

**SULIT**  
4551/1  
**Biology**  
**Kertas 1**  
**Ogos 2015**  
**1 ¼ jam**



**MODUL PENINGKATAN PRESTASI TINGKATAN 5**  
**TAHUN 2015**  
**MAJLIS PENGETUA SEKOLAH MALAYSIA (KEDAH)**

**MODUL 2**

**BIOLOGI**  
**Kertas 1**

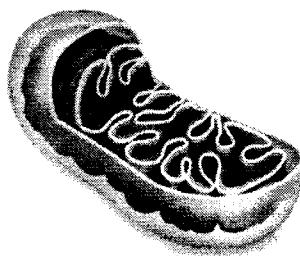
**Satu Jam Lima Belas Minit**

**JANGAN BUKA MODUL INI SEHINGGA DIBERITAHU**

1. Modul ini mengandungi **50** soalan .
2. Jawab semua soalan.
3. Kertas soalan ini adalah dalam dwibahasa.
4. Soalan dalam bahasa Inggeris mendahului soalan yang sepadan dalam bahasa Melayu.

**Kertas soalan ini mengandungi 27 muka surat bercetak.**

- 1 Diagram 1 shows an organelle found in cells.  
*Rajah 1 menunjukkan organel yang terdapat di dalam sel.*

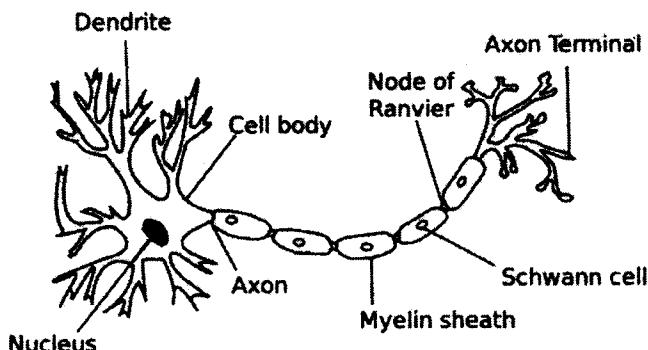


**Diagram 1/Rajah 1**

Which of the following processes occurs in this organelle?  
*Antara proses berikut, yang manakah berlaku dalam organel ini?*

- |   |   |
|---|---|
| A Photosynthesis<br><i>Proses fotosintesis</i>    | C Synthesis of enzyme<br><i>Sintesis enzim</i>    |
| B Synthesis of protein<br><i>Sintesis protein</i> | D Generation of energy<br><i>Penjanaan tenaga</i> |

- 2 Diagram 2 shows a type of cell.  
*Rajah 2 menunjukkan sejenis sel.*



**Diagram 2/Rajah 2**

What is the cell?  
*Apakah sel ini?*

- |  |   |
|--|---|
| A Nerve cell<br><i>sel saraf</i>           | C Epithelial cell<br><i>Sel epitelial</i> |
| B Root hair cell<br><i>Sel akar rambut</i> | D Sperm cell<br><i>Sel sperma</i>         |

- 3 Diagram 3 shows the feeding process of *Amoeba* sp.  
*Rajah 3 menunjukkan proses pemakanan oleh Amoeba sp.*



Diagram 3/Rajah 3

Which structure is not involved in the process shown in the diagram 3 ?  
*Struktur manakah tidak terlibat dalam proses yang ditunjukkan dalam rajah 3 ?*

- |                            |   |
|----------------------------|---|
| A Lysosome / lisosom       | C Food vacuole / vakuol makanan         |
| B Pseudopodia/pseudopodium | D Contractile vacuole / vakuol mengacak |
- 4 Diagram 4 shows the movement of molecules M across the plasma membrane through process X.  
*Rajah 4 menunjukkan pergerakan molekul M merentas membran plasma melalui proses X.*

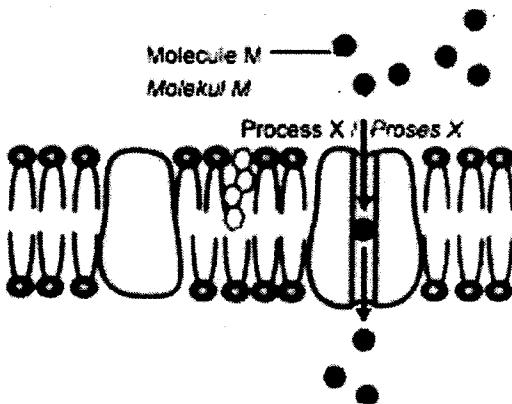


Diagram 4 / Rajah 4

What is process X ?  
*Apakah proses X ?*

- A Osmosis / Osmosis
- B Simple diffusion / Resapan ringkas
- C Active transport / Pengangkutan aktif
- D Facilitated diffusion / Resapan berbantu

- 5 Diagram 5 shows a plant cell.  
*Rajah 5 menunjukkan sel tumbuhan.*

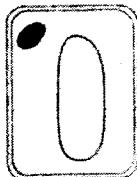


Diagram 5 / Rajah 5

The plant cell was immersed in distilled water for 30 minutes.  
*Sel tumbuhan tersebut telah direndam dalam air suling selama 30 minit.*

Which of the following shows the condition of a cell after 30 minutes ?  
*Antara berikut manakah menunjukkan keadaan sel selepas 30 minit ?*

A



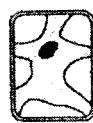
C



B



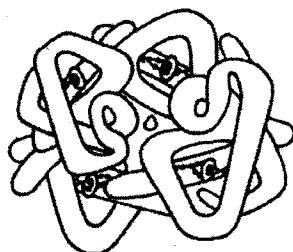
D



- 6 Why does salted fish can be kept after a few months?  
*Mengapakah ikan masin boleh disimpan lama selepas beberapa bulan?*

- A The growth of bacteria is inhibited  
*Pertumbuhan bakteria tidak berlaku*
- B The pH of the solution used is low  
*pH larutan yang digunakan adalah rendah*
- C The water content in the fish is maintained  
*Kandungan air di dalam ikan dikekalkan*
- D Water molecules enter the fish cells by osmosis  
*Molekul air memasuki sel-sel ikan secara osmosis*

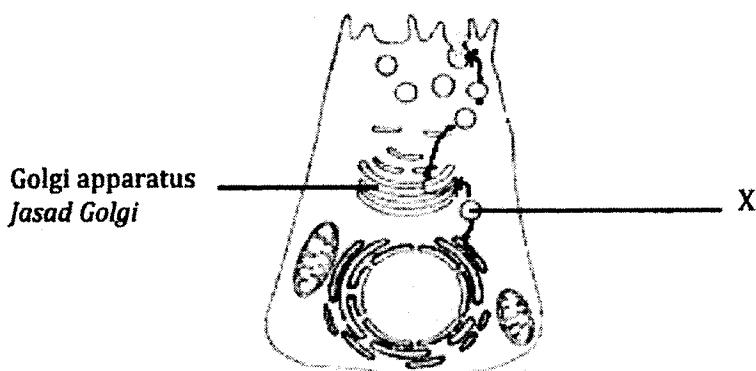
- 7 Diagram 6 shows one of the protein structures.  
*Rajah 6 menunjukkan salah satu struktur protein.*



**Diagram 6 / Rajah 6**

Which of the following example of protein possesses the above protein structure?  
*Antara contoh protein berikut, yang manakah mempunyai struktur protein di atas?*

- |                      |                             |
|----------------------|-----------------------------|
| A Hormone / Hormon   | C Haemoglobin / Hemoglobin  |
| B Lysozyme / Lisozim | D Phospholipid / Fosfolipid |
- 8 Diagram 7 shows structure X which is involved in the production of an extracellular enzymes.  
*Rajah 7 menunjukkan struktur X yang terlibat dalam penghasilan enzim luar sel.*



**Diagram 7 / Rajah 7**

Which of the following will happen if X fails to fuse with the Golgi apparatus ?  
*Antara berikut, yang manakah akan berlaku sekiranya X gagal bercantum dengan Jasad Golgi?*

- A Protein will be denatured / Protein dinyahaslikan
- B Protein cannot be synthesised / Protein tidak disintesis
- C Protein will be hydrolysed / Protein dihidrolisiskan
- D Protein cannot be modified / Protein tidak diubahsuai

- 9 In an experiment, a mixture of agar and starch are placed in a petri dish. Two small holes are made on the agar and filled with solution X contains salivary amylase and Y contains pepsin respectively as shown in diagram 8.

Dalam satu eksperimen, campuran agar dan kanji dimasukkan ke dalam piring petri. Dua lubang kecil dibuat dan diisi dengan larutan X yang mengandungi amilase liur dan Y yang mengandungi pepsin seperti yang ditunjukkan dalam rajah 8.

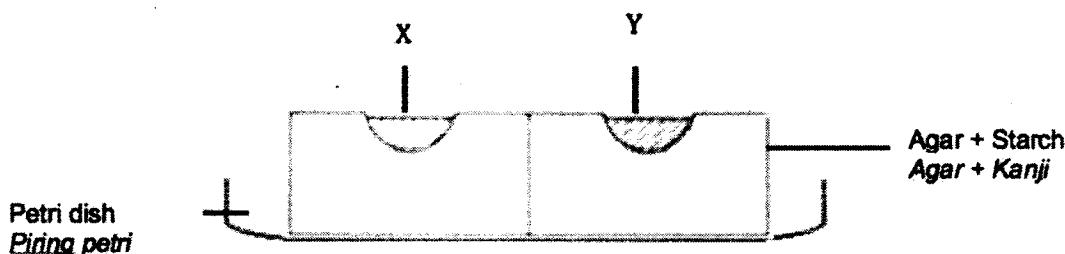
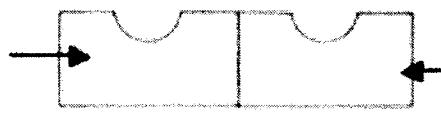
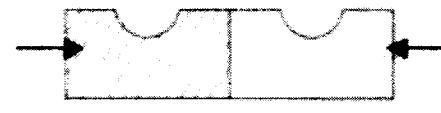
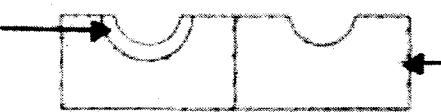
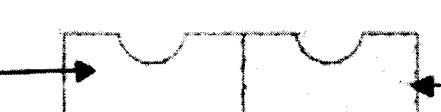


Diagram 8 / Rajah 8

After one hour a few drops of iodine solution are placed into the small holes X and Y. Which of the following shows the suitable result of the experiment?

Selepas satu jam, beberapa titis larutan iodin diletakkan ke dalam lubang kecil X dan Y. Antara berikut manakah menunjukkan keputusan yang paling sesuai bagi eksperimen di atas?

- A Clear area  
Kawasan jernih  Clear area  
Kawasan jernih
- B Dark blue area  
Kawasan biru tua  Clear area  
Kawasan jernih
- C Clear area  
Kawasan jernih  Dark blue area  
Kawasan biru tua
- D Dark blue area  
Kawasan biru tua  Dark blue area  
Kawasan biru tua

- 10 Diagram 9 shows the cell cycle.  
*Rajah 9 menunjukkan kitar sel.*

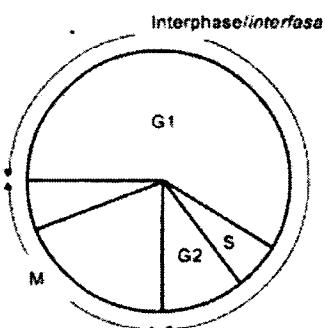


Diagram 9/Rajah 9

At which stage synthesis of DNA occur?  
*Pada peringkat manakah berlakunya sintesis DNA ?*

- |           |          |
|-----------|----------|
| A      G1 | C      S |
| B      G2 | D      M |
- 11 Diagram shows the structure of a flower.  
*Rajah menunjukkan struktur sekuntum bunga.*

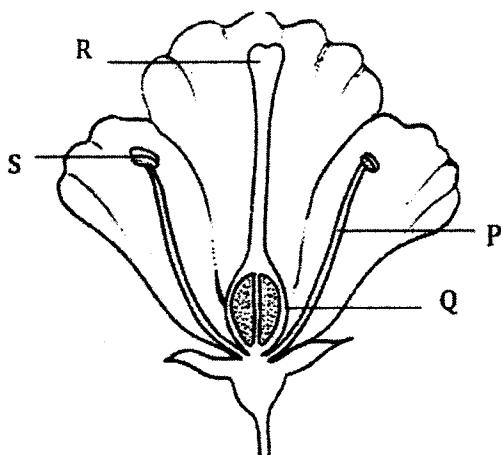
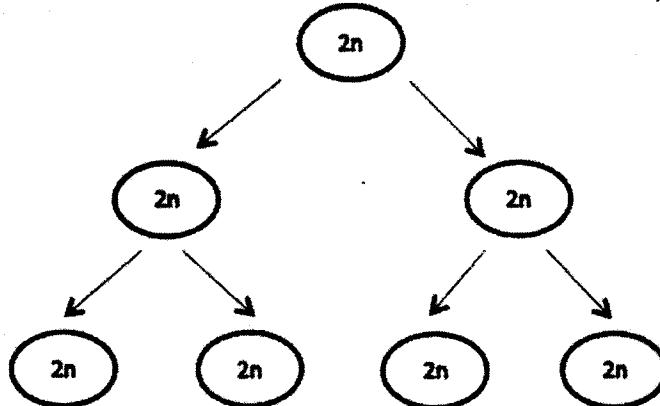


Diagram 10 / Rajah 10

Which of the following parts labeled P,Q,R and S do meiosis process take place?  
*Antara yang berlabel P,Q,R dan S , bahagian manakah berlakunya proses meiosis?*

- A      Q and S / Q dan S
- B      P and Q / P dan Q
- C      Q and R / Q dan R
- D      R and S / R dan S

- 12 Diagram 11 shows the number of cells produced after a cell has undergone two times of mitosis.  
*Rajah 11 menunjukkan bilangan sel yang terhasil selepas satu sel mengalami mitosis sebanyak dua kali.*



How many number of cells produced if mitosis occurs another two times?  
*Berapakah bilangan sel yang terhasil jika mitosis berlaku sebanyak dua kali lagi ?*

- |        |         |
|--------|---------|
| A    4 | C    16 |
| B    8 | D    32 |
- 13 Table 1 shows four type of cells that have undergone cell division and their chromosomal numbers before and after the cell division.  
*Jadual 1 menunjukkan empat jenis sel yang mengalami pembahagian sel dan bilangan kromosom masing-masing sebelum dan selepas pembahagian sel.*

Type of cell  Jenis sel	Chromosomal number <i>Bilangan kromosom</i>	
	Before cell division <i>Sebelum pembahagian sel</i>	After cell division <i>Selepas pembahagian sel</i>
P	46	23
Q	14	28
R	23	46
S	28	28

Table 1 / Jadual 1

Which of the cell has undergone the mitosis completely?  
*Sel manakah telah lengkap mengalami proses mitosis?*

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

- 14 Table 2 shows the nutrient content for every 100 g of certain food.  
*Jadual 2 menunjukkan kandungan nutrien bagi setiap 100 g makanan tertentu.*

	Protein (g)	Lipid (g)	Carbohydrate (IU)	Calcium (IU)	Vitamin A (IU)	Vitamin C (IU)
A	12.3	11.9	4.1	5	5	1
B	17.4	0.8	5.3	45	200	5
C	3.8	3.5	4.5	120	8	2
D	10.5	4.5	3.5	30	6	4

Table 2 / Jadual 2

Which menu is most suitable for people who suffers from night-blindness.  
*Menu yang mana adalah paling sesuai untuk orang yang mengalami rabun malam*

- 15 Diagram 12 shows digestion of protein in the human digestive system which involve several types of enzymes.  
*Diagram 12 menunjukkan penceraaan protein di dalam penceraaan manusia yang melibatkan beberapa jenis enzim.*

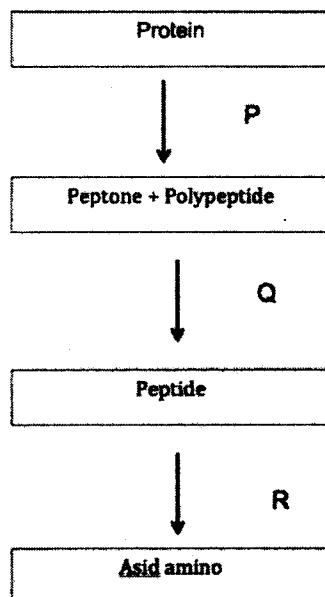


Diagram 12 / Rajah 12

What are enzymes P,Q dan R?  
*Apakah enzim P, Q dan R?*

	P	Q	R
A	Peptidase	Tripsin	Pepsin
B	Tripsin	Pepsin	Peptidase
C	Tripsin	Peptidase	Pepsin
D	Pepsin	Tripsin	Peptidase

- 16 Diagram 13 shows part of alimentary canal.  
*Rajah 13 menunjukkan sebahagian daripada salur pencernaan manusia.*

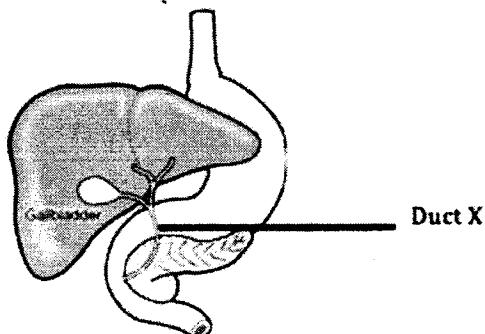


Diagram 13 / Rajah 13

A man suffered from clogged of duct X. He has been advised by a doctor to reduce intake of food that contain fat.  
 Which of the following food is not suitable to be taken by this man?

*Seorang lelaki telah mengalami masalah tersumbat salur X. Beliau telah dinasihatkan oleh doktor untuk mengurangkan pengambilan makanan yang mempunyai lemak.  
 Diantara makanan berikut yang manakah tidak sesuai diambil oleh individu tersebut?*

- A Fish / Ikan
- B Water melon / Tembikai
- C Rice / Nasi
- D Cake / Kek

- 17 Diagram 14 shows an organisms.  
*Rajah 14 menunjukkan sejenis organisme*

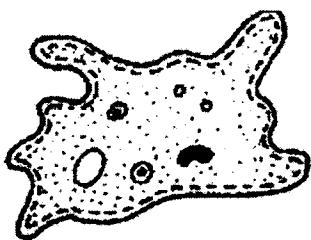


Diagram 14 / Rajah

Which of the following is the respiratory surface for the organism?  
*Manakah di antara berikut adalah permukaan respirasi bagi organisma tersebut?*

- |                    |   |
|--------------------|---|
| A Skin / Kulit     | C Plasma membrane / Membran plasma      |
| B Vacuole / Vakuol | D Contractile vacuole / Vakuol mengecut |

- 18 Diagram 15 shows two organisms P and Q.  
*Rajah 15 menunjukkan dua organisma P dan Q.*

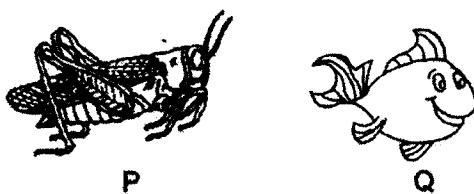


Diagram 15 / Rajah 15

Which of the following shows the correct respiratory organs for the organisms?  
*Antara berikut yang manakah menunjukkan organ respirasi yang betul bagi organisma-organisma tersebut?*

	P	Q
A	Tracheole / Trakeol	Lungs / Peparu
B	Tracheole / Trakeol	Gills / Insang
C	Lungs / Peparu	Tracheole / Trakeol
D	Lungs / Peparu	Gills / Insang

- 19 Diagram 16 below shows a cross section of an alveolus in the lung.  
*Rajah 16 di bawah menunjukkan keratan rentas satu alveolus di dalam paru-paru.*

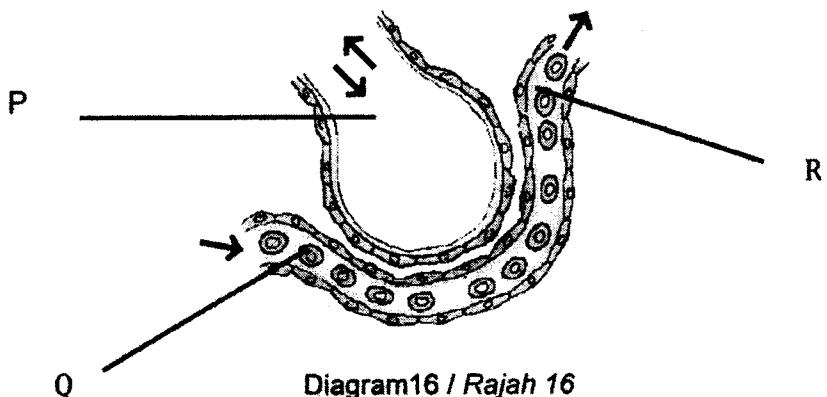


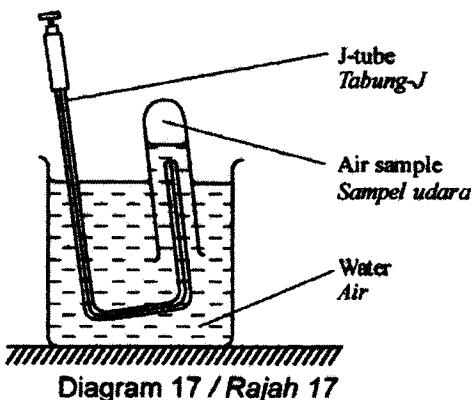
Diagram 16 / Rajah 16

Which of the following is correct about carbon dioxide concentration at P, Q and R?  
*Manakah antara berikut yang benar tentang kepekatan karbon dioksida pada P, Q dan R?*

	P	Q	R
A	Very low <i>Sangat rendah</i>	High <i>Tinggi</i>	Low <i>Rendah</i>
B	Very low <i>Sangat rendah</i>	Low <i>Rendah</i>	Tinggi <i>High</i>
C	High <i>Tinggi</i>	High <i>Rendah</i>	Low <i>Rendah</i>
D	High <i>Tinggi</i>	Low <i>Rendah</i>	High <i>Tinggi</i>

- 20 Diagram 17 shows the arrangement of apparatus to measure the percentage of certain gas in the air sample.

Rajah 17 menunjukkan susunan radas untuk mengukur peratus gas tertentu dalam suatu sampel udara.



Initial length of the air column ..... 10.00 cm  
 Panjang awal turus udara ..... 10.00 sm

Length of air column after using potassium hydroxide solution ..... 9.6 cm  
 Panjang turus udara setelah larutan kalium hidroksida digunakan .... 9.6 sm

Length of air column after using alkaline potassium pyrogallate ..... 8.1 cm  
 Panjang turus udara setelah alkali kalium pirogalol digunakan ..... 8.1 sm

Calculate the percentage of oxygen in the air sample.  
 Kira peratus kepekatan oksigen dalam sampel udara tersebut

- |       |       |
|-------|-------|
| A 4%  | C 14% |
| B 15% | D 19% |

- 21 Diagram 18 shows a food web.

Rajah 18 menunjukkan satu jaringan makanan

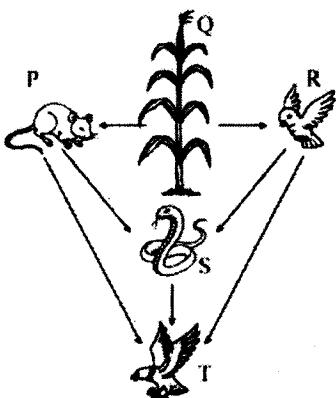
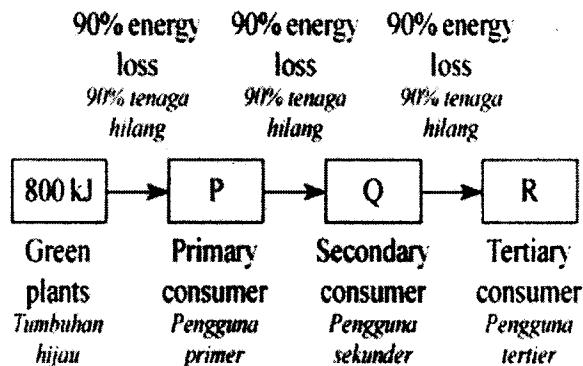


Diagram 18 / Rajah 18

Which organism is the tertiary consumer?  
 Organisma yang manakah ialah pengguna tertier?

- |     |   |   |
|-----|---|---|
| A P | C | R |
| B S | D | T |

- 22 Diagram 19 shows an energy flow in a food chain.  
*Rajah 19 menunjukkan satu pengaliran tenaga dalam satu rantai makanan.*



*Diagram 19 /Rajah 19*

Calculate the sum of energy received by the organism Q.  
*Hitung jumlah tenaga yang diterima oleh organisme Q.*

- |   |       |   |        |
|---|-------|---|--------|
| A | 800kJ | C | 8.8 kJ |
| B | 88kJ  | D | 8 kJ   |

- 23 Table 3 shows the results obtained from the capture-mark-release and recapture technique for a population of garden snails in a school field.  
*Jadual 3 menunjukkan keputusan yang diperoleh daripada teknik tangkap-tanda-lepas dan tangkap semula untuk satu populasi siput dalam padang sekolah.*

Sampling / <i>Persampelan</i>	Sample <i>Sampel</i>	Number <i>Bilangan</i>
First sampling (Garden snails caught, marked and released) <i>Persampelan pertama (Siput ditangkap, ditanda dan dilepas)</i>		10
Second sampling / <i>Persampelan kedua</i>		
– Total Garden snails caught <i>Jumlah bilangan siput yang ditangkap</i>		30
– Garden snails that are marked <i>Siput yang telah ditanda</i>		5

*Table 3/ Jadual 3*

Base on the given information, estimate the population size of the garden snails  
Berdasarkan maklumat di atas, anggarkan saiz populasi siput.

- |   |     |   |      |
|---|-----|---|------|
| A | 60  | C | 300  |
| B | 600 | D | 1500 |

- 24 Diagram 20 shows the gases emission by chemical factories in an industrial area.  
*Rajah 20 menunjukkan pembebasan gas dari kilang kimia dalam satu kawasan perindustrian.*

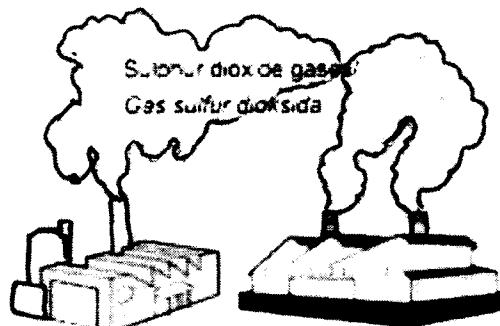


Diagram 20 / Rajah 20

Which of the following is the most likely to occur?  
*Antara berikut yang manakah berkemungkinan akan berlaku?*

- A Acid rain / Hujan asid
  - B Global warming/ Pemanasan global
  - C The greenhouse effect / Kesan rumah hijau.
  - D The thinning of the ozone layers / Penipisan lapisan ozon.
- 25 Diagram 21 shows a lake which is located near an agricultural farm.  
*Rajah 21 menunjukkan sebuah tasik yang terletak berdekatan dengan ladang pertanian.*

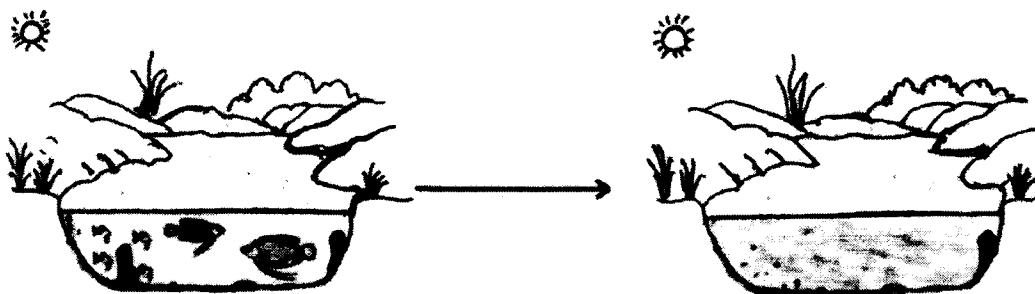


Diagram 21 /Rajah 21

What cause all the fishes in the pond died?  
*Apakah yang menyebabkan semua ikan dalam tasik tersebut mati?*

- A Algal bloom  
*Alga menutupi permukaan tasik*
- B BOD value decrease  
*Nilai BOD menurun*
- C Fertilizers content increase  
*Kandungan baja bertambah*
- D Concentration of oxygen in water decrease  
*Kepakatan oksigen dalam air berkurang*

- 26 An experiment was carried out to investigate the level of pollution in two river X and Y. The result show that the methylene blue solution in sample X decolorizes faster than the methylene blue solution sample Y. Based on the results, what conclusion can be drawn about the concentration of dissolved oxygen, the BOD value and the quality of water in sample X as compared to sample Y?

*Suatu eksperimen telah dijalankan untuk mengkaji aras pencemaran dalam dua buah sungai, X dan Y. Hasil menunjukkan larutan metilena biru dalam sampel X lebih cepat dilunturkan daripada larutan metilena biru sampel Y.*

*Berdasarkan keputusan ini, apakah kesimpulan yang boleh dibuat berkaitan kepekatan oksigen terlarut, nilai BOD dan kualiti air dalam sampel X berbanding sampel Y?*

	Concentration of oxygen Kepekatan oksigen terlarut	BOD value Nilai BOD	Water quality Kualiti air
A	High / Tinggi	Low / Rendah	Not polluted / Tidak tercemar
B	Low / Rendah	High / Tinggi	Polluted/tercemar
C	High / Tinggi	High / Tinggi	Not polluted/Tidak tercemar
D	Low / Rendah	Low / Rendah	Polluted/ tercemar

- 27 Diagram 22 shows the cross sections of three types of blood vessels.  
*Rajah 22 menunjukkan keratan rentas tiga jenis salur darah.(pengetahuan)*

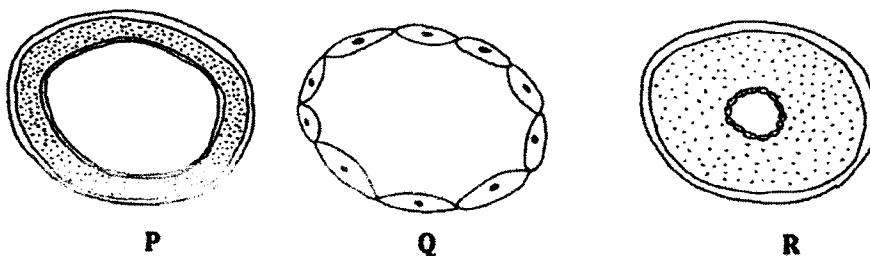


Diagram 22 / Rajah 22

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

	P	Q	R
A	Vein/ Vena	Capillary/Kapilari	Artery / Arteri
B	Artery / Arteri	Vein/ Vena	Capillary/Kapilari
C	Vein/ Vena	Artery / Arteri	Capillary/Kapilari
D	Artery / Arteri	Capillary/Kapilari	Vein/ Vena

- 28 Diagram 23 shows the schematic diagram that shows the clotting mechanism of blood.  
*Rajah 23 menunjukkan gambarajah skema untuk mekanisme pembekuan darah.*

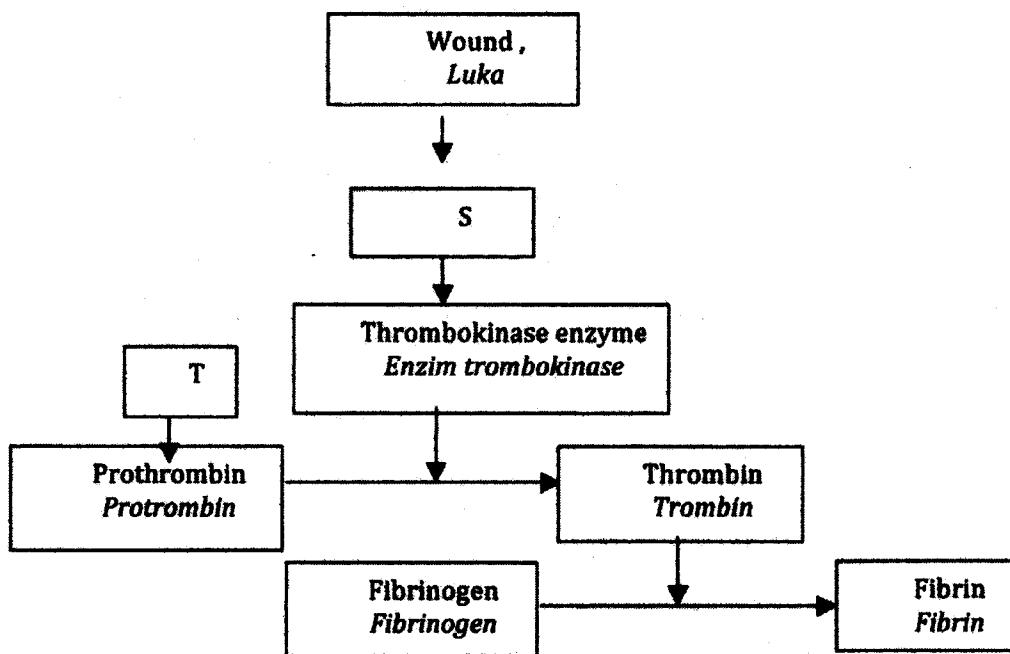


Diagram 23/ Rajah 23

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

	S	T
A	Leucocyte Leukosit	Calcium Ion Ion kalsium
B	Platelet Platlet	Vitamin K Vitamin K
C	Leucocyte Leukosit	Vitamin K Vitamin K
D	Platelet Platlet	Calcium Ion Ion kalsium

- 29 Diagram 24 shows the arrangement of apparatus and materials to measure the rate of transpiration of a plant placed in sunlight.

Rajah 24 menunjukkan susunan bahan dan radas untuk mengukur kadar transpirasi tumbuhan yang diletakkan di bawah cahaya matahari.

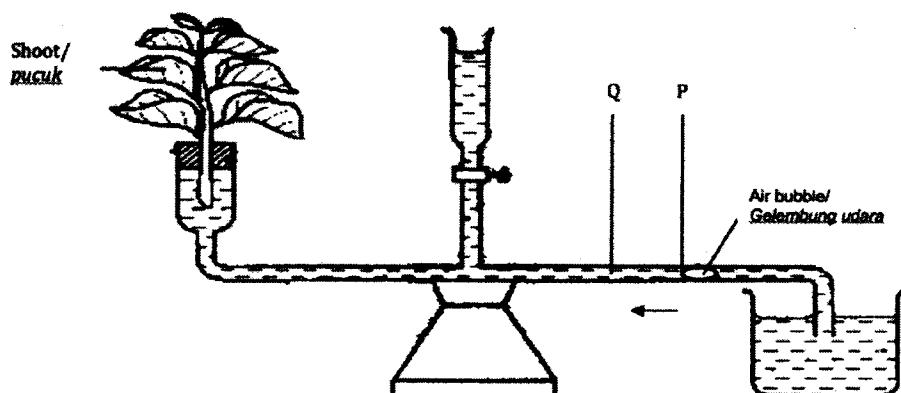


Diagram 24 / Rajah 24

Which of the following will slow down the rate of movement of the air bubbles from P to Q?

Antara berikut, yang manakah akan melambatkan kadar pergerakan gelembung udara dari P ke Q?

- A Reducing the diameter of the capillary tube  
Mengurangkan diameter tiub kapilari
- B Increasing the water volume in the beaker  
Menambahkan isipadu air dalam bikar
- C Spreading Vaseline onto the leaf surface  
Menyapu permukaan daun dengan vaselin
- D Pouring a layer of oil onto the water surface in the beaker  
Meletakkan satu lapisan minyak di permukaan air dalam bikar

- 30 Diagram 25 shows part of the blood circulatory system.  
*Rajah 25 menunjukkan sebahagian daripada sistem pengangkutan darah*

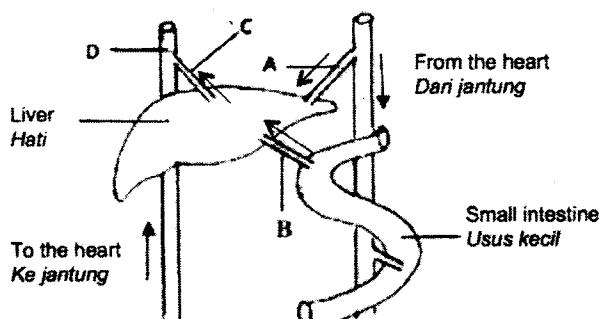


Diagram 25 / Rajah 25

Which blood vessel will contain blood with the most glucose after a meal?  
*Salur darah manakah yang akan mengandungi darah yang paling banyak kandungan glukosa di dalamnya selepas makan?*

- 31 Diagram 26 shows a student standing in front of a flag.  
*Rajah 26 menunjukkan seorang pelajar berdiri di depan bendera.*

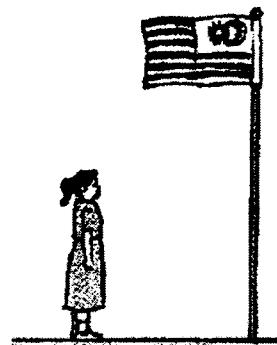


Diagram 26/ Rajah 26

Which of the following is true about the muscles in her arm in this posture?  
*Antara berikut, yang manakah benar tentang otot-otot pada lengan pelajar dalam postur ini?*

	Biceps muscle Otot biseps	Triceps muscle Otot triseps
A	Relaxes / Mengendur	Relaxes / Mengendur
B	Contracts / Mengecut	Contracts / Mengecut
C	Contracts / Mengecut	Relaxes / Mengendur
D	Relaxes / Mengendur	Contracts / Mengecut

- 32 Diagram 27 shows a hinge joint.  
*Rajah 27 menunjukkan sendi engsel*

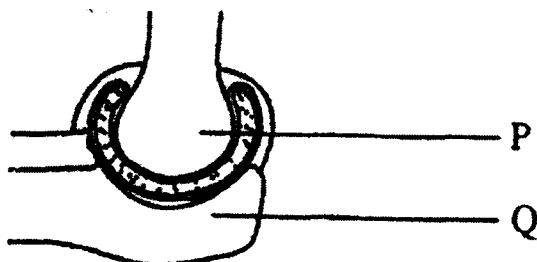


Diagram 27 / Rajah 27

- Which of the following tissue connects P to Q?  
*Diantara tisu berikut yang manakah menghubungkan P dengan Q?*
- |                     |                      |
|---------------------|----------------------|
| A Fibre / Fiber     | C Tendon / Tendon    |
| B Cartilage / Rawan | D Ligament / Ligamen |
- 33 Diagram 28 shows locomotion in an earthworm.  
*Rajah 28 menunjukkan pergerakan dalam cacing tanah.*

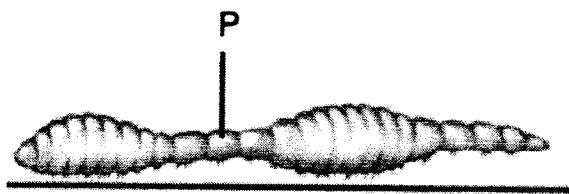


Diagram 28 / Rajah 28

Which of the following statements explains the muscle condition of an earthworm in the part labeled P?

*Antara pernyataan yang berikut, manakah menerangkan keadaan otot cacing tanah pada bahagian berlabel P?*

- |  |
|--|
| A Longitudinal and circular muscles contract together at the same time.<br><i>Otot membujur dan otot lingkar mengecut bersama pada masa yang sama.</i> |
| B Longitudinal and circular muscles relax together at the same time.<br><i>Otot membujur dan otot lingkar mengendur bersama pada masa yang sama.</i>   |
| C Longitudinal muscles contract while circular muscles relax.<br><i>Otot membujur mengecut manakala otot lingkar mengendur.</i>                        |
| D Longitudinal muscles relax while circular muscles contract.<br><i>Otot membujur mengendur manakala otot lingkar mengecut.</i>                        |

Otot membujur mengendur manakala otot lingkar mengecut.

- 34 Diagram 29 shows a cross section of dicotyledonous plant stem and root.  
*Rajah 29 menunjukkan keratan rentas batang dan akar tumbuhan dikotiledon.*

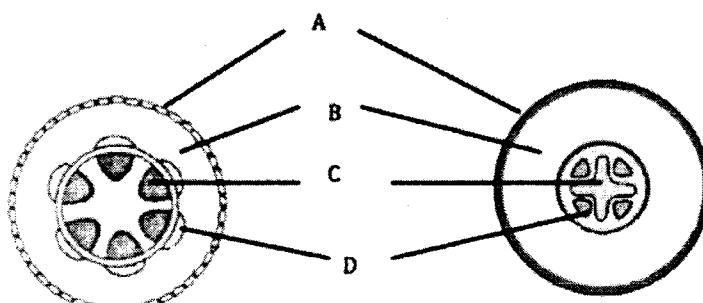


Diagram 29 / Rajah 29

Which of the parts labeled A,B,C and D is important to support the plant?

*Antara bahagian yang berlabel A,B,C dan D yang manakah penting untuk sokongan pada tumbuhan?*

- 35 Diagram 31(a) shows a neuron.  
*Rajah 31(a) menunjukkan satu neuron.*

Diagram 31(b) shows a structure of a spinal cord.

*Rajah 31(b) menunjukkan struktur saraf tunjang.*

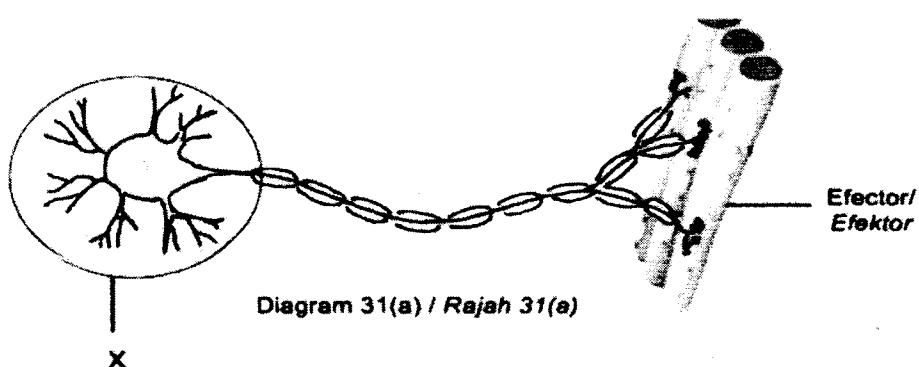


Diagram 31(a) / Rajah 31(a)

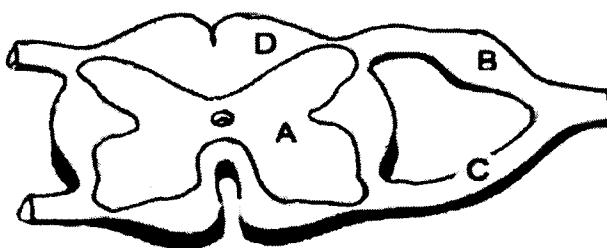


Diagram 31(b) / Rajah 31(b)

Which part of spinal cord that X can be found ?

*Bahagian manakah pada saraf tunjang terletaknya X?*

- 36 Diagram 32 shows coordination and response system in human  
*Rajah 32 menunjukkan sistem koordinasi dan gerakbalas dalam manusia*

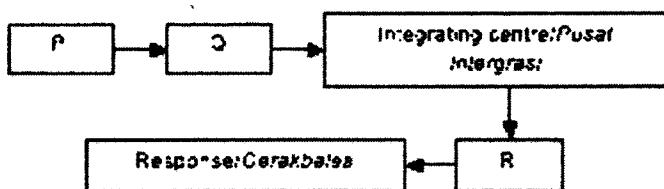


Diagram 32 / Rajah 32

What could be P, Q and R ?  
Apakah P,Q dan R ?

	P	Q	R
A	Receptor/Reseptor	Stimulus /Ransangan	Nerve impuls/Impuls saraf
B	Stimulus /Ransangan	Receptor/Reseptor	Efector/Efektor
C	Receptor/Reseptor	Efector/Efektor	Stimulus /Ransangan
D	Stimulus /Ransangan	Efector/Efektor	Receptor/Reseptor

- 37 Diagram 33 shows the human endocrine gland.  
*Rajah 33 menunjukkan kelenjar endokrin manusia.*

A person is attacked by a fierce dog.  
*Seseorang telah diserang oleh seekor anjing yang garang.*

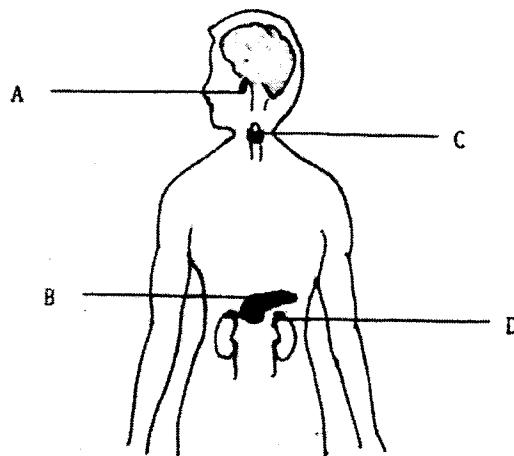


Diagram 33 / Rajah 33

Which of the gland in diagram 33 involved when a person faced the above situation .  
Antara kelenjar dalam rajah 33, yang manakah terlibat apabila seseorang menghadapi situasi di atas.

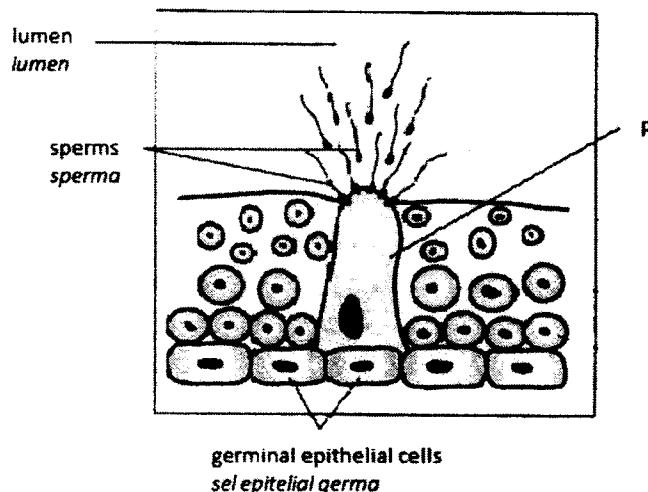
- 38 A farmer wants to sell the mangoes from his farm. To ensure all the mangoes ripens at the same time the farmers spray the mangoes with hormones X. Which of the following plant hormone most probably used by the farmer.

*Seorang petani mahu menjual mangga dari ladang beliau. Untuk memastikan semua mangga masak pada masa yang sama, petani menyembur buah mangga itu dengan hormon X.*

*Manakah di antara berikut hormon tumbuhan yang paling mungkin digunakan oleh petani tersebut.*

- A Ethylene / Etilena
- B Cytokinin / Sitokinin
- C Giberellin / Giberelin
- D Abscisic acid / Asid absisik

- 39 Diagram 34 shows the formation of sperm in the seminiferous tubule.  
*Rajah 34 menunjukkan pembentukan sperma dalam tubul seminiferous*



What is R?

Apakah R ?

Diagram 34 / Rajah 34

- A Spermatogonium  
*Spermatogonium*
- B Sertoli cell  
*Sel sertoli*
- C Primary spermatocyte  
*Spermatosit primer*
- D Secondary spermatocyte  
*Spermatosit sekunder*

- 40 Diagram 35 shows the female reproductive system.  
*Rajah 35 menunjukkan sistem pembiakan betina.*

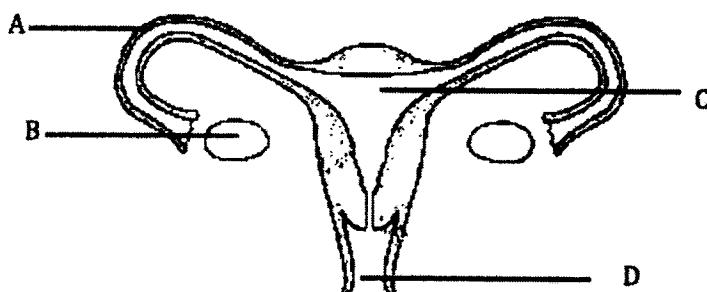


Diagram 35 / Rajah 35

Which part labeled A, B, C or D is the site where the fertilization occur?  
*Bahagian manakah berlabel A, B, C dan D ialah tempat di mana persenyawaan berlaku?*

- 41 Diagram 36 shows the thickness of the endometrium in relation to the menstrual cycle.  
*Rajah 36 menunjukkan ketebalan endometrium berkaitan dengan kitar haid*

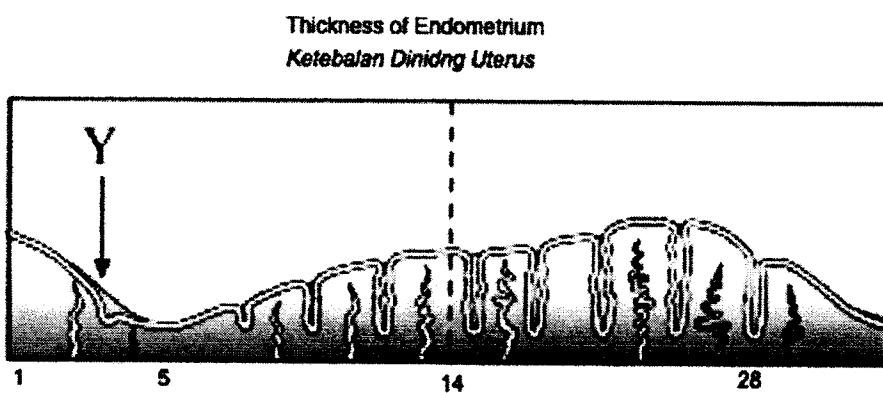


Diagram 36 / Rajah 36

What is the hormone that is responsible for process Y?  
*Apakah hormon yang bertanggungjawab dalam proses Y?*

- A Decreasing secretion of Luteinising hormone (LH)  
*Penurunan rembesan Hormon peluteinian (LH)*
- B Decreasing secretion of Folicle stimulising hormone (FSH)  
*Penurunan rembesan Hormon perangsang folikel*
- C Decreasing secretion of Oestrogen hormone  
*Penurunan rembesan hormon Estrogen*
- D Decreasing secretion of Progesterone hormone  
*Penurunan rembesan hormon Progesteron*

- 42 Diagram 37 below shows one type of twin.  
*Rajah 37 di bawah menunjukkan sejenis kembar.*



Diagram 37/Rajah 37

Which of the following statement is correct about the twin?

*Yang manakah antara berikut benar tentang kejadian kembar itu?*

- A Fertilisation between one sperm and one ovum developed a zygote and the zygote will divide into two.  
*Persenyawaan satu sperma dengan satu ovum hingga membentuk satu zigot dan zigot membahagi kepada dua.*
- B Fertilisation between two sperms and one ovum developed a zygote and the zygote is divided into two.  
*Persenyawaan dua sperma dengan satu ovum hingga membentuk satu zigot dan zigot membahagi kepada dua*
- C Fertilisation between two sperms and two ovums developed into two zygotes.  
*Persenyawaan dua sperma dengan dua ovum hingga membentuk dua zigot.*
- D Fertilisation between two sperms and one ovum developed into two zygotes.  
*Persenyawaan dua sperma dengan satu ovum hingga membentuk dua zigot.*

- 43 Diagram 38 shows the inheritance of flower color in pure breeding.

Which flower, A, B, C or D, is homozygous dominant ?

*Rajah 38 menunjukkan pewarisan bagi warna bunga dalam baka tulen.  
 Manakah bunga, A, B, C atau D adalah homozigot dominan.*

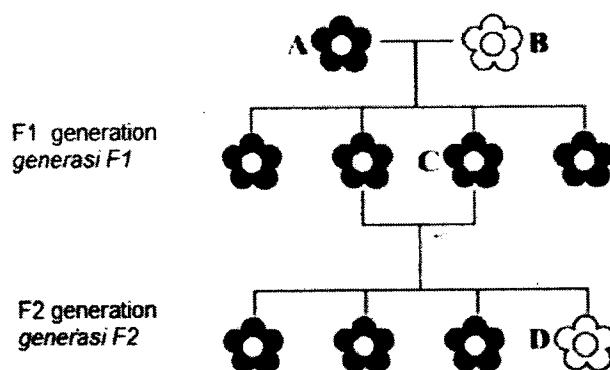


Diagram 38 / Rajah 38

- 44 Diagram 39 shows the stages of the formation of pollen grains in an anther.  
*Rajah 39 menunjukkan peringkat pembentukan butir debunga dalam anter.*

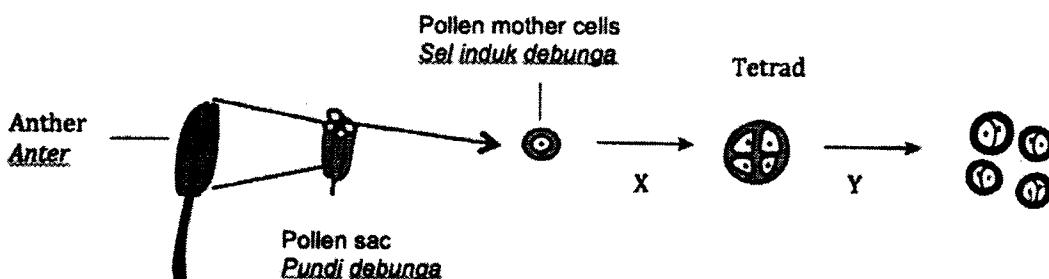


Diagram 39/Rajah 39

What are process X and Y?  
*Apakah proses X dan Y?*

	X	Y
A	Mitosis	Meiosis
B	Meiosis	Mitosis
C	Meiosis	Meiosis
D	Mitosis	Mitosis

- 45 Diagram 40 shows the inheritance of fur trait in rabbits.  
*Rajah 40 menunjukkan pewarisan jenis bulu pada arnab.*

Parent Induk :	Short furred male <i>Jantan berbulu pendek</i>	X	Long furred female <i>Betina berbulu panjang</i>
↓			
Phenotypic ratio of offsprings <i>Nisbah fenotip anak</i>		: 1 short furred: 1 long furred <i>: 1 berbulu pendek : 1 berbulu panjang</i>	

Diagram 40/ Rajah 40

In rabbits, short fur is controlled by dominant allele 'S' and long fur is controlled by recessive allele 's'.

*Sifat bulu pendek pada arnab dikawal oleh alel dominan 'S' dan bulu panjang dikawal oleh alel resesif 's'.*

What are the genotypes of the parents ?  
*Apakah genotip induk tersebut?*

	Male parent <i>Induk jantan</i>	Female parent <i>Induk betina</i>
A	Ss	SS
B	Ss	ss
C	SS	ss
D	Ss	Ss

- 46 A normal human cell contains 46 chromosomes, comprising of 22 pairs of autosomes and 1 pair of sex chromosomes. How many autosomes are present in a human sperm cell?

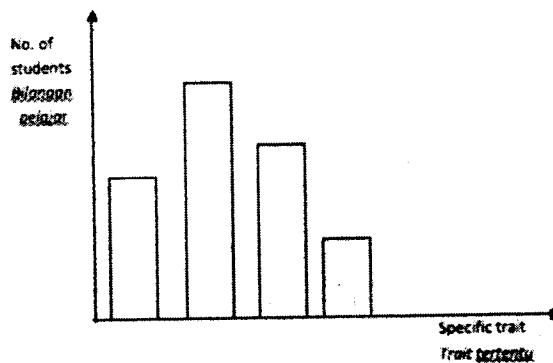
*Sel manusia normal mengandungi 46 kromosom yang terdiri daripada 22 pasang autosom dan sepasang kromosom seks. Berapakah bilangan autosom dalam sel sperma manusia?*

- |      |      |
|------|------|
| A 21 | C 42 |
| B 22 | D 44 |

- 47 Which of the following genetic disease is caused by chromosomal mutation?  
*Manakah antara berikut merupakan penyakit yang disebabkan oleh mutasi kromosom?*

- A Sickle cell anaemia / Anemia sel sabit
- B Down syndrome / Sindrom down
- C Haemophilia / Hemofilia
- D Albinism / Albino

- 48 Graph 1 shows a type of variation in a group of students.  
*Graf 1 menunjukkan graf bagi satu jenis variasi pada sekumpulan pelajar*



Graph 1 / Graf 1

Which is true for the variation studied?  
*Antara berikut, yang manakah benar bagi variasi yang dikaji?*

- |                              |                                 |
|------------------------------|---------------------------------|
| A Intelligence<br>Kepintaran | C Weight<br>Berat badan         |
| B Height<br>Tinggi badan     | D Blood group<br>Kumpulan darah |

- 49 Ali and Aminah gave four statements about themselves.  
*Ali dan Aminah memberi pernyataan tentang diri mereka.*

	All	Aminah
P	I am a boy <i>Saya seorang lelaki</i>	I am a girl <i>Saya seorang perempuan</i>
Q	I am 150cm tall <i>Saya berketinggian 150cm</i>	I am 153cm tall <i>Saya berketinggian 153cm</i>
R	I have unattached ear lobes <i>Saya memiliki cuping telinga yang tidak melekap</i>	I have unattached ear lobe <i>Saya memiliki cuping telinga yang tidak melekap</i>
S	My blood group is A <i>Kumpulan darah saya ialah A</i>	My blood group is AB <i>Kumpulan darah saya ialah AB</i>

Which statements describe characteristics that show discontinuous variation?  
*Antara berikut, manakah menunjukkan ciri variasi tidak selanjar?*

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

- 50 The following information shows the inheritance of haemophilia in Mr X's family.  
*Maklumat berikut menunjukkan tentang perwarisan penyakit hemofilia dalam keluarga En. X.*

- Mr X is normal.  
*En X ialah normal*
- He has six children of which three sons are hemophiliac while three daughter are carriers  
*Beliau mempunyai 6 orang anak dimana 3 orang anak lelaki merupakan pesakit hemofilia manakala 3 orang anak perempuan pembawa hemofilia*

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

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

END OF QUESTION PAPER  
KERTAS SOALAN TAMAT