

**SULIT**  
**4551/1**  
**Biologi**  
**Kertas 1**  
**Julai/**  
**Ogos**  
**2009**  
**1 1/4jam**



**PEPERIKSAAN PERCUBAAN BERSAMA**  
**SIJIL PELAJARAN MALAYSIA 2009**

**ANJURAN**  
**PERSIDANGAN KEBANGSAAN PENGETUA-PENGETUA**  
**SEKOLAH MENENGAH MALAYSIA CAWANGAN PERLIS**

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**BIOLOGI**

**Kertas 1**

**Satu jam lima belas minit**

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**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 kertas soalan ini.

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**Kertas soalan ini mengandungi 40 halaman bercetak**

1. Diagram 1 shows a plant cell.  
*Rajah 1 menunjukkan sel tumbuhan.*

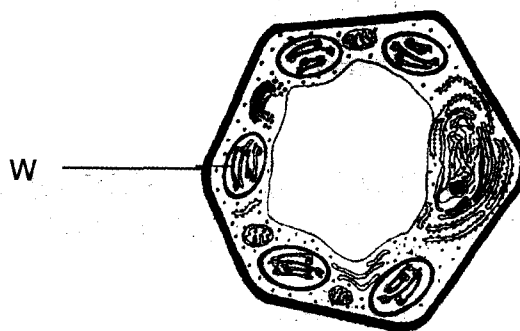


Diagram 1  
*Rajah 1*

What is organelle W ?

*Apakah organel W?*

- A. Nucleus  
*Nukleus*
- B. Ribosomes  
*Ribosom*
- C. Chloroplast  
*Kloroplas*
- D. Mitochondrion  
*Mitokondrion*

2. Which of the following statements is **true** about the cell and the presence of a particular organelle in high density?

*Pernyataan yang manakah antara berikut **benar** mengenai sel dan kehadiran organel tertentu dalam kepadatan tinggi?*

- I      Sperm – ribosome  
         *Sperma - ribosom*
  - II.     Muscle cell – mitochondrion  
         *Sel otot - mitokondrion*
  - III.    Liver cell – smooth endoplasmic reticulum  
         *Sel hati – jalinan endoplasma licin*
  - IV.    Palisade mesophyll cell – rough endoplasmic reticulum  
         *Sel mesofil palisad – jalinan endoplasma kasar*
- 
- A      I and II only  
         *I dan II sahaja*
  - B      II and III only  
         *II dan III sahaja*
  - C      III and IV only  
         *III dan IV sahaja*
  - D      I and IV only  
         *I dan IV sahaja*

3. Diagram 2 shows a strip of mustard green after it has been soaked in solution P.  
*Rajah 2 menunjukkan jalur sawi selepas direndam dalam larutan P.*

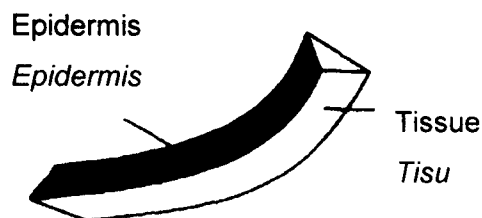


Diagram 2

*Rajah 2*

What is solution P?

*Apakah larutan P?*

- A Water  
*Air*
- B Salt solution  
*Larutan garam*
- C Sucrose solution  
*Larutan sukrosa*
- D Glucose solution  
*Larutan glukosa*

4. Diagram 3 shows a model of the plasma membrane.

*Rajah 3 menunjukkan model membran plasma.*

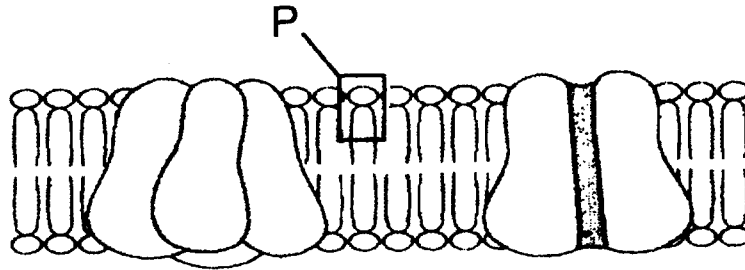


Diagram 3

*Rajah 3*

The part labelled P is known as.....

*Bahagian berlabel P ialah.....*

- A Cholesterol  
*Kolesterol*
- B Pore protein  
*Protein liang*
- C Phospholipid  
*Fosfolipid*
- D Carrier protein  
*Protein pembawa*

5. Diagram 4 shows diffusion through a semi-permeable membrane.

Rajah 4 menunjukkan resapan melalui membran separa telap.

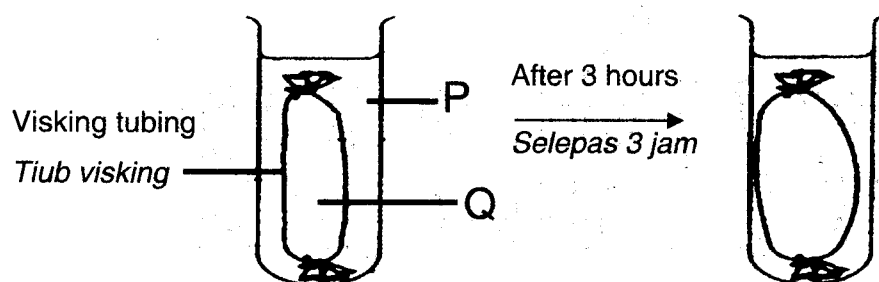


Diagram 4

Rajah 4

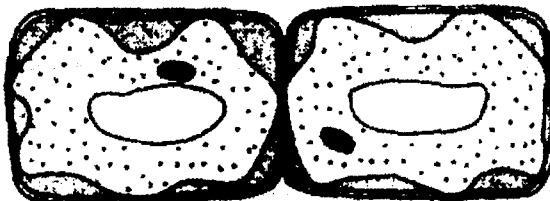
What are solutions P and Q?

Apakah larutan P dan Q?

	P	Q
A	30% sucrose solution 30% larutan sukrosa	Distilled water Air suling
B	30% sucrose solution 30% larutan sukrosa	20% sucrose solution 20% larutan sukrosa
C	Distilled water Air suling	30% sucrose solution 30% larutan sukrosa
D	Distilled water Air suling	Distilled water Air suling

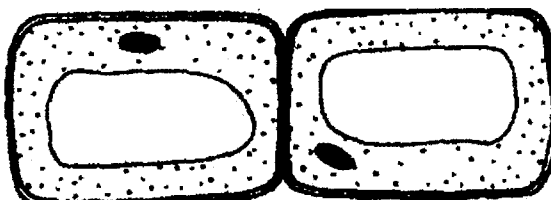
6. Diagram 5 shows the structure of plant cells before and after they have been immersed in solution Z.

*Rajah 5 menunjukkan struktur sel tumbuhan sebelum dan selepas direndam dalam larutan Z.*



(a) Before being immersed in solution Z

*Sebelum direndam dalam larutan Z*



(b) After being immersed in solution Z

*Selepas direndam dalam larutan Z*

Diagram 5

*Rajah 5*

Name solution Z and the process that occurs in the cells.

*Namakan larutan Z dan proses yang berlaku dalam sel.*

	<b>Solution Z</b> <b>Larutan Z</b>	<b>Process</b> <b>Proses</b>
<b>A</b>	20% sucrose solution 20% larutan sukrosa	Plasmolysis Plasmolisis
<b>B</b>	1% glucose solution 1% larutan glukosa	Osmosis Osmosis
<b>C</b>	10% glucose solution 10% larutan glukosa	Deplasmolysis Deplasmolisis
<b>D</b>	15% sodium chloride solution 15% larutan natrium klorida	Haemolysis Hemolisis

7. Four agar discs A, B, C and D were cut away from the starch agar in a petri dish. The holes were then filled with different substances as shown in Diagram 6. After three hours, iodine solution was added into the petri dish. Which holes labelled A, B, C or D would be surrounded by the largest yellow-brown region?

*Empat cakera agar A, B, C dan D dipotong daripada agar kanji di dalam piring petri. Lubang-lubang cakera tersebut diisi dengan bahan-bahan berbeza seperti yang ditunjukkan di dalam piring petri. Lubang cakera berlabel A, B, C atau D yang manakah dikelilingi oleh kawasan kuning perang terbesar?*

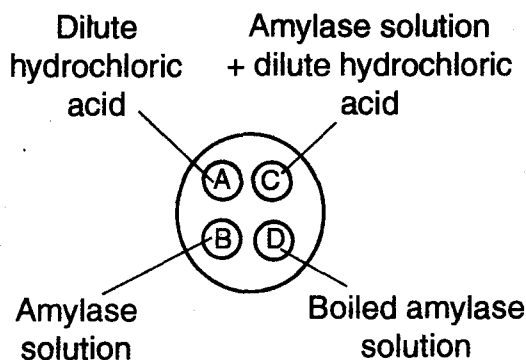
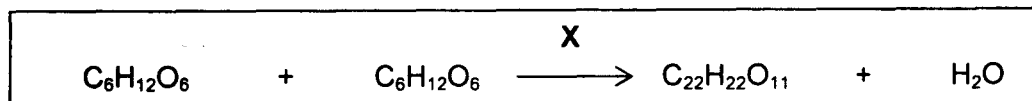


Diagram 6

Rajah 6

8. The following equation refers to a process that occurs in cell.

*Persamaan berikut merujuk kepada satu proses yang berlaku dalam sel.*



What is process X?

*Apakah proses X?*

- A    Condensation  
      *Kondensasi*
- B    Hydrolysis  
      *Hidrolisis*
- C    Oxidation  
      *Pengoksidaan*
- D    Reduction  
      *Penurunan*



9. Diagram 7 shows the formation of one triglyceride molecule and water.

Rajah 7 menunjukkan pembentukan satu molekul trigliserida dan air.

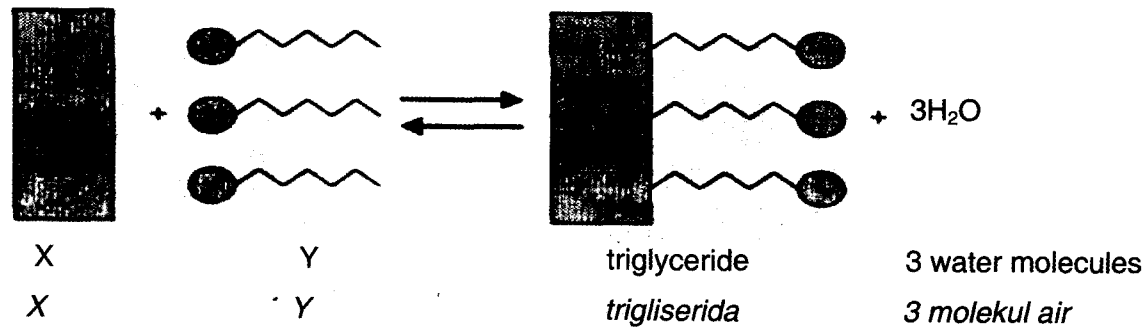


Diagram 7

Rajah 7

What do X and Y represent?

Apakah yang diwakili oleh X dan Y?

	X	Y
A	Fatty acids <i>Asid lemak</i>	Glycerol <i>Gliserol</i>
B	Glycerol <i>Gliserol</i>	Fatty acids <i>Asid lemak</i>
C	Monoglyceride <i>Monogliserida</i>	Fatty acids <i>Asid lemak</i>
D	Glycerol <i>Gliserol</i>	Monoglyceride <i>Monogliserida</i>

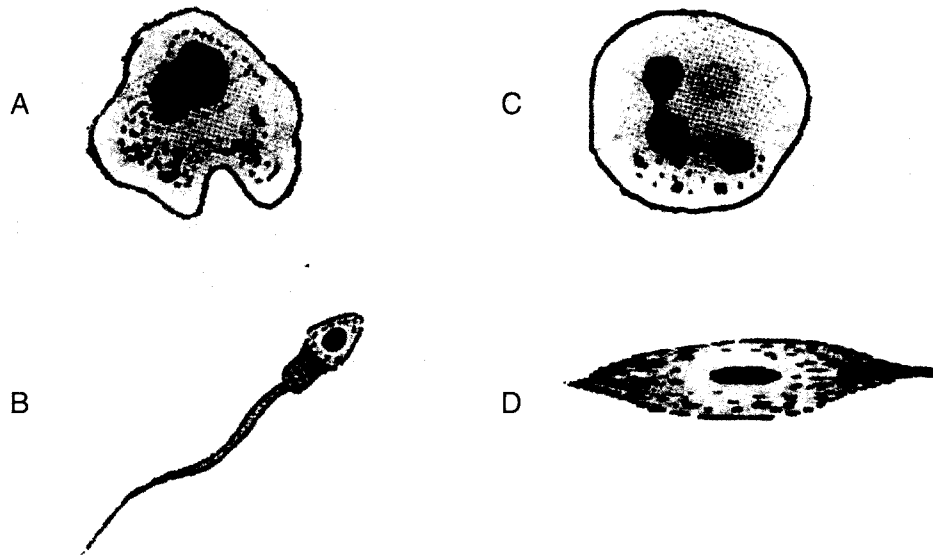
10. If the nucleus of a cell in an organism has 30 chromosomes, how many chromosomes are there in the new daughter cells that are formed through mitosis?

Jika nukleus dalam sel satu organisma mempunyai 30 kromosom, berapakah bilangan kromosom sel anak yang terbentuk melalui mitosis?

- A. 15
- B. 30
- C. 45
- D. 60

11. Which of the following cells is the product of meiosis?

*Sel yang manakah adalah hasil meiosis?*



12. A diploid number of chromosome in a plant cell is 16. Which of the following is **true** about the number of chromosomes in a guard cell and a pollen grain?

*Bilangan kromosom diploid bagi satu sel tumbuhan ialah 16. Pernyataan yang manakah **benar** tentang bilangan kromosom di dalam sel pengawal dan butir debunga?*

	Number of chromosomes <i>Bilangan kromosom</i>	
	Guard cell <i>Sel pengawal</i>	Pollen grain <i>Butir debunga</i>
A	8	8
B	8	16
C	16	8
D	16	16

13. Diagram 8 shows stages in mitosis in a somatic cell of frog.  
*Rajah 8 menunjukkan peringkat-peringkat mitosis dalam sel soma katak.*



P

Q

R

S

Diagram 8  
*Rajah 8*

Which of the following is the **correct** sequence for the stages?

*Antara yang berikut, yang manakah menunjukkan urutan yang betul ?*

- A. S, P, R, Q
  - B. P, Q, S, R
  - C. Q, S, P, R
  - D. P, S, R, Q
14. Which adaptations help the villi to absorb nutrients effectively?  
*Penyesuaian manakah yang membantu vilus menyerap nutrien secara berkesan?*
- I Abundant in number  
*Bilangan yang banyak*
  - II Thin walls  
*Dinding nipid*
  - III Blood capillaries  
*Kapilari darah*
  - IV Lacteals to absorb fatty acids and glycerol  
*Lakteal untuk menyerap asid lemak dan gliserol*
- A I and III only
  - B II and IV only
  - C I, II and III only
  - D I, II, III and IV

15. Diagram 9 shows part of the human alimentary canal.

*Rajah 9 menunjukkan sebahagian salur alimentari manusia.*

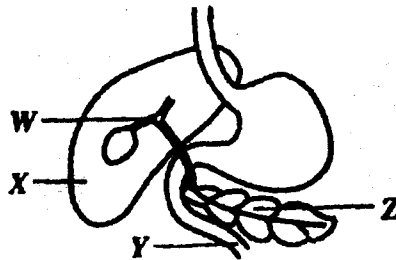


Diagram 9

*Rajah 9*

Which part labelled W, X, Y and Z produces bile juice?

*Antara bahagian berlabel W, X, Y dan Z yang manakah menghasilkan jus hempedu ?*

- A. W
- B. X
- C. Y
- D. Z

16.

- Patients see themselves fatter than what they actually are  
*Pesakit beranggapan diri mereka gemuk*
- There is deliberate dieting followed by self-induced vomiting  
*Diet yang melampau diikuti dengan memuntahkan makanan yang dimakan*
- Patients may die from severe weight loss and undernourished conditions  
*Pesakit akan mati akibat kehilangan berat badan dan kekurangan nutrien*

Based on the statements above, what disease does the patients most likely suffering from?

*Berdasarkan pernyataan diatas, apakah yang dialami oleh pesakit tersebut?*

- |                         |                |
|-------------------------|----------------|
| A. Anorexia nervosa     | C. Bulimia     |
| <i>Anorexia nervosa</i> | <i>Bulimia</i> |
| B. Obesity              | D. Gastritis   |
| <i>Kegemukan</i>        | <i>Gastrik</i> |

17. Diagram 10 shows levels of various food classes in a food pyramid.

*Rajah 10 menunjukkan aras pelbagai kelas makanan dalam piramid makanan.*

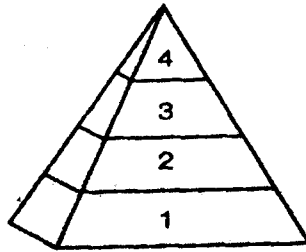


Diagram 10

*Rajah 10*

Which of the following shows the **correct** classes of food in the food pyramid?

*Antara pernyataan berikut yang manakah menunjukkan aras kelas makanan yang betul dalam piramid makanan?*

	1	2	3	4
A	Fats <i>Lemak</i>	Proteins <i>Protein</i>	Carbohydrates <i>Karbohidrat</i>	Vitamins and minerals <i>Vitamin dan garam mineral</i>
B	Carbohydrates <i>Karbohidrat</i>	Vitamins and minerals <i>Vitamin dan garam mineral</i>	Proteins <i>Protein</i>	Fats <i>Lemak</i>
C	Proteins <i>Protein</i>	Carbohydrates <i>Karbohidrat</i>	Fats <i>Lemak</i>	Vitamins and minerals <i>Vitamin dan garam mineral</i>
D	Carbohydrates <i>Karbohidrat</i>	Fats <i>Lemak</i>	Vitamins and minerals <i>Vitamin dan garam mineral</i>	Proteins <i>Protein</i>

18. Yeast is used in making bread. Yeast respire anaerobically to produce a substance which causes the dough to rise, making cavities appear in the bread.  
*Yis digunakan untuk membuat roti. Yis melakukan respirasi anaerobik untuk menghasilkan sejenis bahan yang menyebabkan adonan naik dan berongga di dalam roti.*

Based on the statement above, name the substance produced.

*Berdasarkan pernyataan di atas, namakan bahan yang terhasil*

- A oxygen  
*oksigen*
- B alcohol  
*alkohol*
- C carbon dioxide  
*karbon dioksida*
- D carbon monoxide  
*karbon monoksida*

19. Table 1 shows the observations of four tests on a food sample.

*Jadual 1 menunjukkan pemerhatian empat jenis ujian kelas makanan ke atas satu sampel makanan.*

Test	Results
A few drops of iodine solution is added <i>Beberapa titis larutan iodin ditambah.</i>	No change <i>Tiada perubahan</i>
Sodium hydroxide solution is added, followed by a few drops of copper (II) sulphate solution <i>Larutan natrium hidroksida ditambah dan diikuti dengan penambahan larutan kuprum (II) sulfat.</i>	Blue colour solution is formed <i>Larutan berwarna biru terbentuk</i>
Benedict's solution is added and the mixture is boiled <i>Larutan Benedict ditambah dan campuran dididihkan</i>	Brick red precipitate is formed <i>Mendakan merah bata terbentuk</i>
Shaken in ethanol <i>Digoncangkan dalam etanol</i>	Emulsion is formed <i>Emulsi terbentuk</i>

Table 1

*Jadual 1*

What type of nutrients are found in the food sample?

*Apakah jenis nutrien yang terdapat dalam sampel makanan itu?*

- A** Lipids and starch                      **B** Proteins and starch  
*Lipid dan kanji*                              *Protein dan kanji*
- C** Lipids and reducing sugar   **D** Proteins and reducing sugar  
*Lipid dan gula penurun*                      *Protein dan gula penurun*

20. Diagram 11 shows the longitudinal section of a thorax viewed from the side.

*Rajah 11 menunjukkan keratan membujur toraks dari pandangan sisi.*

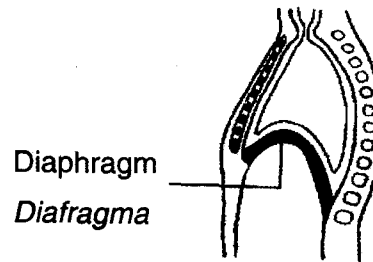


Diagram 11

*Rajah 11*

During the breathing process, which of the following occurs when the diaphragm is arch shaped?

*Semasa proses pernafasan, yang manakah berlaku apabila diafragma melengkung ke atas.*

	<b>External intercostal muscles</b> <i>Otot interkosta luar</i>	<b>Ribcage</b> <i>Sangkar rusuk</i>	<b>Movement of air</b> <i>Pergerakan udara</i>
A	Relax <i>Mengendur</i>	Moves downwards and inwards <i>Bergerak ke bawah dan ke dalam</i>	Air is forced out of the lungs <i>Udara ditolak keluar dari peparu</i>
B	Relax <i>Mengendur</i>	Moves upwards and outwards <i>Bergerak ke atas dan keluar</i>	Air is forced out of the lungs <i>Udara ditolak keluar dari peparu</i>
C	Contract <i>Mengecut</i>	Moves downwards and inwards <i>Bergerak ke bawah dan ke dalam</i>	Air is sucked into the lungs <i>Udara disedut ke dalam peparu</i>
D	Contract <i>Mengecut</i>	Moves upwards and outwards <i>Bergerak ke atas dan keluar</i>	Air is sucked into the lungs <i>Udara disedut ke dalam peparu</i>



21. Diagram 12 shows the respiratory organ of three organisms.

*Rajah 12 menunjukkan organ respirasi bagi tiga organisma.*

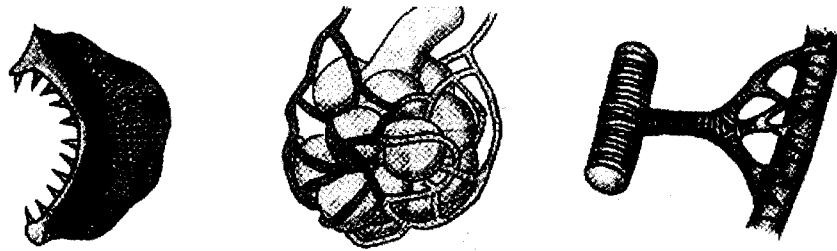


Diagram 12

*Rajah 12*

Which of the following is the adaptation for gaseous exchange in the three respiratory surfaces?

*Antara pernyataan berikut yang manakah ciri penyesuaian pertukaran gas untuk ketiga-tiga organ respirasi itu?*

- A Supported by chitin rings  
*Disokong oleh gelang kitin*
- B Covered with blood capillaries  
*Diliputi dengan kapilari darah*
- C Have large surface area to volume ratio  
*Mempunyai luas permukaan per isipadu yang besar*
- D Have many branches  
*Mempunyai banyak cabang*

22. Diagram 13 shows an experiment to determine the energy value of a cashew nut.

*Rajah 13 menunjukkan satu eksperimen untuk menentukan nilai tenaga kacang gajus.*

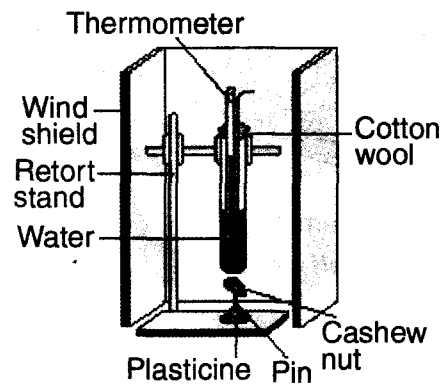


Diagram 13

*Rajah 13*

Volume of water = 20 cm<sup>3</sup>

*Isipadu air*

Initial water temperature = 26°C

*Suhu awal air*

Final temperature water = 78°C

*Suhu akhir air*

Mass of cashew nut = 0.9g

*Jisim kacang gajus*

Specific latent heat of water = 4.2 J g<sup>-1</sup>°C<sup>-1</sup>

*Haba pendam air*

What is the energy value of the cashew nut per gram?

*Apakah nilai tenaga satu gram kacang gajus?*

A 1.45 kJ

B 2.23 kJ

C 4.85 kJ

D 9.83 kJ

23. Diagram 14 shows a pyramid of numbers.

*Rajah 14 menunjukkan satu piramid nombor.*

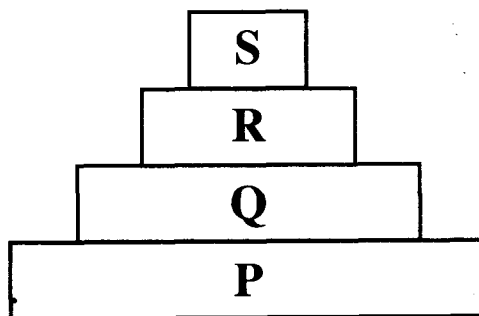


Diagram 14

*Rajah 14*

Which organisms correspond correctly to the pyramid of numbers?

*Organisma yang manakah dipadankan dengan betul dalam piramid nombor ?*

	P	Q	R	S
A	Grass <i>Rumput</i>	Grasshopper <i>Belalang</i>	Small bird <i>Burung kecil</i>	Snake <i>Ular</i>
B	Grass <i>Rumput</i>	Larvae <i>Larva</i>	Grasshopper <i>Belalang</i>	Bird <i>Burung</i>
C	Paddy <i>Padi</i>	Larvae <i>Larva</i>	Snake <i>Ular</i>	Bird <i>Burung</i>
D	Paddy <i>Padi</i>	Grasshopper <i>Belalang</i>	Bird <i>Burung</i>	Larvae <i>Larva</i>

24. The capture, mark, release and recapture technique can be used to estimate a population.

What are the precautions that should be taken when this technique is used?

*Teknik tangkap, tanda, lepas dan tangkap semula boleh digunakan untuk menganggar saiz populasi. Apakah langkah berjaga-jaga yang perlu diambil kira semasa menggunakan teknik ini?*

I The animals should be captured randomly.

*Haiwan tersebut ditangkap secara rawak.*

II The marks used should not be too easily spotted by predators.

*Tanda yang digunakan tidak begitu ketara kepada pemangsa.*

III The captured animals should be recaptured immediately after release.

*Haiwan yang telah ditangkap hendaklah ditangkap semula dengan segera.*

IV The population being studied should be fairly stable: a migratory birds should not be chosen.

*Populasi yang hendak dikaji hendaklah stabil : burung yang berhijrah tidak sesuai dipilih.*

A II and IV only

*II dan IV sahaja*

B I and III only

*I dan III sahaja*

C I, II and IV only

*I, II dan IV sahaja*

D II, III and IV only

*II, III dan IV sahaja*

25. Which of the following is the disease that is transmitted through direct contact?

*Antara penyakit berikut yang manakah disebarikan melalui sentuhan secara langsung ?*

A Dengue

*Denggi*

B Cholera

*Kolera*

C Malaria

*Malaria*

D Ringworm

*Kurap*

26. Which of the following shows an unplanned development?

*Antara berikut yang manakah menunjukkan pembangunan yang tidak terancang?*

- A Putting an industrial zone in a housing area  
*Zon perindustrian dikawasan perumahan*
- B Improving public transport system  
*Meningkatkan sistem pengangkutan awam*
- C Planting of trees in housing areas and along the roads  
*Menanam pokok dikawasan perumahan dan disepanjang jalan*
- D Banned open burning of rubbish and forest.  
*Mengharamkan pembakaran sampah secara terbuka*

27. Which of the following is the main greenhouse gas?

*Antara berikut yang manakah gas utama penyebab rumah hijau?*

- A CFC  
*CFC*
- B Ozone  
*Ozon*
- C Carbon dioxide  
*Karbon dioksida*
- D Carbon monoxide  
*Karbon monoksida*

28. Diagram 15 shows three different types of interactions between organisms.

*Rajah 15 menunjukkan tiga jenis interaksi yang berbeza antara organisma.*

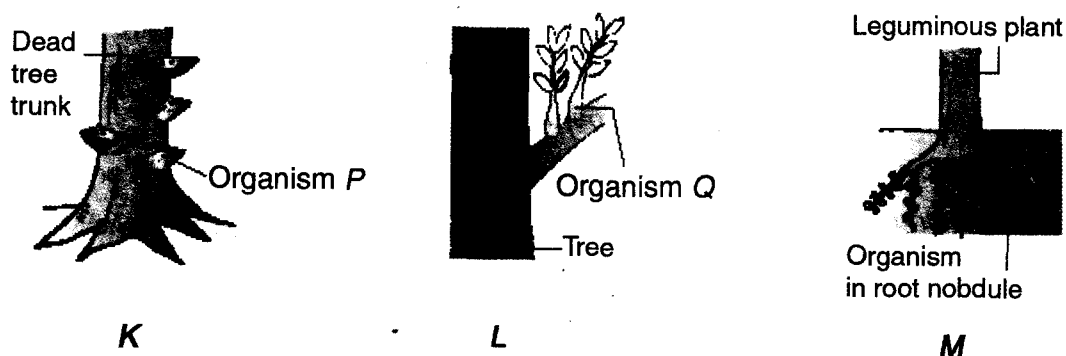


Diagram 15

*Rajah 15*

Which interactions are correct of K, L and M ?

*Antara interaksi berikut, yang manakah benar tentang K, L dan M?*

	K	L	M
A	Mutualism	Commensalism	Parasitism
B	Mutualism	Parasitism	Saprophytism
C	Saprophytism	Commensalism	Mutualism
D	Parasitism	Commensalism	Mutualism

29. Table 2 shows the stages involved in the destruction of the ozone layer.

*Jadual 2 menunjukkan peringkat yang terlibat dalam penipisan lapisan ozon*

P - Ultraviolet rays break the bonds in CFCs

*Sinar ultraungu memecahkan ikatan CFCs*

Q - Free oxygen atoms break the bonds in chlorine monoxide

*Oksigen bebas memecahkan ikatan klorin monoksida*

R - Chlorine atoms destroy ozone molecules

*Atom klorin memusnahkan molekul ozon*

S - Free chlorine atoms react with ozone to produce chlorine monoxide and free oxygen molecule

*Atom klorin bebas bertindak dengan ozon untuk membentuk klorin monoksida dan molekul oksigen bebas*

Table 2

*Jadual 2*

Which is the **correct** sequence of the events?

Yang manakah *urutan kejadian yang betul* dalam peristiwa tersebut?

- A P, Q, S, R
- B P, S, Q, R
- C S, P, R, Q
- D Q, S, P, R

30. Diagram 16 shows the human heart and the blood vessels connected to it.

*Rajah 16 menunjukkan jantung manusia dan salur-salur darah yang bersambungan dengannya.*

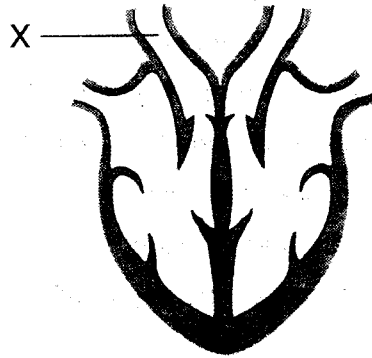


Diagram 16

*Rajah 16*

Name blood vessel X.

*Namakan salur darah X.*

- A Aorta  
*Aorta*
- B Pulmonary vein  
*Vena pulmonari*
- C Pulmonary artery  
*Arteri pulmonari*
- D Vena cava  
*Vena kava*



31. Which of the following sequence of blood clotting mechanism is **correct**?

*Antara berikut yang manakah urutan mekanisma pembekuan darah yang betul ?*

- A Fibrinogen changes into fibrin → Prothrombin changes into thrombin → Platelet plug formed → Thromboplastin released → Scab formed.  
*Fibrinogen bertukar kepada fibrin → Protrombin bertukar kepada trombin → Plak Platlet terbentuk → Tromboplastin dibebaskan → keruping terbentuk*
- B Scab formed → Fibrinogen changes into fibrin → Thromboplastin released → Prothrombin changes into thrombin → Platelet plug formed.  
*keruping terbentuk → Fibrinogen bertukar kepada fibrin → Tromboplastin dibebaskan → Protrombin bertukar kepada trombin → Plak Platlet terbentuk*
- C Platelet plug formed → Thromboplastin released → Prothrombin changes into thrombin → Fibrinogen changes into fibrin → Scab formed.  
*Plak Platlet terbentuk → Tromboplastin dibebaskan → Protrombin bertukar kepada trombin → Fibrinogen bertukar kepada fibrin → keruping terbentuk*
- D Fibrinogen changes into fibrin → Scab formed → Thromboplastin released → Prothrombin changes into thrombin → Platelet plug formed.  
*Fibrinogen bertukar kepada fibrin → keruping terbentuk → Tromboplastin dibebaskan → Protrombin bertukar kepada trombin → Plak Platlet terbentuk*

32. Diagram 17 shows a mechanism used to destroy antigens.

*Rajah 17 menunjukkan mekanisma yang digunakan untuk memusnahkan antigen.*

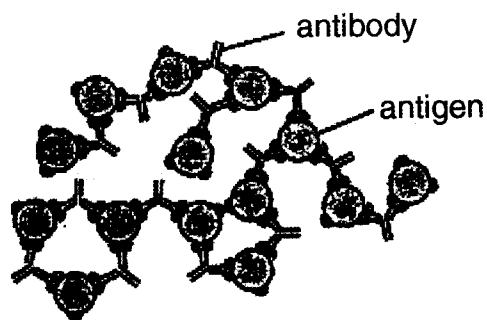


Diagram 17

*Rajah 17*

What is the mechanism above?

Apakah mekanisma yang ditunjukkan diatas?

- A Lysis  
*Lisis*
- B Agglutination  
*Penggumpalan*
- C Phagocytosis  
*Fagositosis*
- D Neutralisation  
*Peneutralan*

33. Which of the following are risk factors related to cardiovascular diseases?

*Antara berikut yang manakah risiko berkaitan penyakit kardiovaskular ?*

- I Family history  
*Sejarah keluarga*
- II Diet low in polyunsaturated fats  
*Diet rendah dalam lemak tepu*
- III Obesity  
*Kegemukan*
- IV Age  
*Umur*

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

34. Diagram 18 shows the condition of guard cells during the day and at night and the movement of P and Q.

Rajah 18 menunjukkan keadaan sel pengawal ketika waktu siang dan malam dan pergerakan P dan Q.

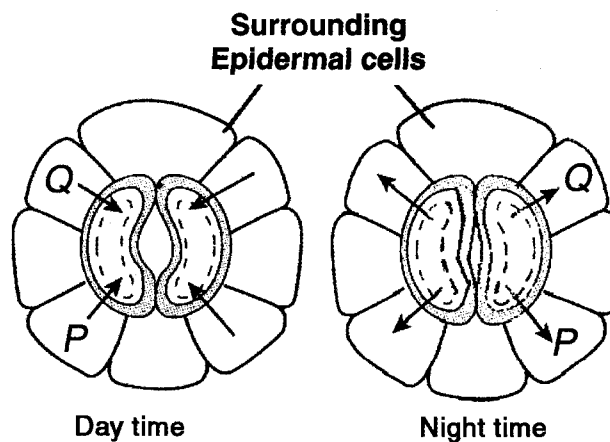


Diagram 18

Rajah 18

What are P and Q?

Apakah P dan Q ?

	P	Q
A	Water Air	Starch Kanji
B	Water Air	Glucose Glukosa
C	Glucose Glukosa	Water Air
D	Ion $K^+$ Ion $K^+$	Water Air

35. A group of students carried out an experiment to investigate the effect of air movement on the rate of transpiration by using a potometer as shown in Diagram 19.

*Sekumpulan pelajar menjalankan eksperimen untuk menyiasat kesan pergerakan udara ke atas kadar transpirasi dengan menggunakan potometer seperti dalam Rajah 19.*

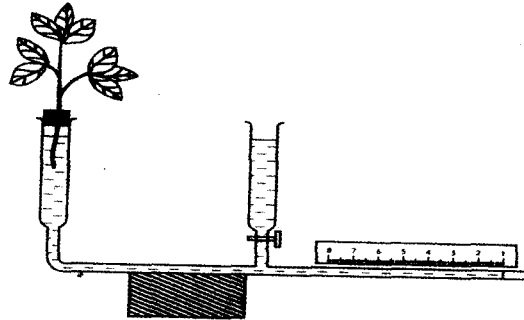


Diagram 19

*Rajah 19*

Table 3 shows the positions of the water meniscus at the beginning and at the end of the experiment.

*Jadual 3 menunjukkan kedudukan meniskus air pada permulaan dan akhir eksperimen itu.*

Time (minute) <i>Masa (minit)</i>	Position of meniscus <i>Kedudukan meniskus</i>
0	<p>Beginning of experiment <i>Permulaan eksperimen</i></p>
15	<p>End of experiment <i>Akhir eksperimen</i></p>

Table 3 / *Jadual 3*

Calculate the rate of transpiration.

*Kira kadar transpirasi*

- A 0.2 cm minute<sup>-1</sup>  
0.2 cm minit<sup>-1</sup>
- B 0.3 cm minute<sup>-1</sup>  
0.3 cm minit<sup>-1</sup>
- C 0.4 cm minute<sup>-1</sup>  
0.4 cm minit<sup>-1</sup>
- D 0.5 cm minute<sup>-1</sup>  
0.5 cm minit<sup>-1</sup>

36. Diagram 20 shows the longitudinal section of a hinge joint. What is the function of the part labelled M?

*Rajah 20 menunjukkan keratan membujur sendi engsel. Apakah fungsi bahagian berlabel M?*

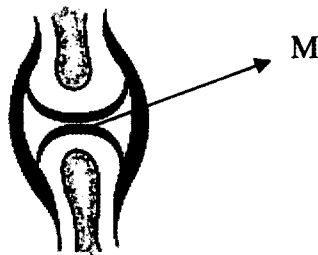


Diagram 20  
*Rajah 20*

- A To give support  
*Untuk memberikan sokongan*
- B To joint two bones together  
*Untuk menyambungkan dua tulang bersama*
- C To connect muscles to bone  
*Untuk menghubungkan otot dengan tulang*
- D To reduce friction between two bones  
*Untuk mengurangkan geseran antara dua tulang*

37. Which of the following are adaptations of aquatic plants to float ?

*Antara berikut yang manakah merupakan penyesuaian tumbuhan akuatik untuk terapung ?*

- I Xylem tissues  
*Tisu xilem*
- II Turgidity of cells  
*Kesegahan sel*
- III Aerenchyma tissues  
*Tisu arenkima*
- IV Large air spaces  
*Rongga udara yang besar*

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

38. Diagram 21 shows a human lumbar vertebra.

*Rajah 21 menunjukkan vertebra lumbar manusia.*

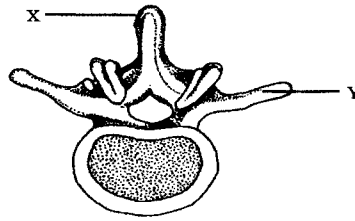


Diagram 21

*Rajah 21*

What is the function of X and Y ?

*Apakah fungsi X dan Y ?*

- A Protection for spinal cord  
*Melindungi saraf tunjang*
- B Surfaces for muscle attachment  
*Permukaan untuk perlekatan otot*
- C Surfaces for vertebral joints  
*Permukaan untuk sendi vertebra*
- D Surfaces for rib articulation  
*Permukaan untuk bersendi dengan tulang rusuk*

39. The Diagram 22 shows an elbow joint. Which of the following parts labelled A, B, C or D is tough and elastic?

*Rajah 22 menunjukkan sendi siku. Antara bahagian yang berlabel A, B, C atau D, yang manakah adalah kuat dan kenyal?*

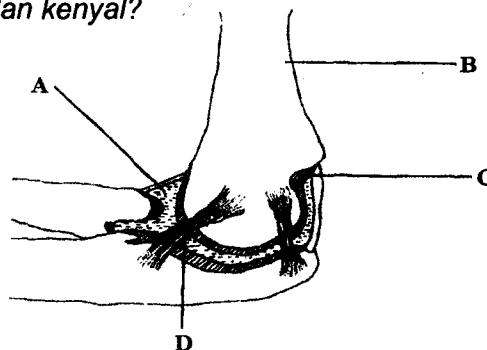


Diagram 22

*Rajah 22*



40. Diagram 23 shows a cross section of the spinal cord of a mammal. Which region contains the axons of the efferent neurons?  
*Rajah 23 menunjukkan keratan rentas saraf tunjang mamalia.*  
*Bahagian manakah mengandungi akson bagi neuron eferen ?*

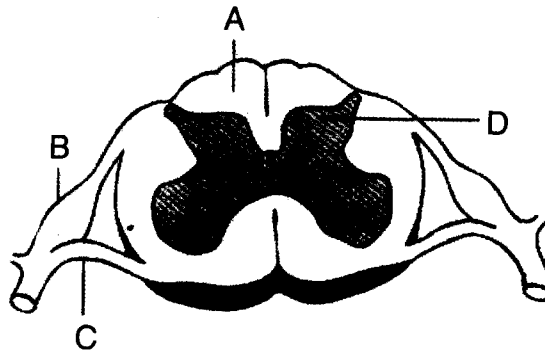


Diagram 23  
*Rajah 23*

41. A person is chased by a fierce dog. What are his reactions?  
*Seseorang telah dikejar oleh seekor anjing yang garang. Apakah reaksinya?*
- I The metabolic rate increases.  
*Kadar metabolisma meningkat.*
  - II The blood glucose level increases.  
*Aras glukosa meningkat.*
  - III The rate of heartbeat decreases.  
*Kadar denyutan jantung menurun.*
- A I only  
*I sahaja*
- B I and II only  
*I dan II sahaja*
- C II and III only  
*II dan III sahaja*
- D I, II and III  
*I, II dan III*

42. Diagram 24 shows a part of the cross section of an ovary.

*Rajah 24 menunjukkan sebahagian daripada keratan rentas ovari.*

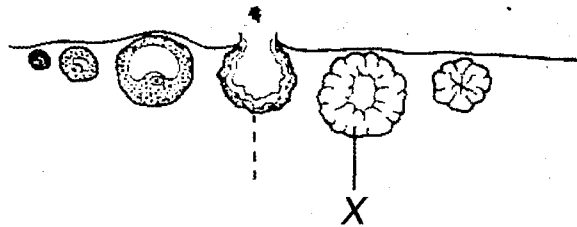


Diagram 24

*Rajah 24*

Name the hormone produced by structure X.

*Namakan hormon yang dihasilkan oleh struktur X.*

- A Oestrogen  
*Estrogen*
- B Progesterone  
*Progesteron*
- C Luteinising Hormone  
*Hormon peluteinan*
- D Follicle – stimulating Hormone  
*Hormon perangsang folikel*

43. Diagram 25 shows the structure of a flower.

Which part of the flower produces pollen grain?

*Rajah 25 menunjukkan struktur bunga.*

*Bahagian manakah yang menghasilkan butir debunga?*

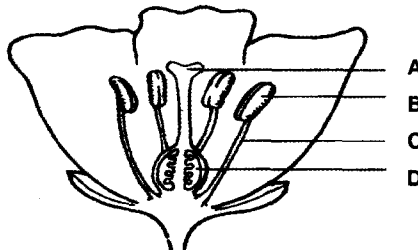


Diagram 25

*Rajah 25*

44. What is the probability for a husband and wife to get a baby boy?  
 Apakah kebarangkalian suami dan isteri untuk mendapatkan anak lelaki?

- |   |     |   |      |
|---|-----|---|------|
|   | 25% |   | 75%  |
| A | 25% | C | 75%  |
|   | 50% |   | 100% |
| B | 50% | D | 100% |

45. Diagram 26 shows a karyotype of a girl suffering from a type of genetic disease.  
 Rajah 26 menunjukkan kariotip seorang kanak-kanak perempuan yang menghidap sejenis penyakit genetik.

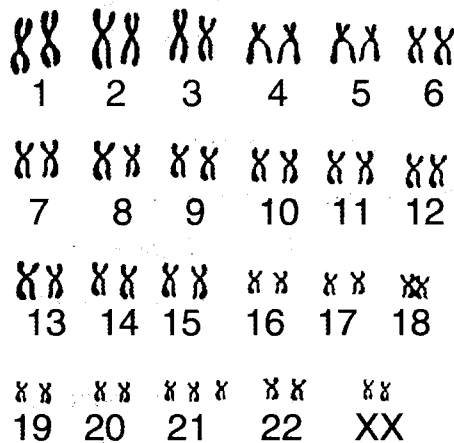


Diagram 26  
 Rajah 26

What disease does the girl suffers from?  
 Apakah penyakit yang dihidapi oleh kanak-kanak perempuan itu?

- A Haemophilia  
*Hemofilia*
- B Colour blindness  
*Rabun warna*
- C Down's syndrome  
*Sindrom Down*
- D Turner's syndrome  
*Sindrom Turner*

46. Diagram 27 shows chromosome mutation process.

*Rajah 27 menunjukkan satu proses mutasi kromosom.*

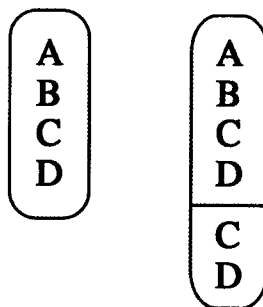


Diagram 27

*Rajah 27*

What type of chromosomal mutation shown?

*Apakah jenis mutasi kromosom yang ditunjukkan?*

A Inversion

*Penyongsangan*

B Duplication

*Penggandaan*

C Deletion

*Pelenyapan*

D Translocation

*Translokasi*

47. Diagram 28 shows a human nephron.  
*Rajah 28 menunjukkan nefron manusia.*

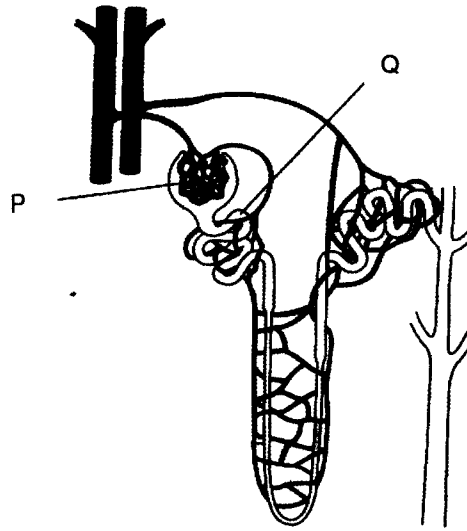


Diagram 28  
*Rajah 28*

What happens to the blood at P and to the amino acids at Q?  
*Apakah yang terjadi kepada darah di P dan asid amino di Q?*

	P	Q
A	Reabsorption <i>Serapan semula</i>	Active transport <i>Pengangkutan aktif</i>
B	Secretion <i>Rembesan</i>	Ultrafiltration <i>Ultraturasan</i>
C	Ultrafiltration <i>Ultraturasan</i>	Reabsorption <i>Serapan semula</i>
D	Ultrafiltration <i>Ultraturasan</i>	Active transport <i>Pengangkutan aktif</i>

48. Diagram 29 shows two types of variation in humans.

Rajah 29 menunjukkan dua jenis variasi pada manusia.

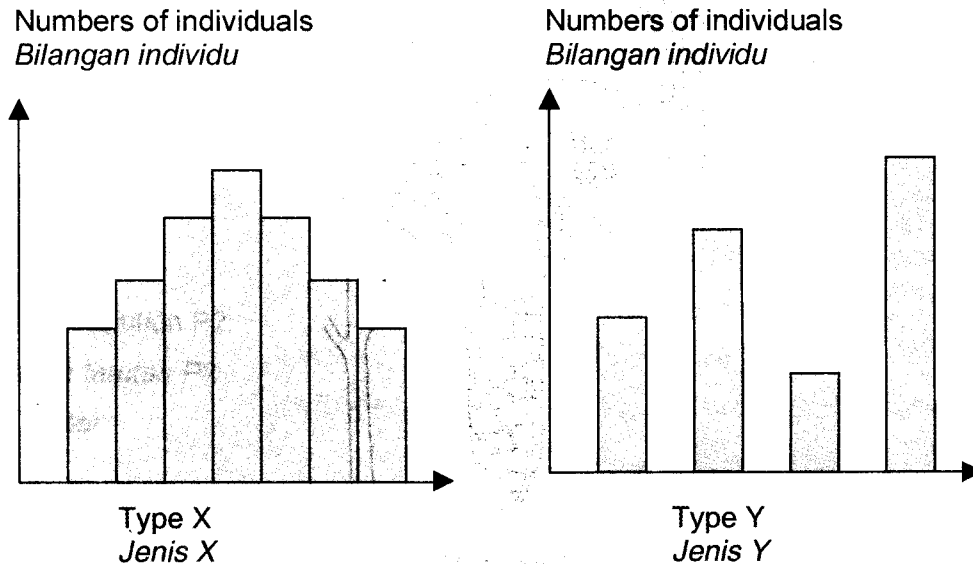


Diagram 29

Rajah 29

Which of the following are examples of variation for type X and type Y?

Antara berikut yang manakah contoh variasi jenis X dan jenis Y?

	Type X Jenis X	Type Y Jenis Y
A	Type of hair Jenis rambut	Height Ketinggian
B	Intelligence Kepintaran	Blood type Jenis darah
C	Ability to roll the tongue Kebolehan menggulung lidah	Eye colour Warna anak mata
D	Weight Berat	Intelligence Kepintaran

49. Diagram 30 shows a process that occur during meiosis I.  
*Rajah 30 menunjukkan proses yang berlaku semasa meiosis I.*

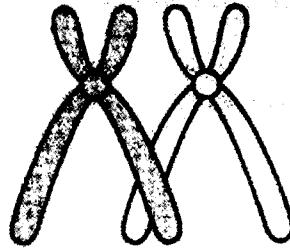


Diagram 30  
*Rajah 30*

What is the process shown in Diagram 30 ?  
*Apakah proses yang ditunjukkan dalam Rajah 30 ?*

- A Chiasma  
*Kiasma*
  - B Synapsis  
*Sinapsis*
  - C Crossing over  
*Pindah silang*
  - D Independent assortment  
*Penyusunan bebas*
50. Which of the following are the environmental factors that cause variation?  
*Antara berikut yang manakah faktor-faktor persekitaran yang menyebabkan variasi?*
- I Humidity  
*Kelembapan*
  - II Temperature  
*Suhu*
  - III Soil fertility  
*Kesuburan tanah*
  - IV Light intensity  
*Keamatan cahaya*
- A I and III only  
*I dan III sahaja*
  - B II and IV only  
*II dan IV sahaja*
  - C I, II and III only  
*I, II dan III sahaja*
  - D I, II, III and IV  
*I, II, III dan IV*

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 blackening the correct space on the answer sheet.  
*Jawab dengan menghitamkan ruangan yang betul pada kertas jawapan.*
4. Blacken only **one** space for each question.  
*Hitamkan **satu** ruangan 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 menukarkan 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 dilukiskan mengikut skala kecuali dinyatakan.*
7. You may use a non-programmable scientific calculator.  
*Anda dibenarkan menggunakan kalkulator saintifik yang tidak boleh diprogram.*