

**SULIT**



**PENTAKSIRAN DIAGNOSTIK AKADEMIK  
SEKOLAH BERASRAMA PENUH 2019**

**PEPERIKSAAN PERCUBAAN SIJIL PELAJARAN MALAYSIA  
BIOLOGY**

**4551/1**

**Kertas 1  
September 2019  
1 ¼ jam**

**Satu jam lima belas minit**

---

**JANGAN BUKA KERTAS SOALAN INI SEHINGGA DIBERITAHU**

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

---

Kertas soalan ini mengandungi 27 halaman bercetak.

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

1. Diagram 1 shows an animal cell.  
*Rajah 1 menunjukkan satu sel haiwan.*

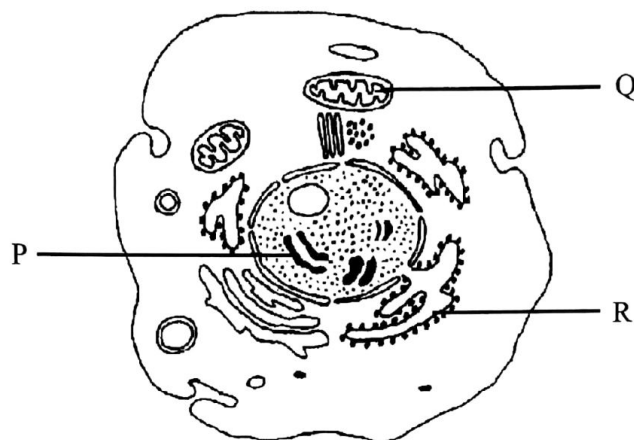


Diagram 1  
*Rajah 1*

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

	P	Q	R
A.	Vesicle <i>Vesikel</i>	Nucleus <i>Nukleus</i>	Rough endoplasmic reticulum <i>Jalanan endoplasma kasar</i>
B.	Nucleus <i>Nukleus</i>	Vesicle <i>Vesikel</i>	Golgi apparatus <i>Jasad golgi</i>
C.	Chromosome <i>Kromosom</i>	Mitochondrion <i>Mitokondrion</i>	Rough endoplasmic reticulum <i>Jalanan endoplasma kasar</i>
D.	Chromosome <i>Kromosom</i>	Mitochondrion <i>Mitokondrion</i>	Smooth endoplasmic reticulum <i>Jalanan endoplasma licin</i>

2. The following statements refer to organelle X.  
*Pernyataan berikut merujuk kepada organel X.*

- Contains hydrolytic enzymes  
*Mengandungi enzim hidrolisis*
- Digest and eliminate worn out mitochondrion  
*Mencernakan dan memusnahkan mitokondrion yang rosak*

What is organelle X?  
*Apakah organel X?*

- |   |   |
|---|---|
| <p>A. Lysosome<br/><i>Lisosom</i></p> <p>C. Ribosome<br/><i>Ribosom</i></p> | <p>B. Golgi apparatus<br/><i>Jasad Golgi</i></p> <p>D. Smooth endoplasmic reticulum<br/><i>Jalanan endoplasma licin</i></p> |
|---|---|

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

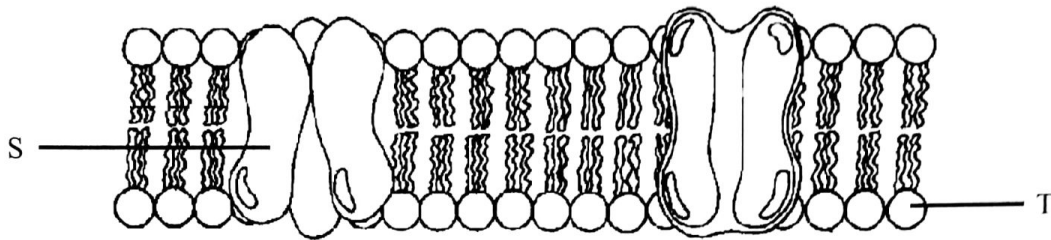


Diagram 2  
*Rajah 2*

What are S and T?  
*Apakah S dan T?*

	S	T
A.	Carrier protein <i>Protein pembawa</i>	Hydrophobic tails <i>Ekor hidrofobik</i>
B.	Hydrophobic tails <i>Ekor hidrofobik</i>	Pore protein <i>Protein berliang</i>
C.	Pore protein <i>Protein berliang</i>	Hydrophilic heads <i>Kepala hidrofilik</i>
D.	Carrier protein <i>Protein pembawa</i>	Hydrophilic heads <i>Kepala hidrofilik</i>

4. Diagram 3 shows a plant cell that has been immersed into a particular solution.  
*Rajah 3 menunjukkan sel tumbuhan yang telah direndam di dalam larutan tertentu.*

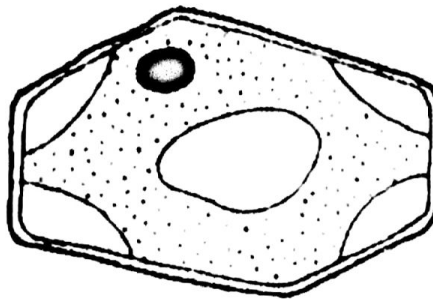


Diagram 3  
*Rajah 3*

What has occurred to the cell?  
*Apakah yang telah berlaku kepada sel ini?*

- |                                      |  |
|--------------------------------------|--|
| A. Turgid<br><i>Segah</i>            | B. Crenation<br><i>Krenasi</i>           |
| C. Plasmolysis<br><i>Plasmolisis</i> | D. Deplasmolysis<br><i>Deplasmolisis</i> |

5. Diagram 4 shows an *Amoeba* sp. in pond water.  
*Rajah 4 menunjukkan satu Amoeba sp. dalam air kolam.*

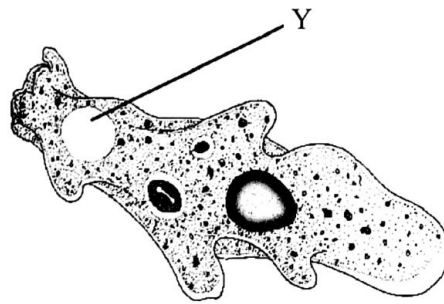


Diagram 4  
*Rajah 4*

Which of the following is the effect to structure Y when the *Amoeba* sp. is placed in salt water?  
*Antara berikut, yang manakah kesan kepada struktur Y apabila Amoeba sp. diletakkan di dalam air masin?*

- |   |  |
|---|--|
| A. Burst and die<br><i>Pecah dan mati</i>                           | B. Stop contracting<br><i>Berhenti mengecut</i>                        |
| C. Contract at a fast rate<br><i>Mengecut pada kadar yang cepat</i> | D. Contract at a slow rate<br><i>Mengecut pada kadar yang perlahan</i> |

6.

A housewife found that leafy vegetables wilt after left for half a day.  
*Seorang surirumah mendapati sayur-sayuran layu selepas ditinggalkan separuh hari.*

What is the best way to refresh the leafy vegetables?  
*Apakah kaedah yang terbaik untuk menjadikan sayur-sayuran ini segar semula?*

- |   |   |
|---|---|
| A. Immerse the vegetables in tap water<br><i>Rendam sayuran di dalam air paip</i>     | B. Immerse the vegetables in salt water<br><i>Rendam sayuran di dalam air garam</i>     |
| C. Keep the vegetables in a plastic bag<br><i>Simpan sayuran di dalam beg plastik</i> | D. Keep the vegetables in the refrigerator<br><i>Simpan sayuran di dalam peti sejuk</i> |

7. Excess amino acid cannot be stored in the body.  
 What is the process involved in the assimilation of amino acids?  
*Asid amino yang berlebihan tidak boleh disimpan di dalam badan.  
 Apakah proses yang terlibat untuk asimilasi asid amino?*

- |                                      |                                       |
|--------------------------------------|---------------------------------------|
| A. Condensation<br><i>Kondensasi</i> | B. Reduction<br><i>Penurunan</i>      |
| C. Deamination<br><i>Pendeaminan</i> | D. Decomposition<br><i>Penguraian</i> |



8. Which of the following is true about saturated fats as compared to unsaturated fats?  
*Antara berikut yang manakah benar mengenai lemak tepu berbanding lemak tak tepu?*
- Of vegetable origin  
*Berasal dari tumbuhan*
  - They are found in butter and cheese  
*Boleh didapati di dalam mentega dan keju*
  - Usually in liquid form at room temperature  
*Biasanya dalam bentuk cecair pada suhu bilik*
  - They have one or more double bonds between their carbon atoms  
*Menpunyai satu atau lebih ikatan ganda dua di antara atom karbon*
9. Potato cells contain an enzyme that can break down hydrogen peroxide into water and oxygen. Experiments were carried out using the apparatus as shown in Diagram 5.  
*Sel kentang mengandungi enzim yang boleh memecahkan hidrogen peroksida kepada air dan oksigen.*  
*Eksperimen telah dijalankan dengan menggunakan set radas yang ditunjukkan dalam Rajah 5.*

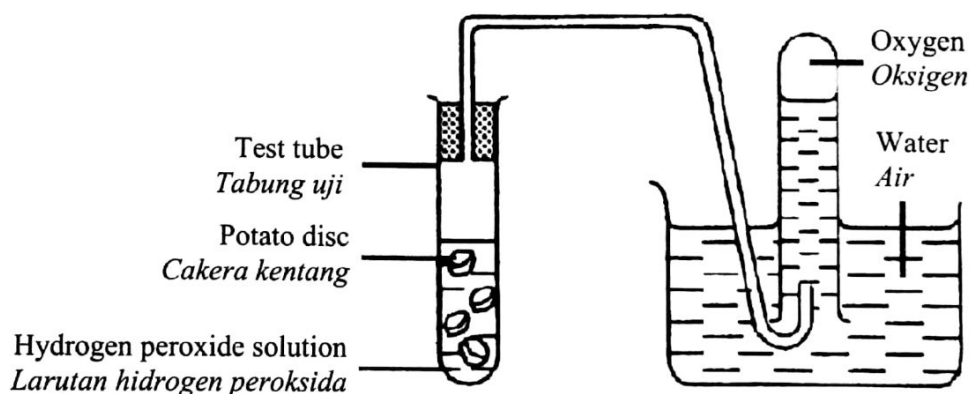


Diagram 5  
 Rajah 5

Which of the following experiments will release the most oxygen?  
*Antara berikut eksperimen manakah yang akan menghasilkan oksigen yang paling banyak?*

	Volume of hydrogen peroxide solution (cm <sup>3</sup> ) <i>Isipadu hidrogen peroksida (cm<sup>3</sup>)</i>	Number of potato discs <i>Bilangan cakera kentang</i>	Condition of the potato discs <i>Keadaan cakera kentang</i>
A.	5	5	Boiled <i>Direbus</i>
B.	5	10	Boiled <i>Direbus</i>
C.	5	10	Fresh <i>Segar</i>
D.	10	5	Fresh <i>Segar</i>

10. Diagram 6 shows cells at different stages of mitosis.  
*Rajah 6 menunjukkan sel-sel dalam peringkat mitosis yang berbeza.*

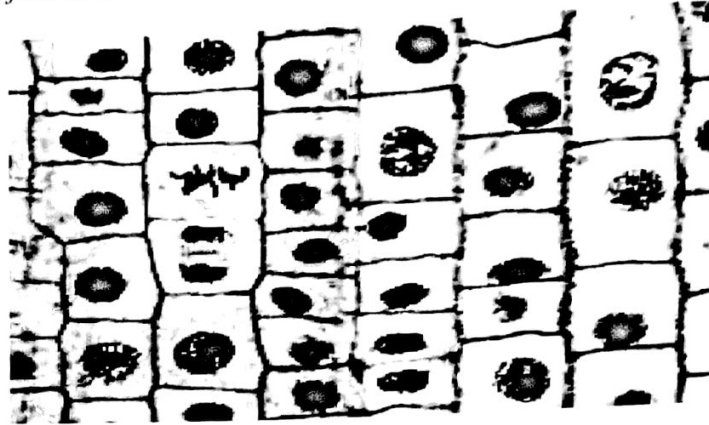


Diagram 6  
*Rajah 6*

Which of the following tissues contains these cells?

*Antara tisu-tisu berikut, yang manakah mengandungi sel-sel ini?*

- |  |  |
|--|--|
| A. The ground tissue<br><i>Tisu asas</i>       | B. The phloem tissue<br><i>Tisu floem</i>        |
| C. The meristem tissue<br><i>Tisu meristem</i> | D. The epidermal tissue<br><i>Tisu epidermis</i> |
11. Diagram 7 shows the chromosomes in the liver cell of organisms Z.  
*Rajah 7 menunjukkan kromosom dalam sel hati organisma Z.*

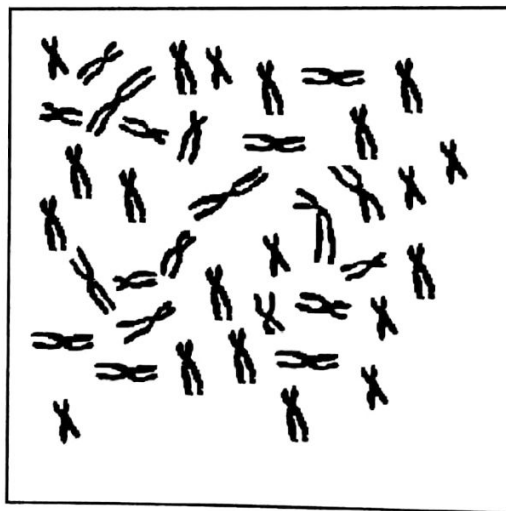


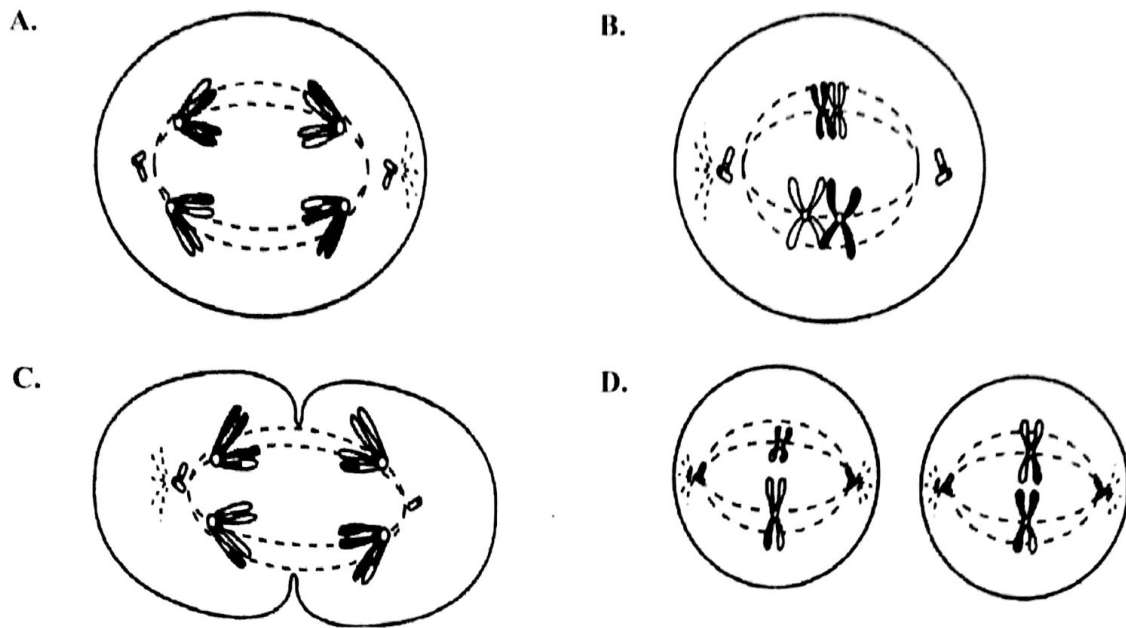
Diagram 7  
*Rajah 7*

How many chromosomes are in a gamete of organism Z?

*Berapakah bilangan kromosom dalam gamet organisma Z?*

- |       |       |
|-------|-------|
| A. 10 | B. 20 |
| C. 40 | D. 80 |

12. Which of the following stages of meiosis is undergoing metaphase I?  
 Antara berikut, yang manakah fasa dalam meiosis yang sedang menjalani metafasa I?



13. Diagram 8 shows a poster of Malaysian Healthy Plate Campaign “Quarter-Quarter-Half”.  
 Rajah 8 menunjukkan satu poster bagi Kempen Pinggan Sihat Malaysia “Suku-Suku-Separuh”.



Diagram 8  
 Rajah 8

What is the food class that need to be taken 'half' in the plate?  
 Apakah kelas makanan yang perlu diambil 'separuh' dalam pinggan tersebut?

- |                       |                                |
|-----------------------|--------------------------------|
| A. Fiber<br>Serat     | B. Lipid<br>Lemak              |
| C. Protein<br>Protein | D. Carbohydrate<br>Karbohidrat |

14. Diagram 9 shows a traditional food processing method in the making of 'tapai ubi'.  
*Rajah 9 menunjukkan satu kaedah pemprosesan makanan tradisonal dalam pembuatan tapai ubi.*

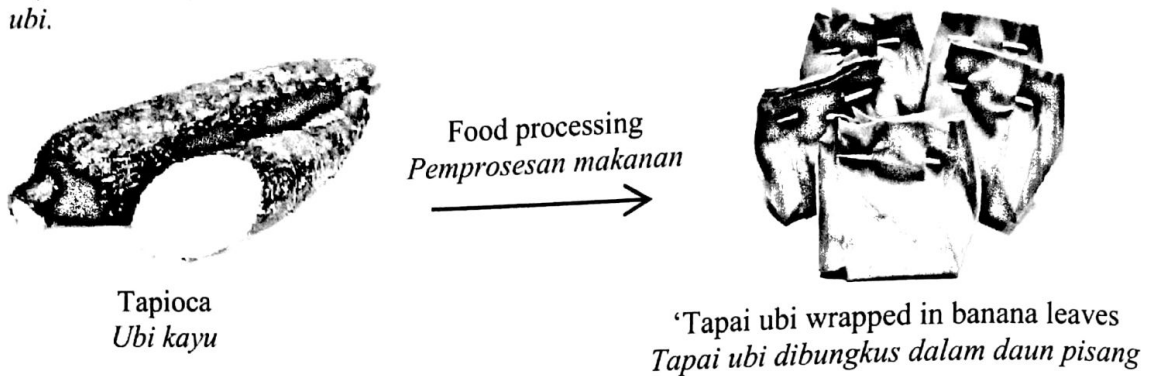


Diagram 9  
Rajah 9

What is the method used in the food processing?  
*Apakah kaedah yang digunakan dalam pemprosesan makanan ini?*

- |   |  |
|---|--|
| <p>A. Sterilisation<br/><i>Pensterilan</i></p> <p>C. Fermentation<br/><i>Fermentasi</i></p> | <p>B. Pasteurisation<br/><i>Pempasteuran</i></p> <p>D. Refrigeration<br/><i>Penyejukan</i></p> |
|---|--|
15. Diagram 10 shows the cross section of a leaf.  
*Rajah 10 menunjukkan keratan rentas satu daun.*

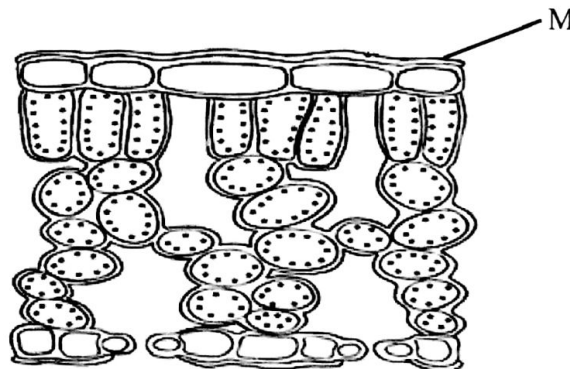


Diagram 10  
Rajah 10

What is the importance of M to the leaf?  
*Apakah kepentingan M kepada daun ini?*

- A. Allow diffusion of gases  
*Membenarkan penyerapan gas*
- B. Regulate the size of stomata  
*Mengawal saiz bukaan stoma*
- C. Prevent excessive loss of water  
*Mencegah kehilangan air secara berlebihan*
- D. Provide large surface area to trap sunlight  
*Menyediakan luas permukaan yang besar untuk menyerap cahaya*

16. Diagram 11 shows a carnivorous plant, that is the Venus Flytrap plant.  
*Rajah 11 menunjukkan pokok karnivor iaitu pokok Venus Flytrap.*

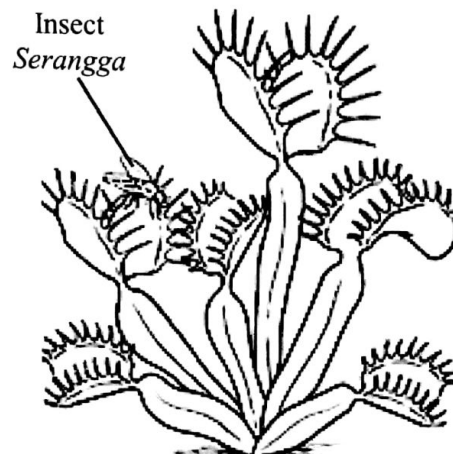


Diagram 11  
*Rajah 11*

What is the type of nutrition of this plant?  
*Apakah jenis nutrisi bagi tumbuhan ini?*

- |                                     |  |
|-------------------------------------|--|
| A. Holozoic<br><i>Holozoik</i>      | B. Parasitism<br><i>Parasitisma</i>    |
| C. Autotrophic<br><i>Autotrofik</i> | D. Saprophytism<br><i>Saprofitisma</i> |
17. The statement below is about Inuit people.  
*Pernyataan dibawah adalah berkenaan orang Inuit.*

- Inuit people living in the Arctic are rarely obese. Their diet consist mainly of oily fish. However most of them enjoy good health without any disease. They able to maintain their body temperature even though the surrounding temperature may drops to  $-50^{\circ}\text{C}$ .  
*Orang Inuit yang menetap di Artik sangat jarang mengalami obesiti. Diet utama mereka ialah ikan berlemak. Walau bagaimanapun, kebanyakan mereka menjalani hidup yang sihat tanpa penyakit. Mereka boleh mengekalkan suhu badan mereka walaupun ketika suhu persekitaran turun sehingga  $-50^{\circ}\text{C}$ .*

In your opinion, what is the lowest incident of disease the Inuit people will have?  
*Pada pendapat anda, apakah jenis penyakit yang paling jarang dihidapi oleh orang Inuit?*

- |   |   |
|---|---|
| A. Diabetes<br><i>Diabetes</i>                  | B. Osteoporosis<br><i>Osteoporosis</i>                      |
| C. Anorexia nervosa<br><i>Anoreksia nervosa</i> | D. Cardiovascular disease<br><i>Penyakit kardiovaskular</i> |

- |   |                       |
|---|-----------------------|
| Volume of orange juice<br><i>Isipadu jus oren</i>   | = 3.4 cm <sup>3</sup> |
| Volume of DCPIP solution<br><i>Isipadu larutan DCPIP</i>  | = 1.0 cm <sup>3</sup> |
| Volume of 0.1 % ascorbic acid to decolourise 1 cm <sup>3</sup> of DCPIP solution<br><i>Isipadu 0.1 % asid askorbik untuk melunturkan warna 1 cm<sup>3</sup> larutan DCPIP</i> | = 1.3 cm <sup>3</sup> |

$$\begin{array}{ccccc} & \text{Zymase} & & & \\ \text{Glucose} & \xrightarrow{\text{Zimase}} & \text{Ethanol} & + & \text{X} & + & \text{Energy} \\ \text{Glukosa} & & \text{Etanol} & & & & \text{Tenaga} \end{array}$$

<b>A.</b>	Water <i>Air</i>	<b>B.</b>	Ethanol <i>Etanol</i>
<b>C.</b>	Lactic acid <i>Asid laktik</i>	<b>D.</b>	Carbon dioxide <i>Karbon dioksida</i>

21. Diagram 13 shows the structure of fish gills and the uptake of oxygen into the blood.  
*Rajah 13 menunjukkan struktur insang ikan dan pengambilan oksigen ke dalam darah.*

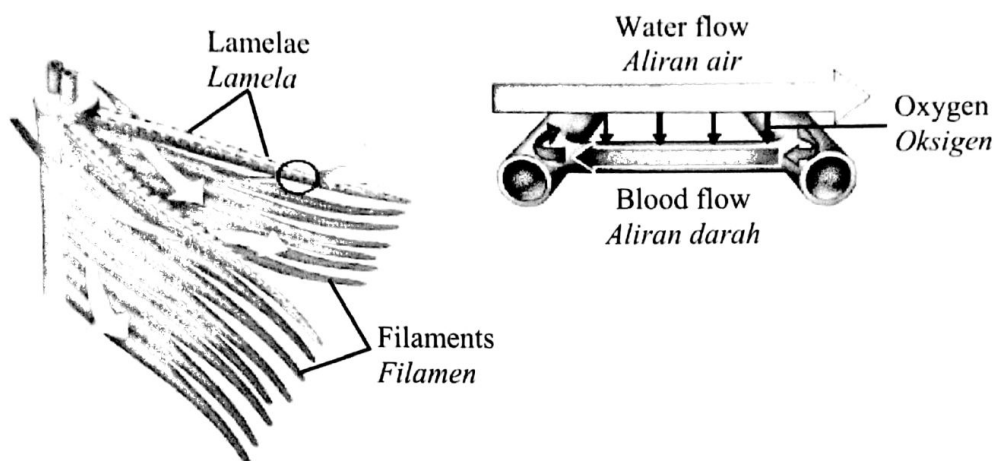


Diagram 13  
*Rajah 13*

What process involved during the uptake of oxygen into the blood?  
*Apakah proses yang terlibat semasa pengambilan oksigen ke dalam darah?*

- |   |  |
|---|--|
| A. Osmosis<br><i>Osmosis</i>                        | B. Simple diffusion<br><i>Resapan ringkas</i>    |
| C. Facilitated diffusion<br><i>Resapan berbantu</i> | D. Active transport<br><i>Pengangkutan aktif</i> |
22. The following information shows the results of an experiment to determine the oxygen content in exhaled air using a J-tube.  
*Maklumat berikut menunjukkan keputusan satu eksperimen untuk menentukan kandungan oksigen dalam udara hembusan dengan menggunakan tiub-J.*

Length of exhaled air column <i>Panjang turus udara hembusan</i>	=	10.0 cm
Length of exhaled air column after treatment with potassium hydroxide <i>Panjang turus udara hembusan selepas dirawat dengan kalium hidroksida</i>	=	9.7 cm
Length of exhaled air column after treatment with potassium pyrogallate <i>Panjang turus udara hembusan selepas dirawat dengan kalium pirogalat</i>	=	8.3 cm

What is the percentage of oxygen content in the exhaled air?  
*Berapakah peratusan kandungan oksigen dalam udara hembusan?*

- |           |           |
|-----------|-----------|
| A. 0.3 %  | B. 8.3 %  |
| C. 14.0 % | D. 24.0 % |

23. What is an ecological niche?

*Apakah nic ekologi?*

- A. The role of an organism in an ecosystem  
*Peranan suatu organisma dalam suatu ekosistem*
- B. The natural surrounding where organisms live  
*Persekitaran semula jadi di mana organisma hidup*
- C. A group of organisms which have the same characteristics  
*Sekumpulan organisma yang mempunyai ciri-ciri yang serupa*
- D. A study about the relationship between living things and the surroundings  
*Kajian tentang hubungan antara hidupan dengan persekitaran*

24. Diagram 14 shows a food web.

*Rajah 14 menunjukkan satu siratan makanan.*

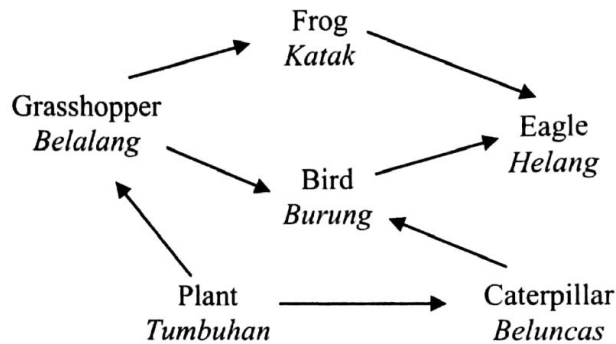


Diagram 14  
*Rajah 14*

Which organism is in the fourth trophic level?

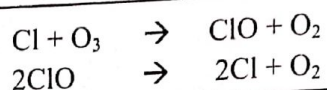
*Organisma manakah yang berada pada aras trof keempat?*

- |                             |                           |
|-----------------------------|---------------------------|
| A. Plant<br><i>Tumbuhan</i> | B. Eagle<br><i>Helang</i> |
| C. Frog<br><i>Katak</i>     | D. Bird<br><i>Burung</i>  |





27. The following are the reactions that occur at the stratosphere layer in the earth atmosphere.  
 Yang berikut adalah tindak balas yang berlaku pada lapisan stratosfera dalam atmosfera bumi.

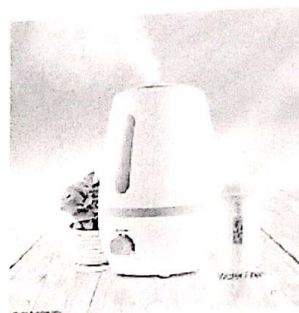


Which of the following does **not** contribute to the reaction to occur?  
 Antara berikut, yang manakah **tidak** menyumbang tindak balas ini berlaku?

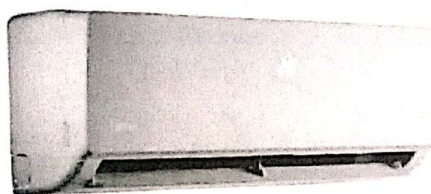
A.



B.



C.



D.



28. Diagram 16 shows the occurrence of an environmental phenomenon in an agricultural area.  
 Rajah 16 menunjukkan kejadian bagi satu fenomena dalam satu kawasan pertanian.

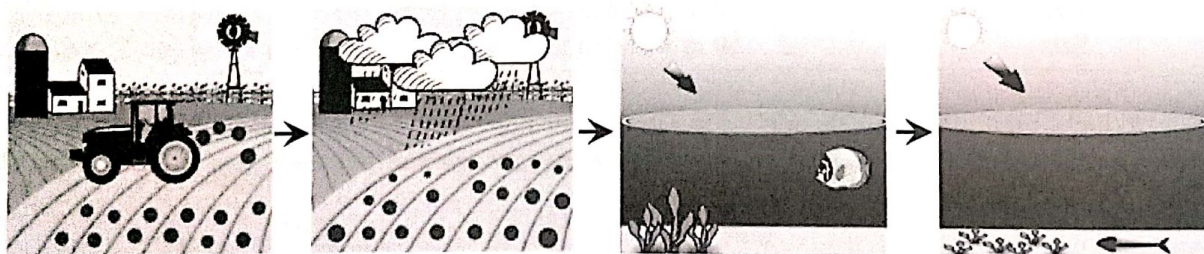


Diagram 16

Rajah 16

What is the phenomenon and the main substance that cause this phenomenon?  
 Apakah fenomena ini dan bahan penyebab utama bagi fenomena ini?

	Phenomenon <i>Fenomena</i>	Substances <i>Bahan</i>
A.	Acid rain <i>Hujan asid</i>	Nitrogen dioxide <i>Nitrogen dioksida</i>
B.	Acid rain <i>Hujan asid</i>	Phosphate <i>Fosfat</i>
C.	Eutrofication <i>Eutrofikasi</i>	Phosphate <i>Fosfat</i>
D.	Eutrofication <i>Eutrofikasi</i>	Nitrogen dioxide <i>Nitrogen dioksida</i>

29. The following statements are the characteristics of a phenomenon.  
*Pernyataan berikut adalah ciri-ciri bagi suatu fenomena.*

- Carbon dioxide gas increase  
*Gas karbon dioksida meningkat*
- Earth temperature increases  
*Suhu bumi meningkat*
- Increase in sea level  
*Kenaikan aras laut*

What is the phenomenon?  
*Apakah fenomena ini?*

- |   |  |
|---|--|
| A. Acid Rain<br><i>Hujan Acid</i>           | C. Eutrophication<br><i>Eutrofikasi</i>      |
| B. Ozone depletion<br><i>Penipisan ozon</i> | D. Global warming<br><i>Pemanasan global</i> |
30. Diagram 17 shows an eco-friendly car.  
*Rajah 17 menunjukkan satu kereta mesra alam.*

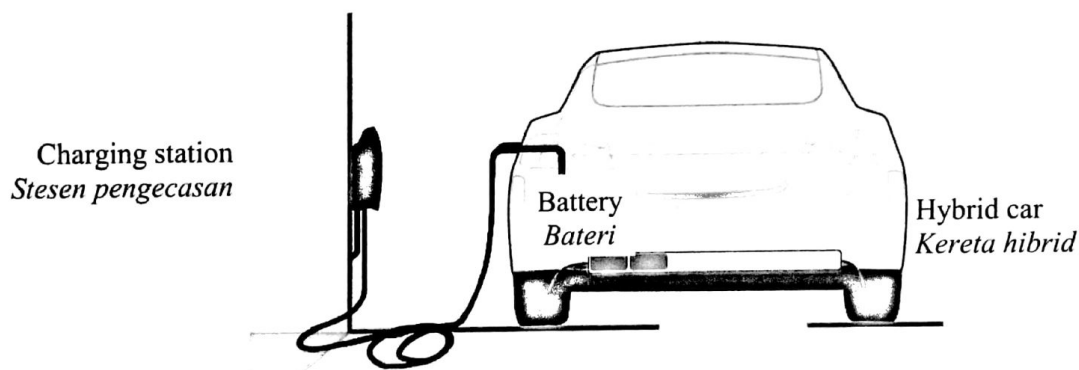


Diagram 17  
*Rajah 17*

What is the benefit of this technology to the environment?  
*Apakah faedah penggunaan teknologi ini kepada alam sekitar?*

- A. Reduce the air pollution  
*Mengurangkan pencemaran udara*
- B. Reduce the BOD level in water  
*Mengurangkan aras BOD di dalam air*
- C. Increase the humidity in the atmosphere  
*Meningkatkan kelembapan dalam atmosfera*
- D. Increase the oxygen content in the air  
*Meningkatkan kandungan oksigen dalam udara*

31. The following statements are about a blood cell.  
*Pernyataan berikut adalah berkaitan dengan satu sel darah.*

- Exists in biconcave shape  
*Terdapat di dalam bentuk dwicekung*
- No nucleus in the cell  
*Tiada nucleus di dalam sel*

What is the type of this blood cell?  
*Apakah jenis sel darah ini?*

- |   |   |
|---|---|
| A. Platelet<br><i>Platlet</i>               | B. Monocyte<br><i>Monosit</i>                 |
| C. Red blood cell<br><i>Sel darah merah</i> | D. White blood cell<br><i>Sel darah putih</i> |
32. The following are the processes in the blood clotting mechanism.  
*Berikut adalah proses dalam mekanisma pembekuan darah.*

- I Platelets clumps at the wound  
*Platelet bergumpal pada luka*
- II Platelets stimulate the formation of fibrinogen  
*Platelet merangsang pembentukan fibrinogen*
- III Thrombokinese converts prothrombin to thrombin  
*Trombokinese menukarkan protrombin kepada trombin*
- IV Thrombin converts fibrinogen to meshwork of fibrin  
*Trombin menukarkan fibrinogen kepada jaringan fibrin*

Which of the following are correct about the mechanism of blood clotting?  
*Antara berikut, yang manakah betul berkenaan mekanisme pembekuan darah?*

- |  |  |
|--|--|
| A. I, II and III<br><i>I, II dan III</i> | B. I, II and IV<br><i>I, II dan IV</i>     |
| C. I, III and IV<br><i>I, III dan IV</i> | D. II, III and IV<br><i>II, III dan IV</i> |

33. Diagram 18 shows the deposit of cholesterol on the inner wall of heart coronary artery.  
*Rajah 18 menunjukkan enapan kolesterol pada dinding dalam arteri koronari jantung .*

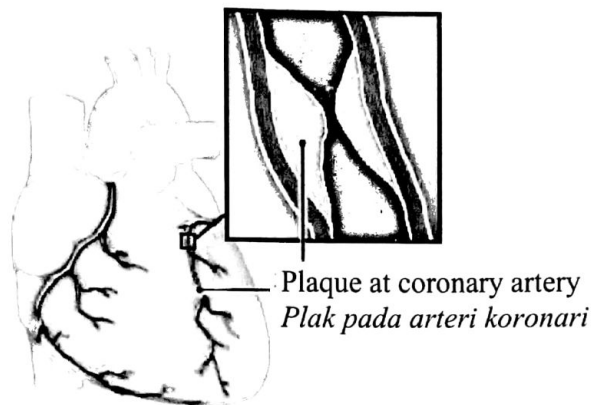


Diagram 18  
*Rajah 18*

What is the effect of this condition?  
*Apakah kesan bagi keadaan ini?*

- |  |   |
|--|---|
| A. Obesity<br><i>Kegemukan</i>                       | B. Heart attack<br><i>Serangan jantung</i>                  |
| C. Low blood pressure<br><i>Tekanan darah rendah</i> | D. Arterial septal defect (ASD)<br><i>Jantung berlubang</i> |
34. Diagram 19 shows the concentration of antibody in the blood after two injections.  
*Rajah 19 menunjukkan kepekatan antibodi dalam darah selepas dua suntikan*

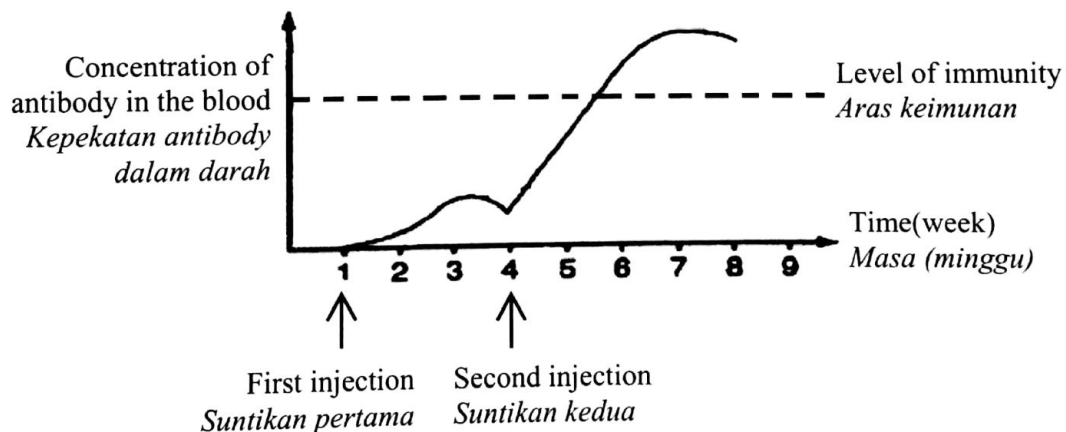


Diagram 19  
*Rajah 19*

What diseases can be prevented from this injection?  
*Apakah penyakit yang boleh dihalang daripada suntikan ini?*

- |                                  |   |
|----------------------------------|---|
| A. Asthma<br><i>Asma</i>         | B. Typhoid<br><i>Tifoid</i>                   |
| C. Poliomyelitis<br><i>Polio</i> | D. Muscular dystrophy<br><i>Distrofi otot</i> |

35. Diagram 20 shows a human elbow joint.  
*Rajah 20 menunjukkan sendi siku manusia.*

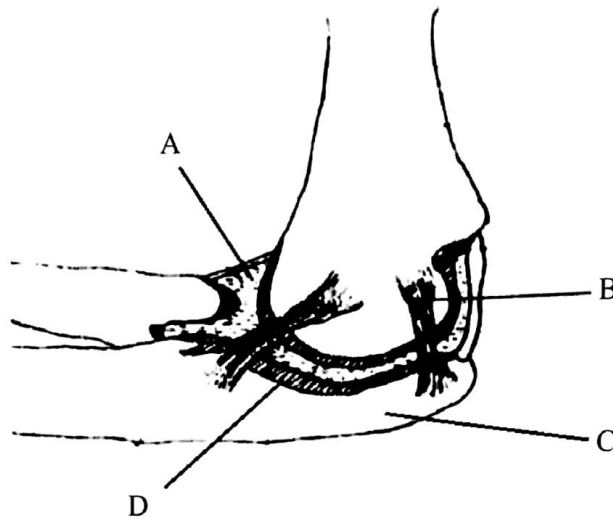


Diagram 20  
*Rajah 20*

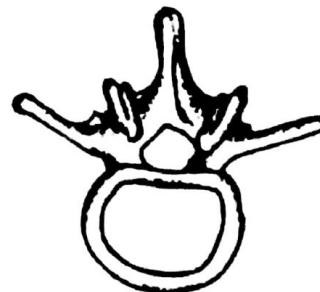
Which of the structures A, B, C and D joins one bone to the other bone?  
*Struktur A, B, C atau D yang manakah menghubungkan tulang kepada tulang lain?*

36. Which of the following is a cervical vertebra?  
*Antara berikut, yang manakah vertebra serviks?*

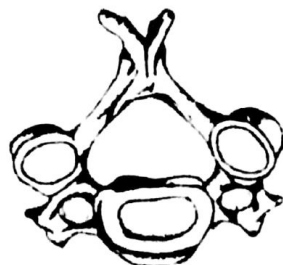
A.



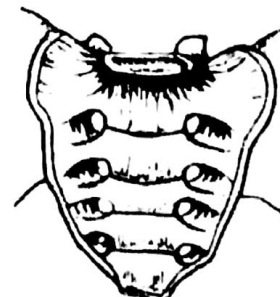
B.



C.



D.



37. Diagram 21 shows a type of support tissue in plants.  
*Rajah 21 menunjukkan sejenis tisu sokongan dalam tumbuhan.*

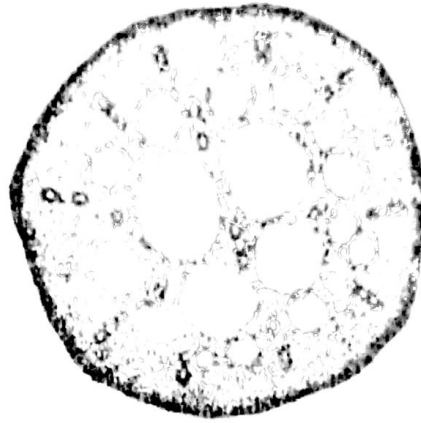


Diagram 21  
*Rajah 21*

Which plant has this type of tissue abundantly?  
*Tumbuhan manakah yang mempunyai banyak tisu jenis ini?*

A.



B.



C.



D.





38. Diagram 22 shows a synapse at the nerve ending.  
*Rajah 22 menunjukkan sinaps pada hujung saraf.*

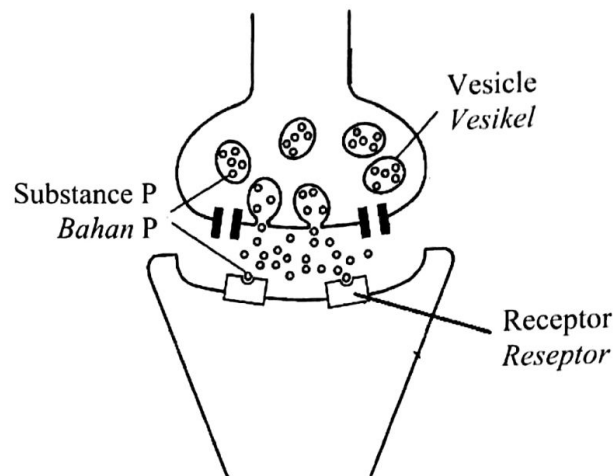


Diagram 22  
*Rajah 22*

What is substances P?  
*Apakah bahan P?*

- |   |   |
|---|---|
| <p>A. Adenine<br/> <i>Adenina</i></p> <p>C. Adrenaline<br/> <i>Adrenalina</i></p> | <p>B. Thyroxine<br/> <i>Tiroksina</i></p> <p>D. Dopamine<br/> <i>Dopamine</i></p> |
|---|---|
39. Which of the following are the effects of under secretion of ADH hormone that caused diabetes insipidus?  
*Antara berikut yang manakah kesan yang disebabkan oleh kekurangan rembesan horman ADH yang menyebabkan diabetes insipidus?*
- |   |   |   |
|---|---|---|
| <p>I Blood glucose level increase<br/> <i>Aras glukosa darah meningkat</i></p> <p>II Excrete large amount of urine<br/> <i>Membuang kuantiti air kencing yang banyak</i></p> <p>III Excrete small amount of urine<br/> <i>Membuang kauntiti air kencing yang kurang</i></p> <p>IV Cause dehydration<br/> <i>Menyebabkan dehidrasi</i></p> | <p>A. I and II<br/> <i>I dan II</i></p> <p>C. II and IV<br/> <i>II dan IV</i></p> | <p>B. I and III<br/> <i>I dan III</i></p> <p>D. III and IV<br/> <i>III dan IV</i></p> |
|---|---|---|



40. Diagram 23 shows a human nephrone.  
*Rajah 23 menunjukkan nefron manusia.*

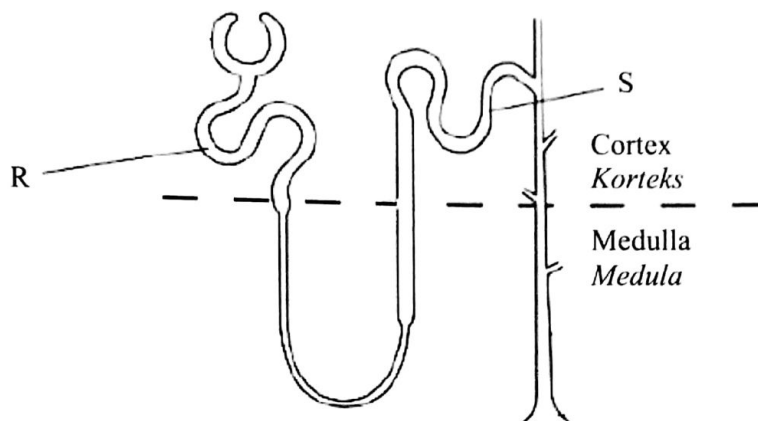


Diagram 23  
*Rajah 23*

What substances that contain in R and S?  
*Apakah bahan yang ada di dalam R dan S?*

	R	S
A.	Presence of glucose and amino acid <i>Ada glukosa dan asid amino</i>	Absence glucose and amino acid <i>Tiada glukosa dan asid amino</i>
B.	Absence glucose and amino acid <i>Tiada glukosa dan asid amino</i>	Presence of glucose and amino acid <i>Ada glukosa dan asid amino</i>
C.	Presence of glucose, absence of amino acid <i>Ada glukosa, tiada asid amino</i>	Absence of glucose, presence of amino acid <i>Tiada glukosa, ada asid amino</i>
D.	Absence of glucose, presence of amino acid <i>Tiada glukosa, ada asid amino</i>	Presence of glucose, absence of amino acid <i>Ada glukosa, tiada asid amino</i>

41. A bunch of ripe banana is placed in a basket that contains unripe mango. After a few days, the mango has ripened faster than usual.  
*Sesikat pisang yang masak diletakkan di dalam bakul berisi mangga muda. Selepas beberapa hari, didapati mangga itu masak lebih cepat daripada biasa.*

Which of the following substances stimulates the ripening of mango to be faster?  
*Antara bahan berikut, yang manakah merangsang pemasakan buah mangga yang lebih cepat?*

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

42. Diagram 24 shows the growth curve of an organism.  
*Rajah 24 menunjukkan lengkung pertumbuhan satu organisma.*

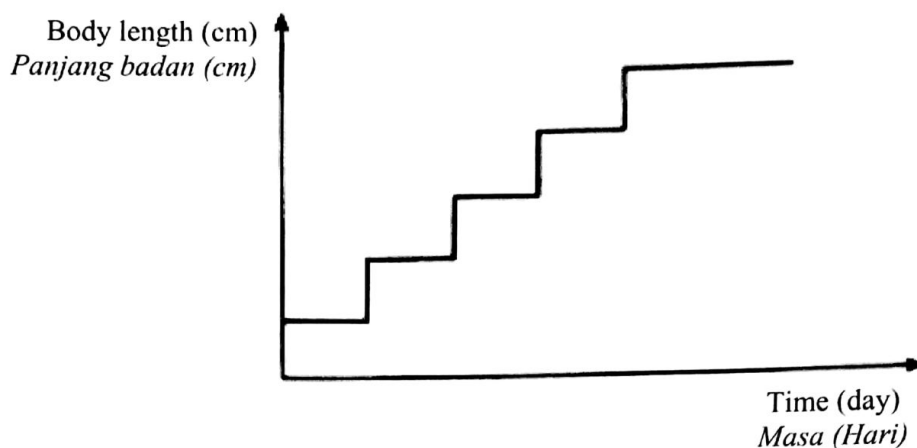


Diagram 24  
*Rajah 24*

What is the organism?  
*Apakah organisma tersebut?*

- |                                  |                                     |
|----------------------------------|-------------------------------------|
| A. Lizard<br><i>Cicak</i>        | B. Scorpion<br><i>Kala jengking</i> |
| C. Butterfly<br><i>Rama-rama</i> | D. Earthworm<br><i>Cacing tanah</i> |

43. Diagram 25 shows the longitudinal section of an ovary of a flowering plant.  
*Rajah 25 menunjukkan keratan membujur satu ovari tumbuhan berbunga.*

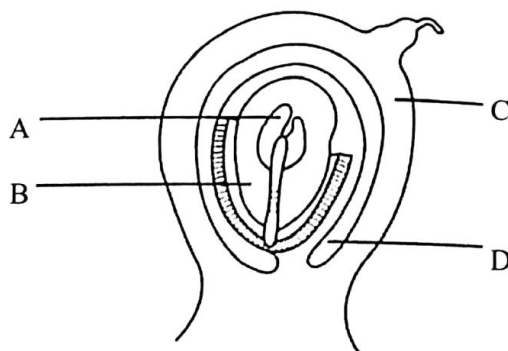


Diagram 25  
*Rajah 25*

Which of the parts labelled A, B, C and D will develop to become the seed coat?  
*Antara bahagian berlabel A, B, C dan D, yang manakah akan berkembang menjadi kulit biji?*

44. Diagram 26 shows the stages in the development of a follicle in human ovary.  
*Rajah 26 menunjukkan peringkat perkembangan satu folikel dalam ovari manusia.*

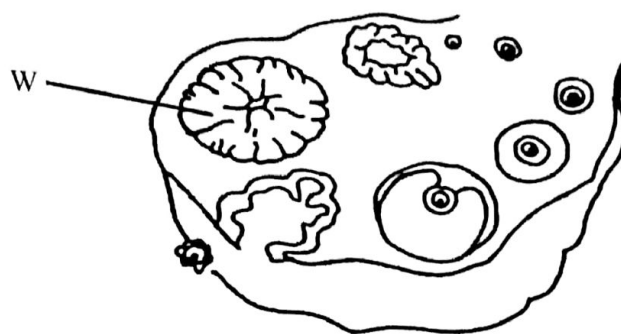


Diagram 26  
*Rajah 26*

What is the hormone secreted by W?

*Apakah hormon yang dirembeskan oleh W?*

- |  |   |
|--|---|
| A. Oestrogen<br><i>Estrogen</i>                    | B. Progesterone<br><i>Progesteron</i>                               |
| C. Luteinising hormone<br><i>Hormon peluteinan</i> | D. Follicle stimulating hormone<br><i>Hormon perangsang folikel</i> |
45. Diagram 27 shows a calendar of March 2019. A normal woman starts her menstruation on the 3<sup>rd</sup> of March 2019.  
*Rajah 27 menunjukkan kalendar Mac 2019. Seorang wanita normal mengalami haid bermula pada 3 Mac 2019.*

MARCH 2019						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

Diagram 27  
*Rajah 27*

Which of the following dates does the ovulation occur?

*Antara berikut bilakah tarikh berlakunya pengovulan?*

- |                                       |                                       |
|---------------------------------------|---------------------------------------|
| A. 3-5 March 2019<br>3-5 Mac 2019     | B. 7-11 March 2019<br>7-11 Mac 2019   |
| C. 16-19 March 2019<br>16-19 Mac 2019 | D. 24-27 March 2019<br>24-27 Mac 2019 |

46. Diagram 28 shows genes carried on a pair of homologous chromosomes.  
*Rajah 28 menunjukkan gen yang dibawa pada sepasang kromosom homolog.*

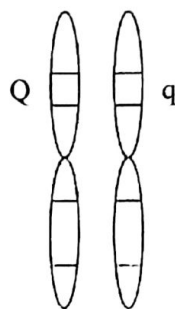
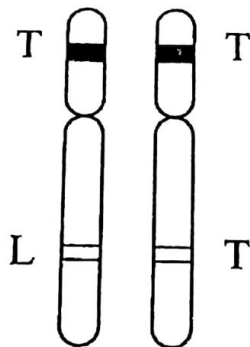


Diagram 28  
*Rajah 28*

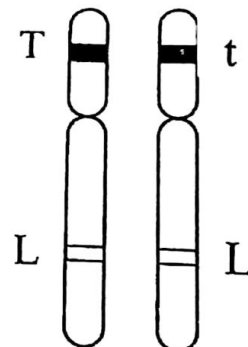
What does Qq represent?  
*Apakah yang diwakili oleh Qq?*

- |                                |                                  |
|--------------------------------|----------------------------------|
| A. Genotype<br><i>Genotip</i>  | B. Chromatin<br><i>Kromatin</i>  |
| C. Phenotype<br><i>Fenotip</i> | D. Chromosome<br><i>Kromosom</i> |
47. Which of the following diagrams represents alleles?  
*Antara berikut, rajah yang manakah mewakili alel?*

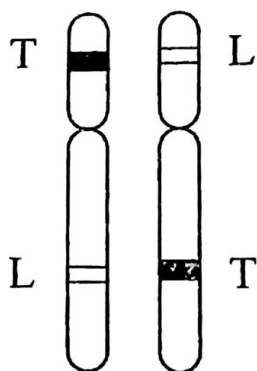
A.



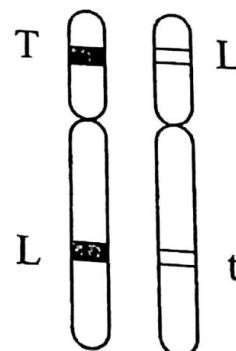
B.



C.



D.



48. Diagram 29 shows the inheritance of dimple trait in human. Dimple is a dominant trait and is represented by D while non-dimpled is a recessive trait and is represented by d.

Rajah 29 menunjukkan pewarisan trait berlesung pipit pada manusia.

Berlesung pipit adalah trait dominan dan diwakili oleh D manakala tanpa lesung pipit adalah trait resesif dan diwakili oleh d.

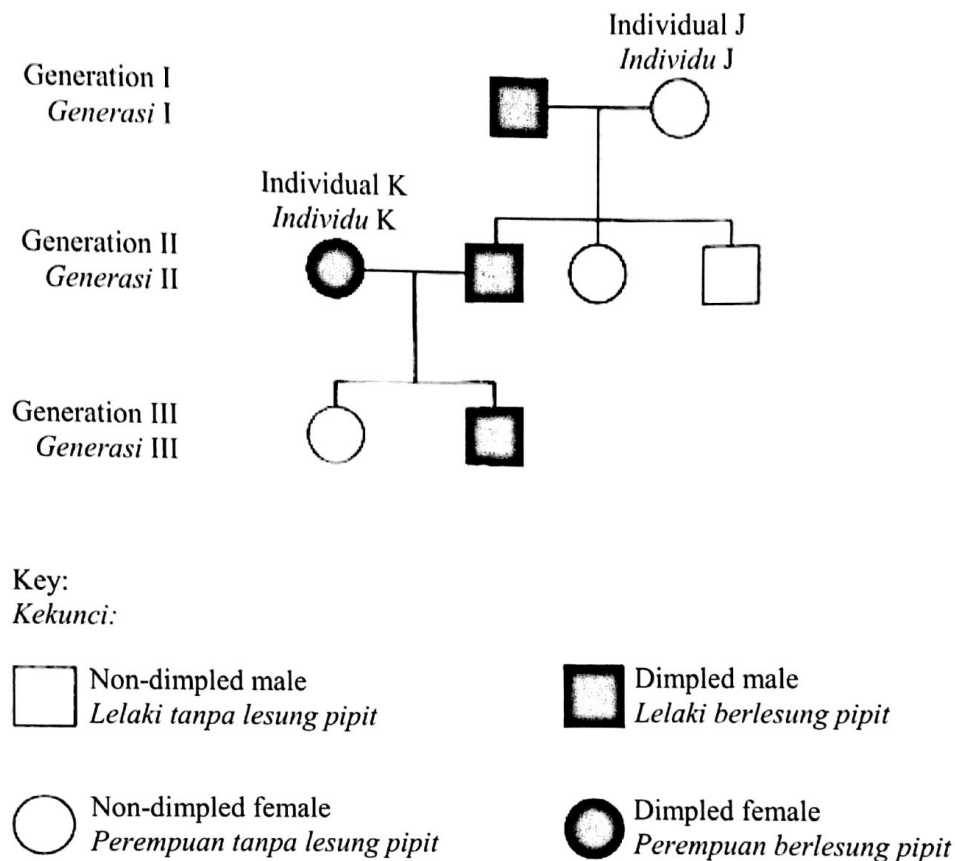


Diagram 29  
Rajah 29

Which of the following are the genotypes of individual J and K?

Antara berikut, yang manakah adalah genotip-genotip bagi individu J dan K?

	J	K
A.	Dd	Dd
B.	dd	DD
C.	dd	Dd
D.	DD	dd

49. Which of the following statements about discontinuous variation is true?  
*Antara berikut, pernyataan yang manakah adalah benar mengenai variasi tak selanjar?*
- A. It has intermediate characteristics  
*Mempunyai ciri-ciri perantaraan*
  - B. The characteristics can be measured  
*Ciri-ciri boleh diukur*
  - C. It is not affected by the environment  
*Tidak dipengaruhi oleh persekitaran*
  - D. It is controlled by a large number of genes  
*Dikawal oleh banyak gen*
50. The following information shows the inheritance of haemophilia in Mr. Z's family.  
*Maklumat berikut menunjukkan pewarisan penyakit haemofilia dalam keluarga En. Z.*

- Mr. Z is normal.  
*En. Z ialah normal.*
- He has five children as follows: Two haemophiliac sons,  
Two normal daughters, and  
One carrier daughter.  
*Beliau mempunyai enam orang anak seperti berikut:  
Dua orang anak lelaki hemofilia,  
Dua orang anak perempuan normal, dan  
Seorang anak perempuan pembawa.*

Based on the above information, what is the genotype of Mr. Z's wife?  
*Berdasarkan maklumat di atas, apakah genotip bagi isteri En. Z?*

- A.  $X^hX^h$
- B.  $X^HX^h$
- C.  $X^HX^H$
- D.  $X^hX$

**END OF QUESTION PAPER**  
**KERTAS SOALAN TAMAT**

**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 shading the correct space on the objective answer sheet.  
*Jawab dengan menghitamkan ruang yang betul pada kertas jawapan objektif.*
4. Shade only **one** space for each question.  
*Hitamkan **satu** ruang sahaja bagi setiap soalan.*
5. If you wish to change your answer, erase the shaded mark that you have made. Then shade the space for the new answer.  
*Sekiranya anda hendak menukar jawapan, padamkan tanda yang telah dibuat. Kemudian hitamkan jawapan yang baharu.*
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 scientific calculator.  
*Anda dibenarkan menggunakan kalkulator saintifik.*