  
*Glukosa*
- B. Amino acid  
*Asid amino*
- C. Sodium ion  
*Ion natrium*
- D. Oxygen  
*Oksigen*

5. Diagram 3 shows the condition of a red blood cell and a plant cell after being immersed in solution M and solution N.

*Rajah 3 menunjukkan keadaan sel darah merah dan sel tumbuhan selepas direndam dalam larutan M dan larutan N.*

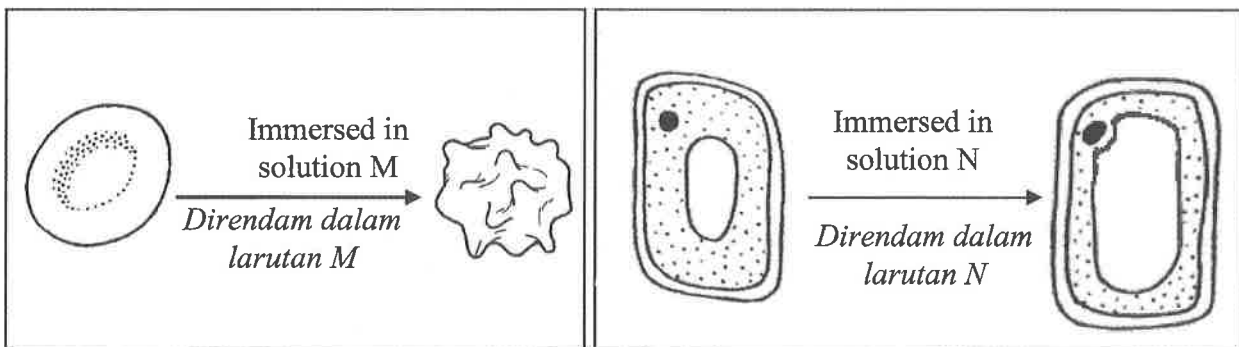


Diagram 3  
*Rajah 3*

Which of the following is true about solution M and solution N?

*Antara berikut, yang manakah benar tentang larutan M dan larutan N?*

	<b>Solution M</b> <i>Larutan M</i>	<b>Solution N</b> <i>Larutan N</i>
A.	Hypertonic <i>Hipertonik</i>	Hypertonic <i>Hipertonik</i>
B.	Hypotonic <i>Hipotonik</i>	Hypertonic <i>Hipertonik</i>
C.	Hypertonic <i>Hipertonik</i>	Hypotonic <i>Hipotonik</i>
D.	Hypotonic <i>Hipotonik</i>	Hypotonic <i>Hipotonik</i>

6. Diagram 4 shows part of DNA molecule.  
*Rajah 4 menunjukkan sebahagian daripada molekul DNA.*

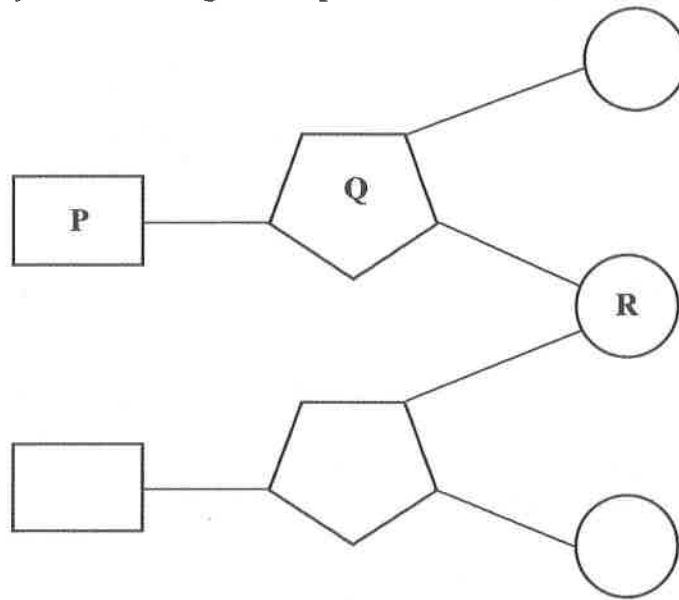
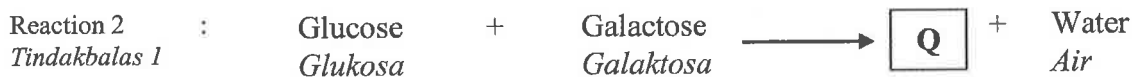
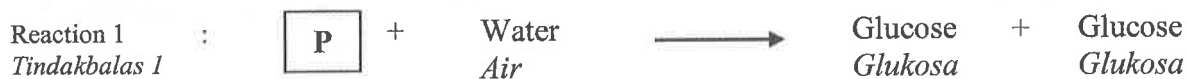


Diagram 4  
*Rajah 4*

Which of the following correctly represent the parts labelled **P**, **Q** and **R**?  
*Antara berikut, yang manakah mewakili bahagian berlabel **P**, **Q** dan **R**?*

	<b>P</b>	<b>Q</b>	<b>R</b>
A.	Phosphate group <i>Kumpulan fosfat</i>	Deoxyribose sugar <i>Gula deoksiribosa</i>	Nitrogenous base <i>Bes nitrogen</i>
B.	Nitrogenous base <i>Bes nitrogen</i>	Deoxyribose sugar <i>Gula deoksiribosa</i>	Phosphate group <i>Kumpulan fosfat</i>
C.	Nitrogenous base <i>Bes nitrogen</i>	Phosphate group <i>Kumpulan fosfat</i>	Deoxyribose sugar <i>Gula deoksiribosa</i>
D.	Deoxyribose sugar <i>Gula deoksiribosa</i>	Nitrogenous base <i>Bes nitrogen</i>	Phosphate group <i>Kumpulan fosfat</i>

7. The information shows two chemical reactions, Reaction 1 and Reaction 2 of sugar group.  
 Maklumat menunjukkan dua tindak balas kimia, Tindakbalas 1 dan Tindakbalas 2 dalam kumpulan gula.



What are P and Q?  
 Apakah P dan Q?

	P	Q
A.	Galactose <i>Galaktosa</i>	Maltose <i>Maltosa</i>
B.	Glucose <i>Glukosa</i>	Fructose <i>Fruktosa</i>
C.	Maltose <i>Maltosa</i>	Lactose <i>Laktosa</i>
D.	Fructose <i>Fruktosa</i>	Glucose <i>Glukosa</i>

8. Diagram 5 shows the structure of a protein.  
 Rajah 5 menunjukkan struktur satu protein.

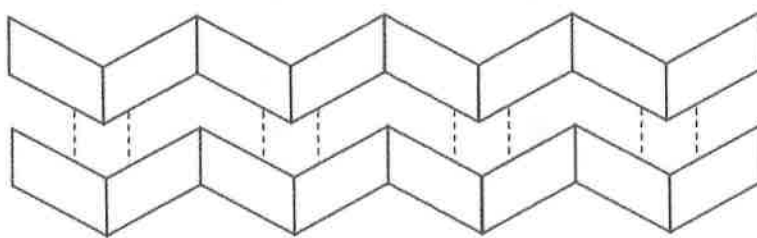
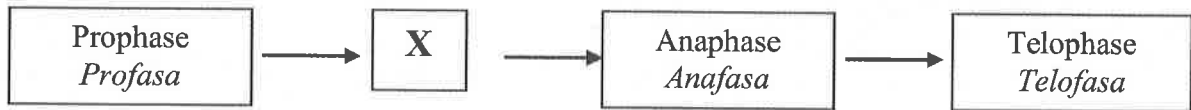


Diagram 5  
 Rajah 5

Which of the following examples has the protein structure as shown in Diagram 5?  
 Antara contoh berikut, yang manakah mempunyai struktur protein seperti dalam Rajah 5?

- |                              |                                     |
|------------------------------|-------------------------------------|
| A. Silk<br><i>Sutera</i>     | C. Haemoglobin<br><i>Hemoglobin</i> |
| B. Keratin<br><i>Keratin</i> | D. Insulin<br><i>Insulin</i>        |

9. The following information shows the phases in mitosis.  
Maklumat berikut menunjukkan fasa – fasa dalam mitosis.



Which of the following is true about the chromosomal behaviour at phase X?  
Antara berikut, yang manakah benar tentang perlakuan kromosom pada fasa X?

- A. The chromosomes are aligned at the equator plane  
*Kromosom tersusun pada satah khatulistiwa*
- B. The chromosomes start to shorten and thicken  
*Kromosom mula memendek dan menebal*
- C. The chromosomes are at the opposite poles of the cell  
*Kromosom berada pada kutub sel yang bertentangan*
- D. The sister chromatids separate and move to the opposite poles of the cell  
*Kromatid beradik terpisah dan bergerak ke kutub sel bertentangan*
10. Diagram 6 shows an animal cell during Anaphase I of meiosis.  
Rajah 6 menunjukkan sel haiwan semasa Anafasa I meiosis.

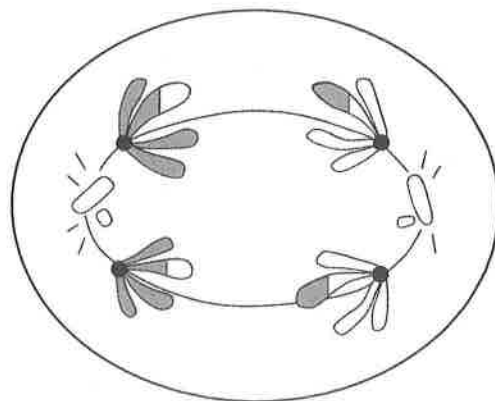


Diagram 6  
Rajah 6

What is the number of chromosome in the parent cell?  
Berapakah bilangan kromosom dalam sel induk?

- A. 2  
B. 4  
C. 8  
D. 16



11. Diagram 7 shows an organism.  
Rajah 7 menunjukkan sejenis organisma.

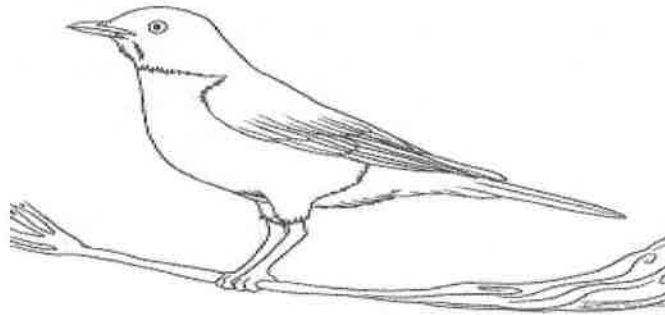


Diagram 7  
Rajah 7

Which of the following is the type of nutrition for the organism?  
Antara berikut, yang manakah jenis nutrisi bagi organisma tersebut?

- A. Holozoic  
*Holozoik*
- B. Parasitic  
*Parasitik*
- C. Saprophytic  
*Saprofitik*
- D. Autotrophic  
*Autotrofik*
12. Table 1 shows result that was obtained in an experiment to determine the energy content of a bread.  
Jadual 1 menunjukkan keputusan yang diperolehi dalam satu eksperimen untuk menentukan kandungan tenaga dalam sekeping roti

Mass of water in test tube <i>Jisim air dalam tabung uji</i>	20.0 g
Mass of bread <i>Jisim roti</i>	0.5 g
Initial temperature of water <i>Suhu awal air</i>	28°C
Final temperature of water <i>Suhu akhir air</i>	78°C
Specific heat capacity of water <i>Muatan haba tentu air</i>	4.2 joule/gram

Table 1 / Jadual 1

Calculate the energy content in the bread.  
Hitungkan kandungan tenaga di dalam roti tersebut.

- A. 0.05 kJ
- B. 5.25 kJ
- C. 8.40 kJ
- D. 84.0 kJ

13. Diagram 8 shows an activity that was conducted by a student.  
*Rajah 8 menunjukkan satu aktiviti yang dijalankan oleh seorang pelajar.*

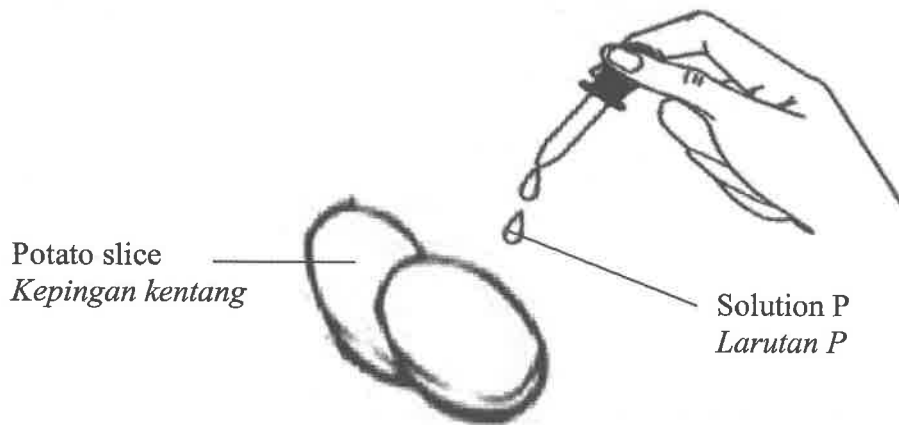
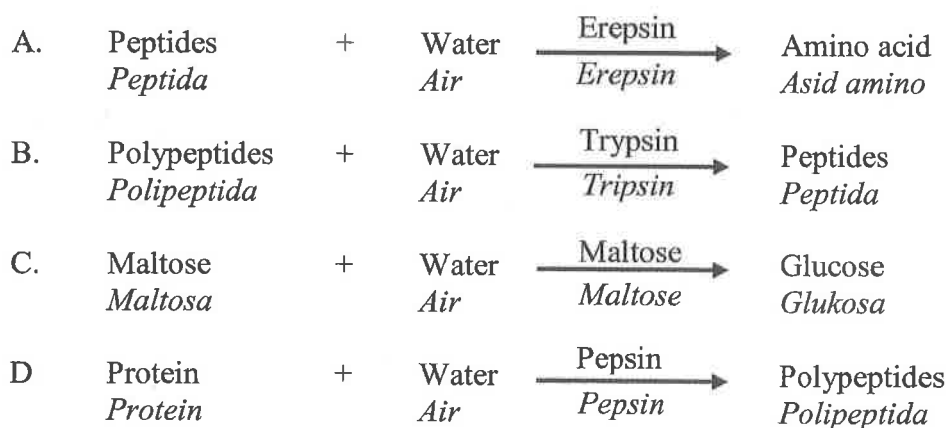


Diagram 8  
*Rajah 8*

The surface of the potato slice turned to dark blue after a few drop of solution P was added. What is solution P?

*Warna permukaan kepingan kentang berubah kepada biru tua selepas beberapa titisan larutan P ditambah. Apakah larutan P?*

- |    |  |    |   |
|----|--|----|---|
| A. | Iodine solution<br><i>Larutan iodin</i>  | C. | Benedict solution<br><i>Larutan Benedict</i>        |
| B. | Millon's reagent<br><i>Reagen Millon</i> | D. | Bicarbonate indicator<br><i>Penunjuk bikarbonat</i> |
14. Which of the following is the correct equation for enzyme reaction in the duodenum?  
*Antara berikut, persamaan manakah menunjukkan tindakan enzim yang betul dalam duodenum?*



15. Diagram 9 shows digestive system of a ruminant. Structure K contains a lots of symbiotic bacteria.  
*Rajah 9 menunjukkan sistem pencernaan haiwan ruminan. Struktur K mengandungi banyak bakteria simbiotik.*

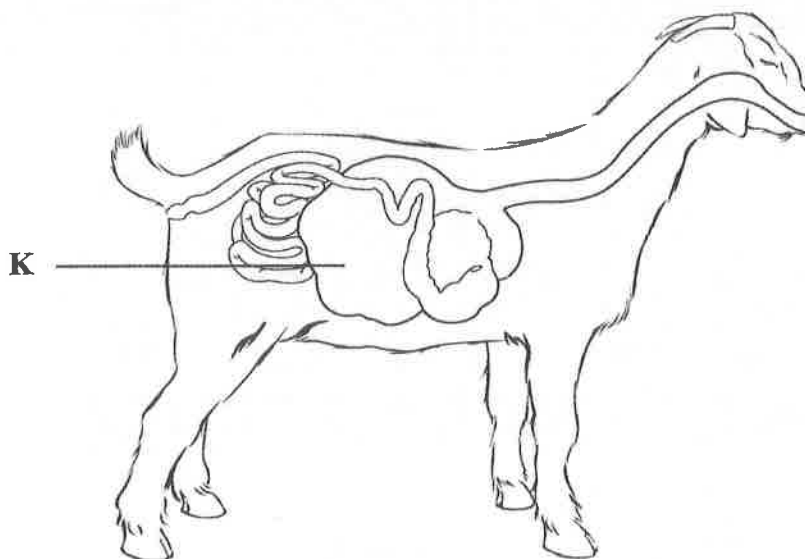


Diagram 9  
*Rajah 9*

What is structure K?  
*Apakah struktur K?*

- |                                  |                                |
|----------------------------------|--------------------------------|
| A. Rumen<br><i>Rumen</i>         | C. Omasum<br><i>Omasum</i>     |
| B. Reticulum<br><i>Retikulum</i> | D. Abomasom<br><i>Abomasom</i> |

16. Diagram 10 shows the cross section of a dicotyledonous leaf.  
*Rajah 10 menunjukkan keratan rentas daun dikotiledon.*

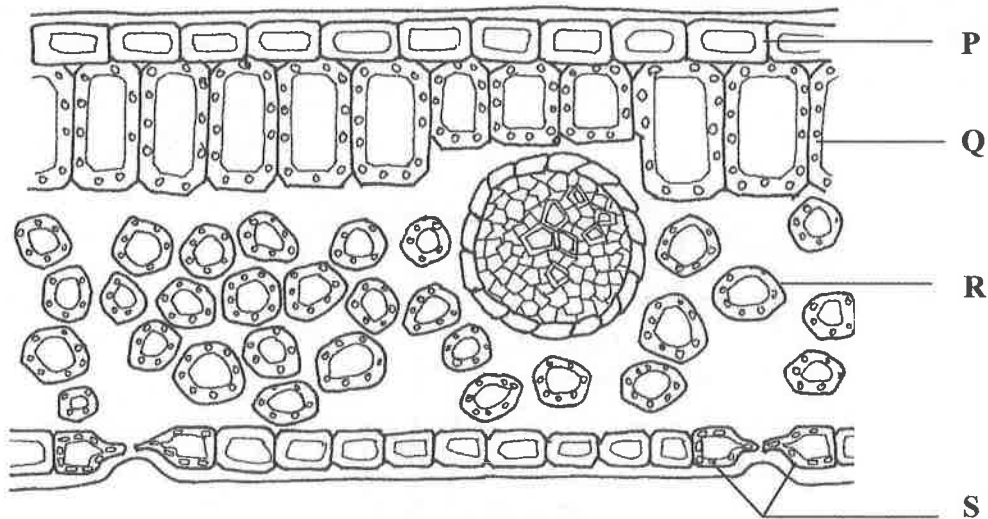


Diagram 10  
*Rajah 10*

In which structures does photosynthesis occur?  
*Di dalam struktur manakah berlakunya proses fotosintesis?*

- |  |  |
|--|--|
| A. P and Q only<br><i>P dan Q sahaja</i> | C. P, Q dan R only<br><i>P, Q dan R sahaja</i> |
| B. Q dan R only<br><i>Q dan R sahaja</i> | D. Q, R and S only<br><i>Q, R dan S sahaja</i> |

17. Diagram 11 shows an equation for photosynthesis.  
Rajah 11 menunjukkan persamaan proses fotosintesis.

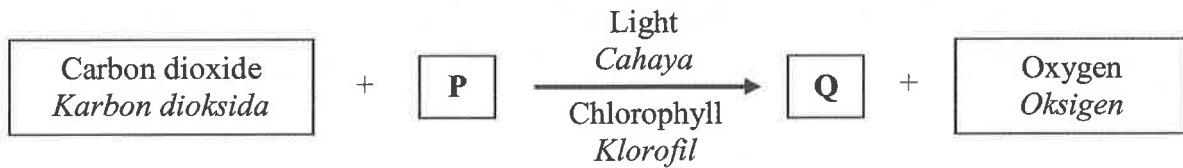


Diagram 11  
Rajah 11

What is P and Q?  
Apakah P dan Q?

	P	Q
A.	Hydrogen ion <i>Ion hidrogen</i>	Glucose <i>Glukosa</i>
B.	Water <i>Air</i>	Glucose <i>Glukosa</i>
C.	Hydrogen ion <i>Ion hidrogen</i>	Water <i>Air</i>
D.	Water <i>Air</i>	Hydrogen ion <i>Ion hidrogen</i>

18. Diagram 12 shows a dairy product.  
Rajah 12 menunjukkan satu produk tenusu.



Diagram 12  
Rajah 12

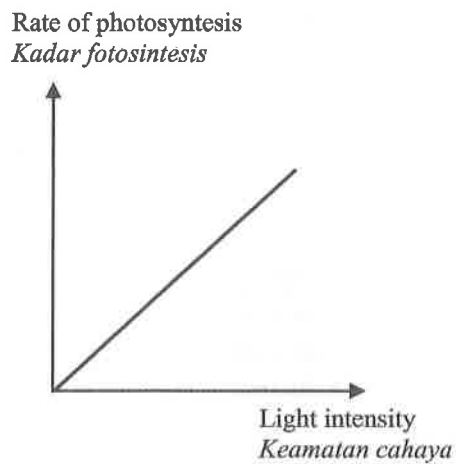
Which of the following methods is used to keep the product long lasting after it is opened?

Antara kaedah berikut, manakah yang digunakan untuk menjadikan produk tahan lebih lama selepas dibuka?

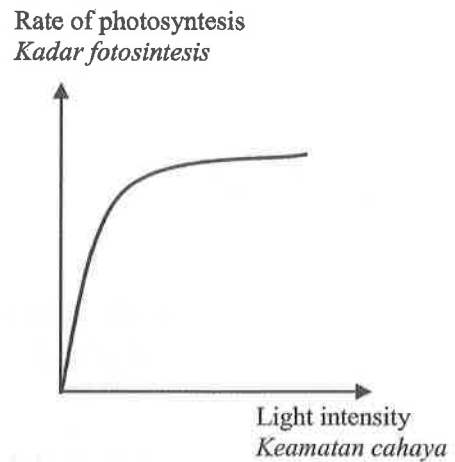
- |                                     |  |
|-------------------------------------|--|
| A. Canning<br><i>Pengetinan</i>     | C. Pasteurization<br><i>Pempasteuran</i> |
| B. Fermentation<br><i>Penapaian</i> | D. Refrigeration<br><i>Penyejukan</i>    |

19. Which of the following graphs shows the effect of increasing light intensity on the rate of photosynthesis?  
*Antara graf berikut, yang manakah menunjukkan kesan peningkatan kadar keamatan cahaya terhadap kadar fotosintesis?*

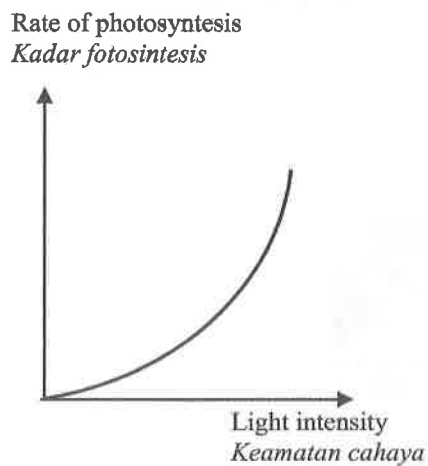
A.



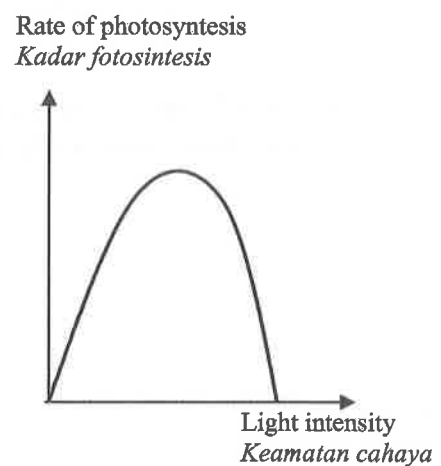
C.



B.



D.



20. Diagram 13 shows the germination of maize seed.  
*Rajah 13 menunjukkan percambahan biji benih jagung.*

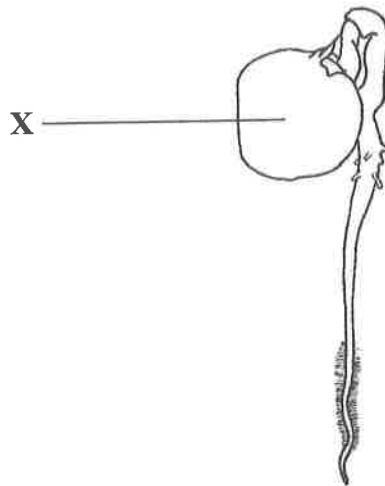


Diagram 13  
*Rajah 13*

Which of the following equation is correct for the respiration process that takes place in X?

*Antara berikut, persamaan manakah betul bagi proses respirasi yang berlaku dalam X?*

- A.  $\text{Glucose} \longrightarrow \text{lactic acid} + \text{energy}$   
*Glukosa \longrightarrow asid laktik tenaga*
- B.  $\text{Glucose} \longrightarrow \text{carbon dioxide} + \text{ethanol} + \text{energy}$   
*Glukosa \longrightarrow karbon dioksida etanol tenaga*
- C.  $\text{Glucose} + \text{oxygen} \longrightarrow \text{carbon dioxide} + \text{ethanol} + \text{energy}$   
*Glukosa oksigen \longrightarrow karbon dioksida etanol tenaga*
- D.  $\text{Glucose} + \text{oxygen} \longrightarrow \text{carbon dioxide} + \text{water} + \text{energy}$   
*Glukosa oksigen \longrightarrow karbon dioksida air tenaga*

21. Which of the following is an adaptation of the body at low atmospheric pressure?  
*Antara berikut, yang manakah adaptasi badan apabila dalam keadaan tekanan atmosfera rendah?*
- A. pH of blood decrease  
*pH darah menurun*
  - B. Blood pressure increase  
*Tekanan darah meningkat*
  - C. Rate of respiration increase  
*Kadar respirasi meningkat*
  - D. Body temperature increase  
*Suhu badan meningkat*



22. Diagram 14 shows the apparatus set up to demonstrate the effect of cigarette smoke on lungs.  
*Rajah 14 menunjukkan pemasangan radas untuk menunjukkan kesan asap rokok pada peparu.*

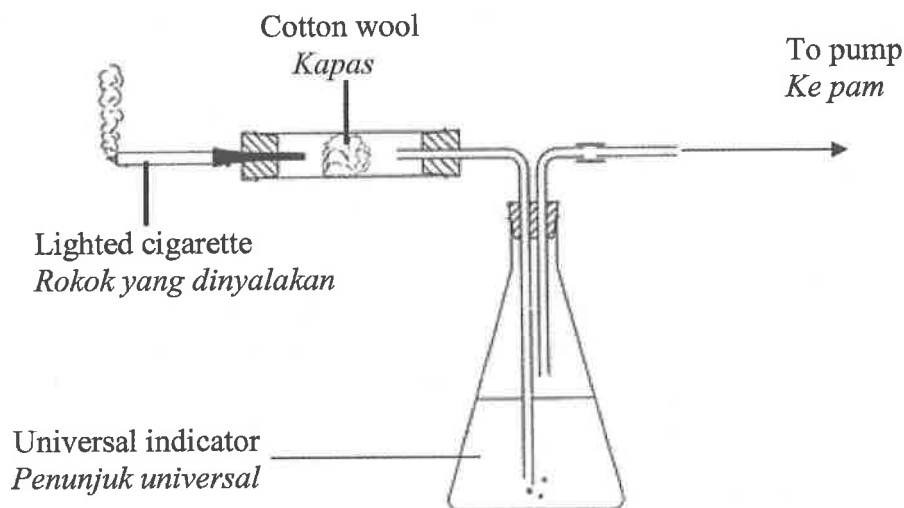


Diagram 14  
*Rajah 14*

What changes can be observed after 1 hour?  
*Apakah perubahan yang boleh diperhatikan selepas 1 jam?*

- A. Deposition of dust at cotton wool  
*Pengenapan debu pada kapas*
- B. Level of universal indicator increases  
*Paras penunjuk universal meningkat*
- C. Colour of cotton wool does not change  
*Warna kapas tidak berubah*
- D. Universal indicator color turns from red to yellow  
*Warna penunjuk universal berubah daripada merah ke kuning*

23. Diagram 15 shows a graph of intake of oxygen and release of oxygen by a plant within 24 hours.

*Rajah 15 menunjukkan graf pengambilan oksigen dan pembebasan oksigen oleh sejenis tumbuhan dalam masa 24 jam.*

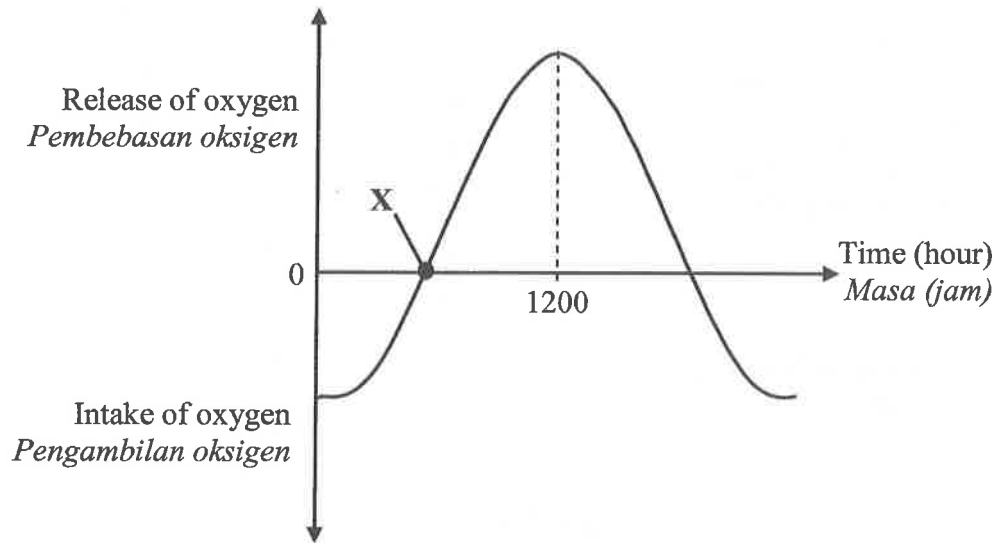


Diagram 15  
Rajah 15

Which of the following statement is true about the condition at point X?  
*Antara berikut, pernyataan manakah yang benar tentang keadaan di titik X?*

- A. Rate of respiration lower than rate of photosynthesis  
*Kadar respirasi lebih rendah berbanding kadar fotosintesis*
- B. Rate of respiration and rate of photosynthesis is equal  
*Kadar respirasi dan kadar fotosintesis adalah sama*
- C. Rate of respiration is higher than rate of photosynthesis  
*Kadar respirasi lebih tinggi berbanding kadar fotosintesis*
- D. Rate of respiration and rate of photosynthesis are increasing  
*Kadar respirasi dan kadar fotosintesis meningkat*

24. Diagram 16 shows an interaction between two organisms.  
*Rajah 16 menunjukkan satu interaksi antara dua organisma.*



Diagram 16  
*Rajah 16*

What is the type of interaction between the organisms in Diagram 16?  
*Apakah jenis interaksi yang ditunjukkan oleh organisma-organisma dalam Rajah 16?*

- A. Parasitism  
*Parasitisme*
- B. Mutualism  
*Mutualisme*
- C. Commensalism  
*Komensalisme*
- D. Prey – predator  
*Mangsa – pemangsa*

25. Diagram 17 shows three different zones at a mangrove swamp.  
*Rajah 17 menunjukkan tiga zon yang berbeza di paya bakau.*

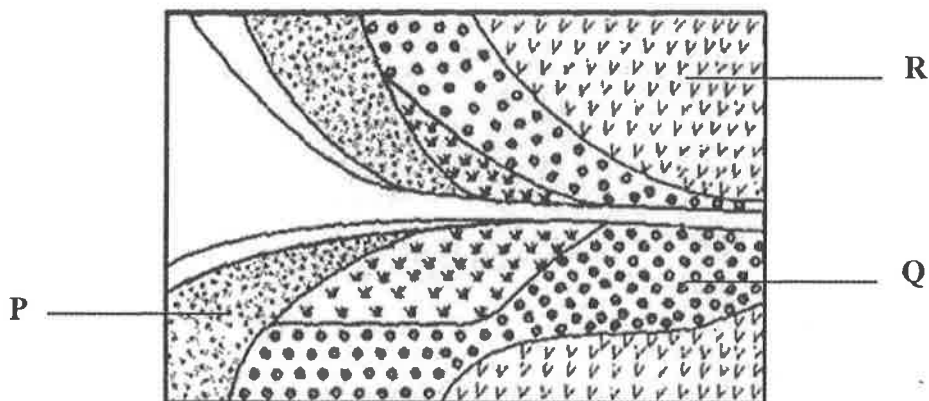


Diagram 17 / *Rajah 17*

Which type of roots are correctly matched to the dominant mangrove plant in the zones P, Q and R?

*Antara berikut, yang manakah padanan yang betul bagi jenis akar dan tumbuhan paya bakau yang dominan di kawasan P, Q dan R?*

	P	Q	R
A.			
B.			
C.			
D.			

26. Diagram 18 shows the process of colonization and succession in a pond.  
*Rajah 18 menunjukkan proses pengkolonian dan sesaran dalam sebuah kolam.*

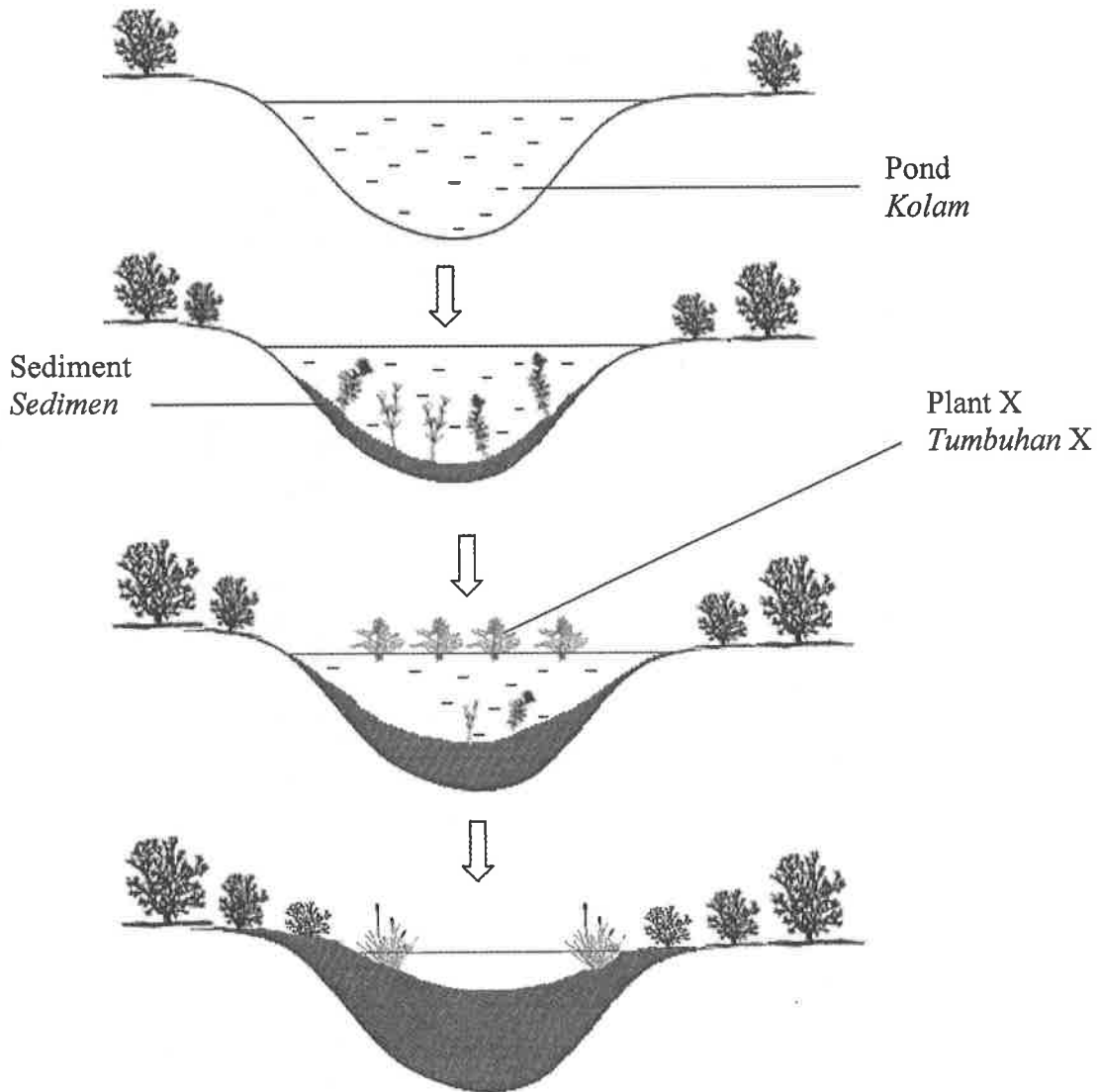


Diagram 18  
*Rajah 18*

What is the role of plant X?  
*Apakah peranan tumbuhan X?*

- A. Pioneer species  
*Spesis perintis*
- B. First successor  
*Penyesar pertama*
- C. Second successor  
*Penyesar kedua*
- D. Third successor  
*Penyesar ketiga*

27. Diagram 19 shows part of a nitrogen cycle.  
*Rajah 19 menunjukkan sebahagian kitaran nitrogen.*

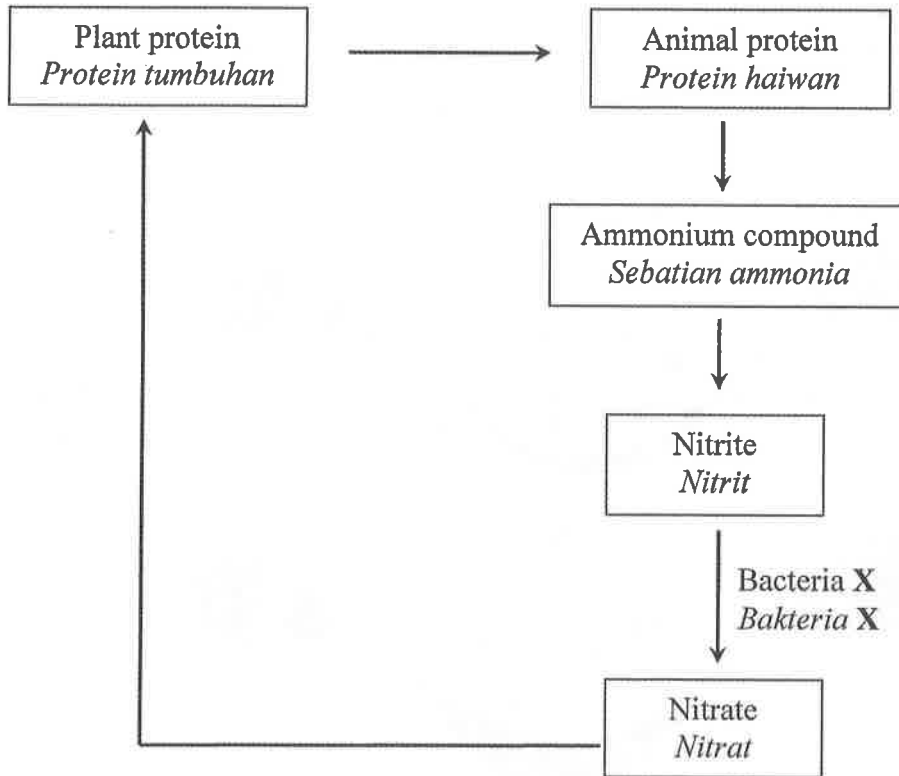


Diagram 19  
*Rajah 19*

What is bacteria X?  
*Apakah bakteria X?*

- A. *Nitrobacter sp*  
*Nitrobakter sp*
- B. *Rhizobium sp*  
*Rhizobium sp*
- C. Blue green algae  
*Alga biru hijau*
- D. *Nitrosomonas sp*  
*Nitrosomaonas sp*



30. The following statements are about eutrophication.  
*Pernyataan berikut tentang proses eutrofikasi.*

- P – The pond is covered by algae  
*Kolam dilitupi oleh alga*
- Q – The rate of bacterial reproduction increase  
*Kadar pembiakan bakteria meningkat*
- R – Excess organic fertiliser flow into the pond  
*Lebihan baja organik mengalir masuk ke dalam kolam*
- S – Number of aquatic organism in the pond decrease  
*Bilangan organisma akuatik kolam berkurangan*
- T – BOD value increase  
*Nilai BOD meningkat*

Which of the following sequences is correct about eutrophication process?  
*Antara berikut, turutan manakah yang betul bagi proses eutrofikasi?*

- A. P → R → S → Q → T
- B. R → P → Q → S → T
- C. R → P → Q → T → S
- D. P → R → T → Q → S



31. Diagram 20 shows an environmental phenomenon.  
*Rajah 20 menunjukkan satu fenomena alam sekitar.*

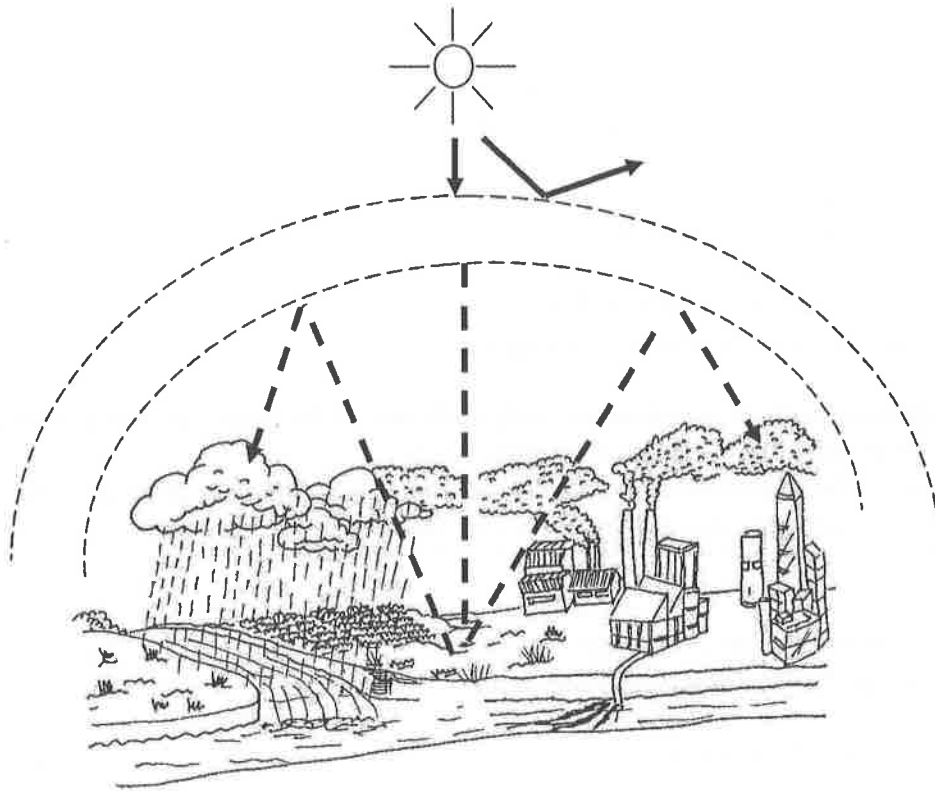


Diagram 20  
*Rajah 20*

What is the phenomenon?  
*Apakah fenomena tersebut?*

- A. Water pollution  
*Pencemaran air*
- B. Greenhouse effect  
*Kesan Rumah hijau*
- C. Thermal pollution  
*Pencemaran haba*
- D. Thinning of ozone layer  
*Penipisan lapisan ozon*

32. The following information is about the flow of nerve impulse during cardiac cycle.  
*Maklumat berikut menyatakan tentang pengaliran impuls saraf semasa kitar kardiak..*

K – Nerve impulses spread to the ventricles wall  
*Impuls saraf tersebar ke dinding ventrikel*

L – Sinoatrial node generate nerve impulses  
*Nodus sinoatria menghasilkan impuls saraf*

M – Impulses spread over the wall of atrium  
*Impuls tersebar ke seluruh dinding atrium*

N – Impulses reach atrioventricular node and apex of the heart through bundle His fibre, bundle branches and Purkinjee fibres  
*Impuls tiba di nodus atrioventrikel dan apeks jantung melalui gentian berkas His, cabangannya dan gentian Purkinje.*

Which sequence of events is correct ?

*Antara berikut, turutan manakah yang betul ?*

- A. L → M → N → K  
B. M → L → K → N  
C. L → N → M → K  
D. M → K → L → N

33. Diagram 21 shows a process carried out by a white blood cell.  
Rajah 21 menunjukkan proses yang dijalankan oleh sel darah putih.



Diagram 21  
Rajah 21

Which white blood cell carries out this process ?

Antara sel darah putih berikut, yang manakah menjalankan proses ini?

- |                                   |                                   |
|-----------------------------------|-----------------------------------|
| A. Basofil<br><i>Basofil</i>      | C. Eosinofil<br><i>Eosinofil</i>  |
| B. Neutrophil<br><i>Neutrofil</i> | D. Lymphocytes<br><i>Limfosit</i> |
34. Diagram 22 shows the structure X in the lymphatic system.  
Rajah 22 menunjukkan struktur X dalam sistem limfa.

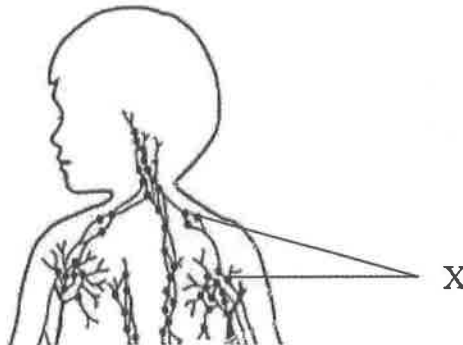


Diagram 22  
Rajah 22

Which of the following is the function of structure X?

Antara berikut, yang manakah merupakan fungsi struktur X?

- |   |
|---|
| A. Filter bacteria and foreign bodies<br><i>Menapis bakteria dan bendasing</i>                            |
| B. Absorbs digested product of fat<br><i>Menyerap hasil pencernaan lemak</i>                              |
| C. Helps the flow of lymph in the lymphatic system<br><i>Membantu pengaliran limfa dalam sistem limfa</i> |
| D. Helps to destroy red blood cell<br><i>Membantu memusnahkan sel darah merah</i>                         |

35. Diagram 23 shows the environment of a multicellular organism.  
*Rajah 23 menunjukkan persekitaran bagi organisma multisel.*

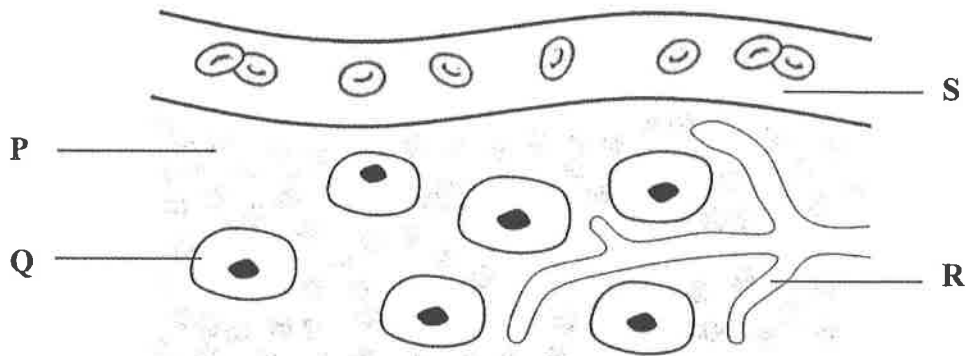


Diagram 23  
*Rajah 23*

Which parts P, Q, R and S that make up the internal environment?  
*Antara bahagian P, Q, R dan S, yang manakah membentuk persekitaran dalam?*

- |                                    |  |
|------------------------------------|--|
| A. P and S<br><i>P dan S</i>       | C. P, R and S<br><i>P, R dan S</i>       |
| B. P, Q and R<br><i>P, Q dan R</i> | D. P, Q, R and S<br><i>P, Q, R dan S</i> |
36. Diagram 24 shows a human joint.  
*Rajah 24 menunjukkan sendi manusia.*

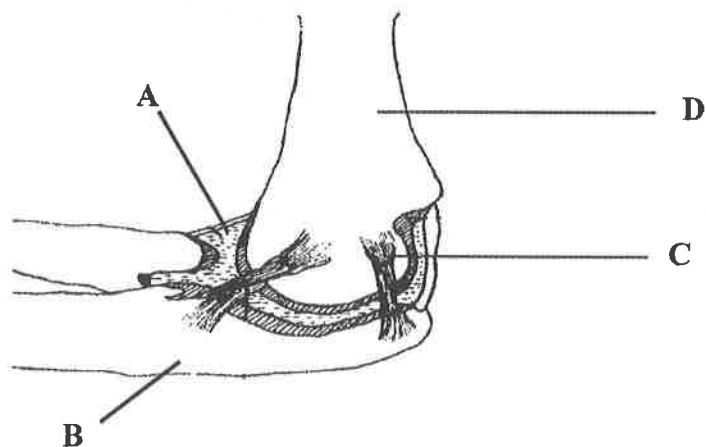


Diagram 24  
*Rajah 24*

Which of the part A, B, C or D reduces the friction between the ends of bones?  
*Antara bahagian A, B, C atau D yang manakah mengurangkan geseran antara hujung tulang?*

37. Diagram 25 shows a cross section of the human spinal cord.  
*Rajah 25 menunjukkan keratan rentas saraf tunjang manusia.*

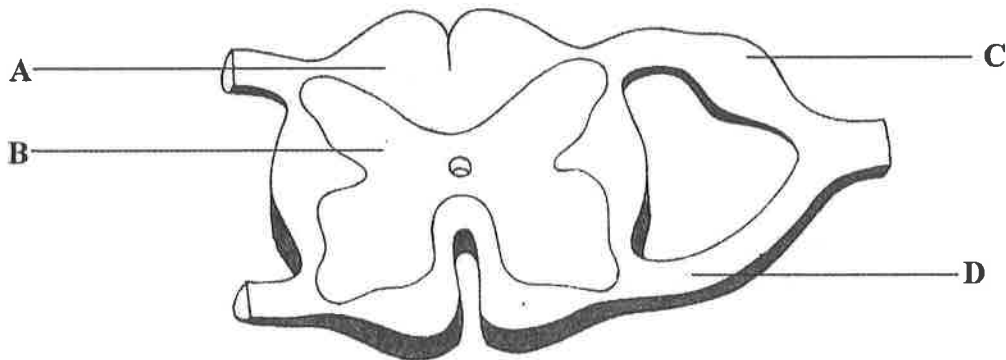


Diagram 25  
*Rajah 25*

Which part A, B, C or D contains cell body of the afferent neurone?  
*Antara bahagian A, B, C atau D berikut, yang manakah mengandungi badan sel neuron aferen?*

38. Diagram 26 shows a structure of a human brain.  
*Rajah 26 menunjukkan struktur otak manusia.*

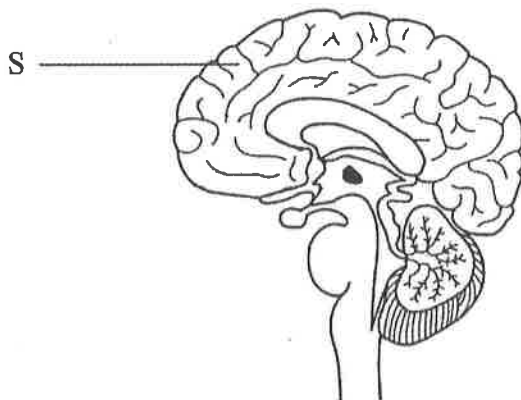


Diagram 26  
*Rajah 26*

What is S?  
*Apakah S?*

- |                                   |   |
|-----------------------------------|---|
| A. Cerebellum<br><i>Serebelum</i> | C. Hypothalamus<br><i>Hipotalamus</i>           |
| B. Cerebrum<br><i>Serebrum</i>    | D. Medulla oblongata<br><i>Medula oblongata</i> |

39. Which of the following plant hormones stimulate the production of fruit without seed?  
*Antara hormon tumbuhan berikut, yang manakah merangsang penghasilan buah tanpa biji?*

- |                                  |                                    |
|----------------------------------|------------------------------------|
| A. Auxin<br><i>Auksin</i>        | C. Ethylene<br><i>Etilena</i>      |
| B. Cytokinin<br><i>Sitokinin</i> | D. Gibberellin<br><i>Giberelin</i> |

40. Diagram 27 shows structure of a nephron.  
*Rajah 27 menunjukkan struktur nefron.*

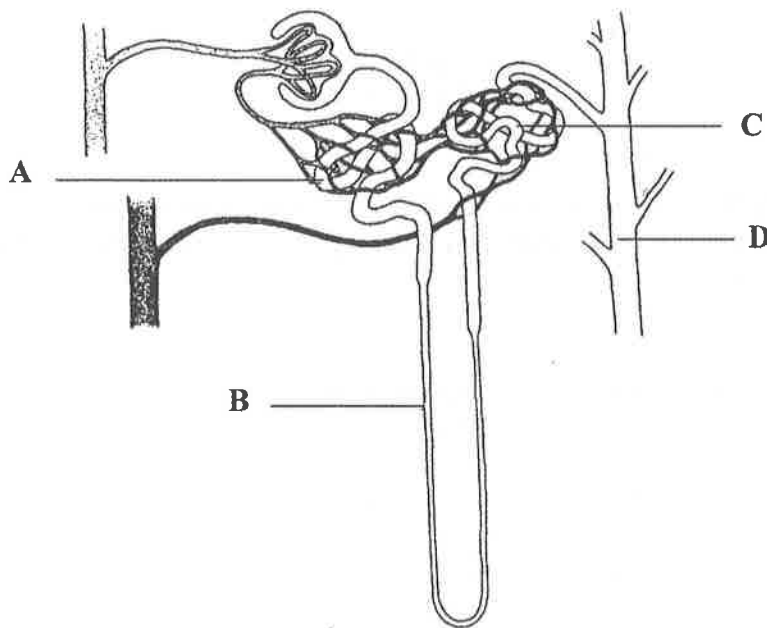


Diagram 27  
*Rajah 27*

Which part A, B, C or D involve in reabsorption of glucose?  
*Antara bahagian A, B, C atau D, yang manakah terlibat dalam penyerapan semula glukosa?*

41. The following statements are about a process which occurs in human kidney.  
*Maklumat berikut berkaitan dengan proses yang berlaku dalam ginjal manusia.*

Ultrafiltration occurs at the rate of 150 litres daily in human. Only 1.5 litres of water are excreted as urine.

*Ultraturasan berlaku pada kadar 150 liter sehari dalam manusia. Hanya 1.5 liter air sahaja yang dikumuh sebagai air kencing.*

What happen to the remaining water that is not excreted as urine?

*Apakah yang berlaku kepada baki air yang tidak dikumuh sebagai air kencing?*

- A. Excreted as sweat  
*Dikumuh sebagai peluh*
- B. Become tissue fluid  
*Menjadi bendalir tisu*
- C. Reabsorbed into the blood  
*Diserap semula ke dalam darah*
- D. Stored in the urinary bladder  
*Disimpan dalam pundi kencing*
42. The table shows the number of chromosomes in the germ cells during spermatogenesis in human.  
*Jadual berikut menunjukkan bilangan kromosom di dalam sel sel germa semasa proses spermatogenesis pada manusia.*

Which germ cells and number of chromosomes are correctly matched?  
*Padanan pasangan sel germa dan bilangan kromosom manakah yang betul?*

	<b>Germ cells</b> <i>Sel germa</i>	<b>Number of chromosomes</b> <i>Bilangan kromosom</i>
I	Spermatogonia <i>Spermatogonium</i>	46
II	Primary spermatocyte <i>Spermatisit primer</i>	46
III	Secondary spermatocyte <i>Spermatisit sekunder</i>	46
IV	Spermatozoa <i>Spermatozoa</i>	23

- A. I, II and III only  
*I, II dan III sahaja*
- B. I, III and IV only  
*I, III dan IV sahaja*
- C. I, II and IV only  
*I, II dan IV sahaja*
- D. I, II, III and IV  
*I, II, III dan IV*

43. Diagram 28 shows the ovule of a flowering plant containing the nuclei involved in double fertilisation.

*Rajah 28 menunjukkan ovul tumbuhan berbunga yang mengandungi nukleus-nukleus yang terlibat dalam persenyawaan ganda dua.*

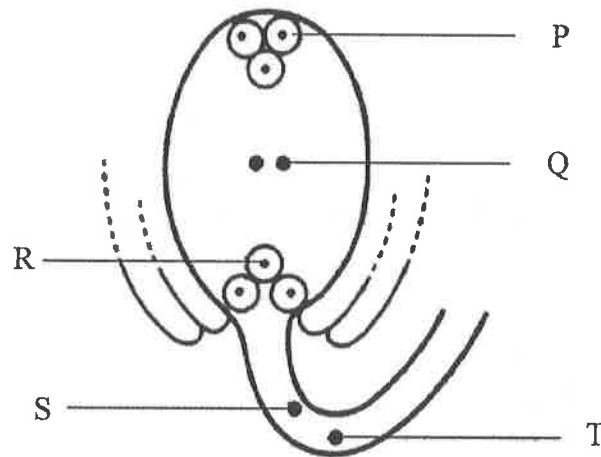


Diagram 28  
*Rajah 28*

Which nuclei P, Q, R, S and T fuse to form triploid nucleus?

*Nukleus P, Q, R, S dan T yang manakah bergabung untuk membentuk nukleus triploid?*

- |                              |                              |
|------------------------------|------------------------------|
| A. P and S<br><i>P dan S</i> | C. Q and R<br><i>Q dan R</i> |
| B. P and T<br><i>P dan T</i> | D. Q and T<br><i>Q dan T</i> |
44. A medical check-up on a woman shows that there is a blockage in both of her fallopian tube. Which treatment may help the woman to get pregnant?  
*Pemeriksaan kesihatan seorang wanita menunjukkan kedua-dua tiub fallopio beliau tersumbat. Rawatan manakah yang boleh membantu wanita tersebut untuk hamil?*
- A. In-vitro fertilization  
*Persenyawaan in-vitro*
- B. Zygote intra-fallopian transfer  
*Pemindahan intra-fallopio*
- C. Use of fertility pill  
*Menggunakan pil kesuburan*
- D. Artificial insemination  
*Permanian beradas*



45. Diagram 29 is a graph showing growth pattern of organism K.  
*Rajah 29 menunjukkan graf pertumbuhan organisma K.*

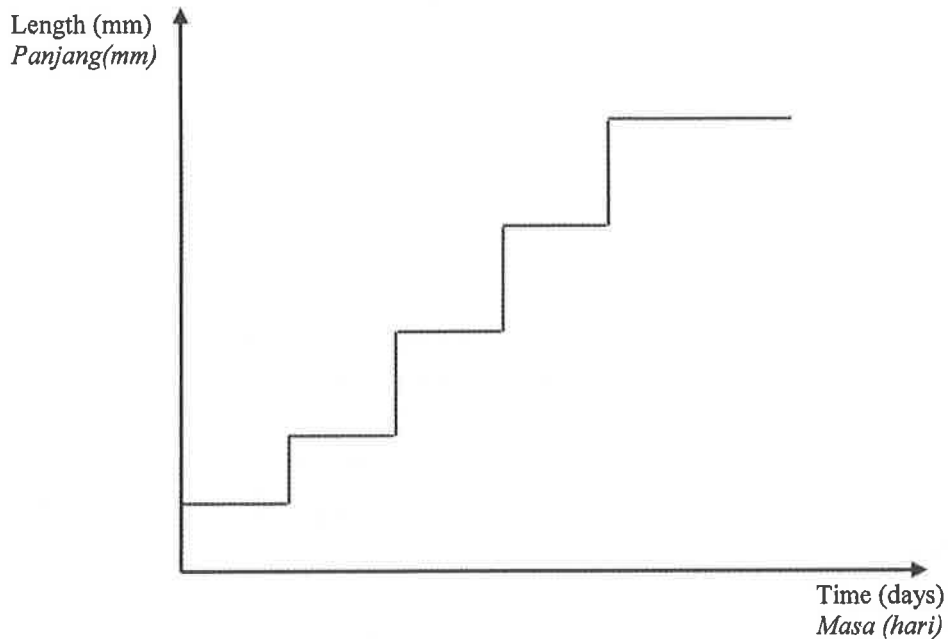


Diagram 29  
*Rajah 29*

Which of the following organisms represents organism K?  
*Antara berikut, organisma manakah mewakili organisma K?*

- |                                     |                           |
|-------------------------------------|---------------------------|
| A. Earthworm<br><i>Cacing tanah</i> | C. Lizard<br><i>Cicak</i> |
| B. Cockroach<br><i>Lipas</i>        | D. Frog<br><i>Katak</i>   |
46. Which of the following hormones stimulates the process of ovulation during menstrual cycle?  
*Antara berikut, hormon manakah yang merangsang proses pengovulan semasa kitar haid?*
- |  |   |
|--|---|
| A. Luteinizing hormone<br><i>Hormon peluteinan</i> | C. Oestrogen<br><i>Estrogen</i>                                     |
| B. Progesterone<br><i>Progesteron</i>              | D. Follicle stimulating hormone<br><i>Hormon perangsang folikel</i> |

47. Diagram 30 shows a dihybrid cross between two types of pea plants.  
Rajah 30 menunjukkan kacukan silang antara dua jenis tumbuhan kacang pea.

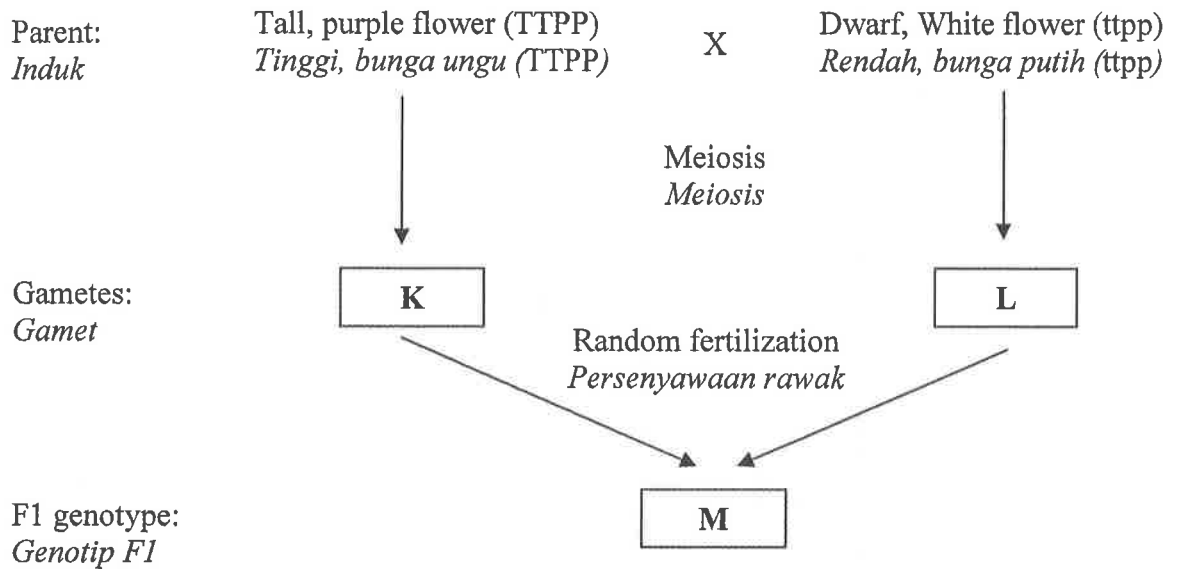


Diagram 30  
Rajah 30

What are the genotypes of K, L and M?  
Apakah genotip K, L dan M?

	K	L	M
A.	TP	Tp	TTpp
B.	pp	tt	Ttpp
C.	TP	tp	TtPp
D.	TT	Pp	TTpp

48. Which of the following chemicals are mutagens?  
Antara berikut, bahan kimia manakah merupakan agen mutasi?

- I Asbestos  
Asbestos
- II Benzene  
Benzena
- III Carbon monoxide  
Karbon monoksida
- IV Formaldehyde  
Formaldehid

- A. I, II and III only  
I, II dan III sahaja
- B. I, II and IV only  
I, II dan IV sahaja
- C. I, III and IV only  
I, III dan IV sahaja
- D. I, II, III and IV  
I, II, III dan IV

49. What is the chromosomal condition of an individual who suffers from Klinefelter syndrome?

*Apakah keadaan kromosom individu yang mengidap sindrom Klinefelter?*

- A. 44 + XY
- B. 44 + XO
- C. 44 + XXY
- D. 44 + YO

50. Diagram 31 shows a graph of distribution of a particular characteristic in human.

*Rajah 31 menunjukkan graf taburan ciri tertentu dalam manusia.*

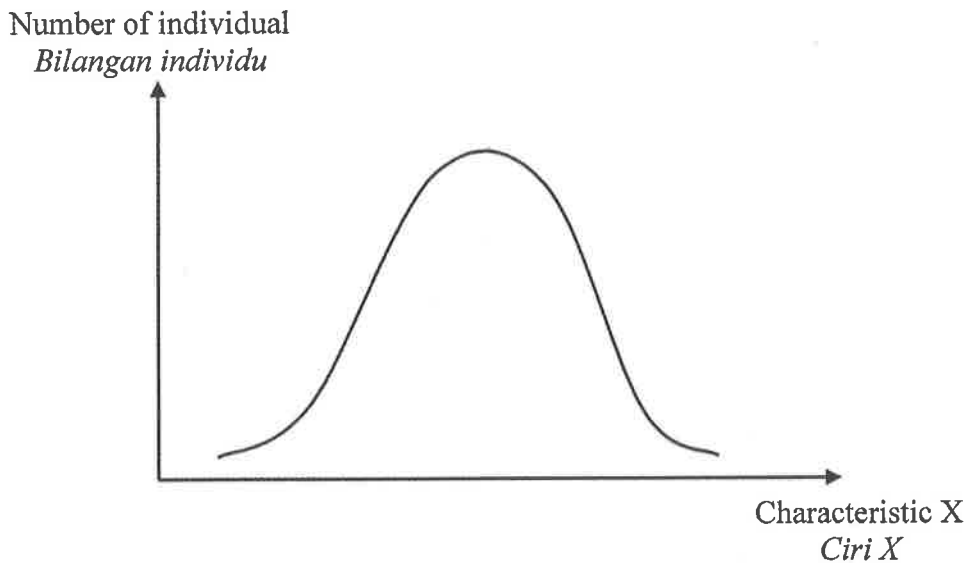


Diagram 31  
*Rajah 31*

What is characteristic X?

*Apakah ciri X?*

- A. Blood group  
*Kumpulan darah*
- B. Presence of dimple  
*Kehadiran lesung pipit*
- C. Shape of ear lobe  
*Bentuk cuping telinga*
- D. Length of arm  
*Panjang lengan*

