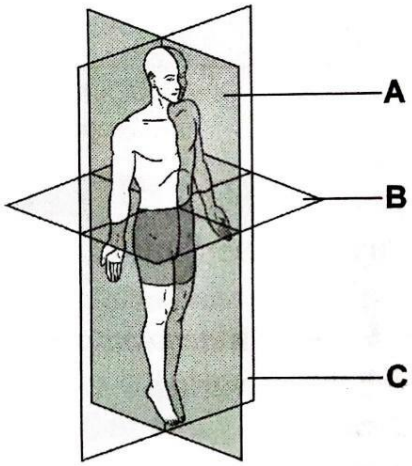
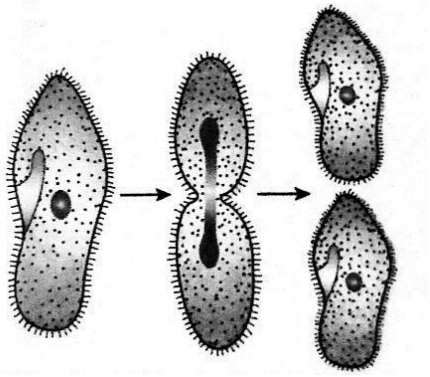
1 Rajah 1 menunjukkan satah-satah badan manusia.
Diagram 1 *shows human body planes.*



Rajah 1 / *Diagram* 1

Antara satah berlabel **A**, **B** dan **C**, yang manakah adalah satah sagital?
Which of the plane labelled **A**, **B** *and* **C** *is sagittal plane?*

2 Rajah 2 menunjukkan sejenis organisma unisel, *Paramecium sp.*
Diagram 2 *shows a unicellular organism, Paramecium sp.*

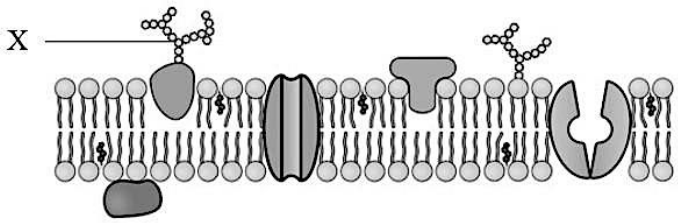


Rajah 2 / *Diagram* 2

Apakah proses pembiakan yang ditunjukkan dalam Rajah 2?
What is the reproduction process shown in Diagram 2?

A Pertunasan
Budding
B Konjugasi
Conjugation
C Belahan dedua
Binary fission
D Pembentukan spora
Spore formation

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

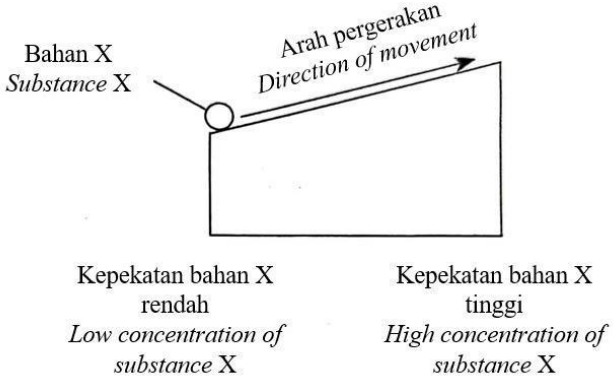


Rajah 3 / *Diagram* 3

Apakah struktur X?
What is structure X?

A Glikolipid
Glycolipid
B Kolesterol
Cholesterol
C Glikoprotein
Glycoprotein
D Fosfolipid *Phospholipid*

4 Rajah 4 menerangkan pergerakan bahan X merentasi membrane plasma.
Diagram 4 *shows the movement of substance* X *across the plasma membrane*.

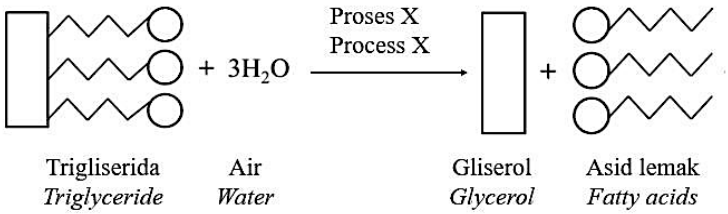


Rajah 4 / *Diagram* 4

Antara berikut, yang manakah menerangkan pergerakan bahan X?
Which of the following describes the movement of substance X?

A Resapan ringkas
Simple diffusion
B Resapan berbantu
Facilitated diffusion
C Pengangkutan aktif
Active transport
D Pengangkutan pasif
Passive transport

5 Rajah 5 menunjukkan proses penguraian satu molekul trigliserida.
Diagram 5 shows the breakdown process of a triglyceride molecule.

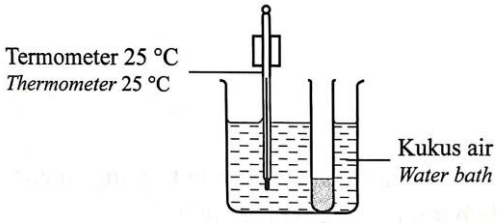


Rajah 5 / *Diagram* 5

Apakah proses X?
What is process X?

A Pendeaminan
Deamination
B Hidrolisis
Hydrolysis
C Kondensasi
Condensation
D Asimilasi
Assimilation

6. Rajah 6 menunjukkan satu eksperimen untuk mengkaji tindakan pepsin.
Diagram 6 *shows an experiment to investigate pepsin activity.*



Rajah 6 / *Diagram* 6

Tabung mengandungi campuran 1 ml larutan pepsin 1%, 2 ml ampaian albumen 1% dan 5 titik asid hidroklorik cair.
Apakah yang perlu dilakukan untuk mengurangkan masa yang diambil untuk campuran menjadi tidak berwarna?
The test tube contains a mixture of 1 *ml of* 1% *pepsin solution,* 2 *ml of* 1% *albumen suspension and* 5 *drops of dilute hydrochloric acid.*
What should be done to reduce the time taken for the mixture to turn clear?

A Tambahkan 5 titik larutan natrium hidroksida cair
Add 5 *drops of dilute sodium hydroxide solution*
B Kurangkan kepekatan pepsin kepada 0.5% *Decrease the concentration of pepsin to* 0.5%
C Tingkatkan suhu kukus air kepada 37°C
Increase the temperature of water bath to 37°C
D Tambahkan renin ke dalam campuran
Add rennin into the mixture

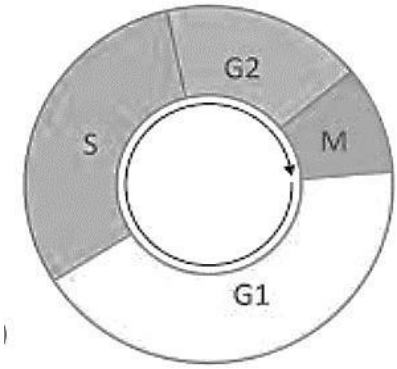
7 Rajah 7 menunjukkan suatu kaedah pengawetan timun supaya dapat bertahan lebih lama. Kaedah ini mengambil masa sebulan untuk melengkapka proses pengawetan.
Diagram 7 shows a preservation method of cucumber to make it last longer. This method takes one month to complete the preservation process.

Rajah 7 / *Diagram* 7

Antara berikut, yang manakah dapat memendekkan masa proses pengawetan tersebut?
Which of the following can shorten the time for the preservation process?

A Menggantikan dengan timun yang lebih segar *Replace with a fresher cucumber*
B Menggantikan dengan balang yang lebih besar *Replace with a bigger jar*
C Menggantikan dengan timun yang lebih kecil saiznya *Replace with a smaller size cucumber*
D Menggantikan larutan dengan larutan yang kurang kepekatannya *Replace the solution with less concentrated solution*

8 Rajah 8 menunjukkan kitar sel.
Diagram 8 shows a cell cycle.



Rajah 8 / *Diagram* 8

Pada fasa manakah replikasi DNA berlaku?
In which phase does the replication of DNA occur?

A G_1
B S
C G_2
D M

9 Maklumat berikut menunjukkan ciri-ciri seorang kanak-kanak yang mengalami kecacatan genetik.
The following information shows the characteristics of a child with genetic disorder.

- Mata sepet/ *Slanted eyes*
- Kerencatan mental/ *Mental retardation*
- Lidah sedikit terjelir/ *Protruding tongue*

Apakah punca kecacatan genetik tersebut?
What is the cause of this genetic disorder?

A Sinapsis tidak berlaku semasa profasa I
Synapsis did not occur during prophase I
B Sitokinesis tidak berlaku semasa telofasa II
Cytokinesis did not occur during telophase II
C Membran nukleus tidak terbentuk semasa telofasa II
Nucleus membrane did not form during telophase II
D Kromatid kembar tidak terpisah semasa anafasa II
Sister chromatids did not separate during anaphase II

10 Maklumat berikut menerangkan penghasilan tenaga oleh yis.
The following information describes energy production by yeast.

Fementasi alkohol adalah proses penghasilan ATP tanpa penggunaan oksigen.

Alcohol fermentation is a process to generate ATP *without utilizing oxygen.*

Antara persamaan berikut, yang manakah betul untuk menjelaskan proses tersebut? *Which of the following equations is correct to describe the process?*

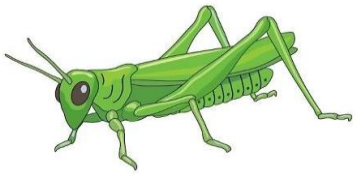
A Glukosa / *Glucose* $\xrightarrow[zymase]{zimase}$ Etanol / *Ethanol* + Karbon dioksida / *Carbon dioxide* + 210 kJ

B Glukosa / *Glucose* $\xrightarrow[zymase]{zimase}$ Asid laktik / *Lactic acid* + 210 kJ

C Glukosa / *Glucose* $\xrightarrow[zymase]{zimase}$ Etanol / *Ethanol* + Asid laktik / *Lactic acid* + 150 kJ

D Glukosa / *Glucose* $\xrightarrow[zymase]{zimase}$ Etanol / *Ethanol* + Air / *Water* + 210 kJ

11 Rajah 9 menunjukkan suatu organisma.
Diagram 9 *shows an organism.*

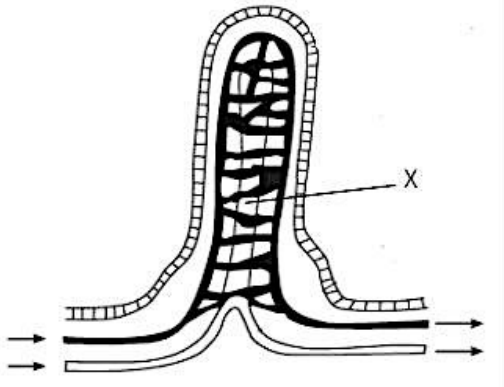


Rajah 9 / *Diagram* 9

Apakah organ respirasi bagi organisma tersebut?
What is the respiratory organ for the organism?

A Peparu
Lungs
B Trakeol
Tracheoles
C Insang
Gills
D Kulit
Skin

12 Rajah 10 menunjukkan struktur vilus dalam ileum.
Diagram 10 *shows the structure of a villus in the ileum.*

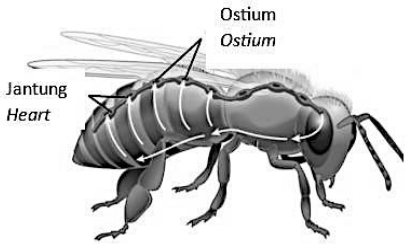


Rajah 10 / *Diagram* 10

Apakah fungsi bahagian yang berlabel X?
What is the function of the part labelled X*?*

A Penyerapan vitamin A, D, E dan K
Absorption of vitamin A*,* D*,* E *and* K
B Penyerapan asid amino
Absorption of amino acids
C Penyerapan vitamin B dan C
Absorption of vitamin B *and* C
D Penyerapan glukosa
Absorption of glucose

13 Rajah 11 menunjukkan sistem peredaran dalam lebah.
Diagram 11 *shows the circulatory system of bee.*

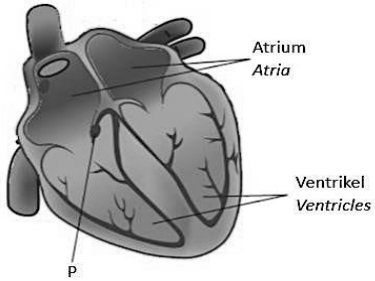


Rajah 11 / *Diagram* 11

Antara yang berikut, yang manakah penyataan yang betul menerangkan sistem peredaran bagi lebah?
Which of the following is the correct statement explain the circulatory system of bee?

A Apabila jantung mengendur, hemolimfa mengalir kembali ke jantung melalui ostium.
When the heart relaxes, haemolymph flow back into heart through ostium.
B Apabila jantung mengecut, hemolimfa mengalir kembali ke jantung melalui ostium.
When the heart contracts, haemolymph flow back into heart through ostium.
C Apabila jantung mengendur, darah mengalir kembali ke jantung melalui ostium.
When the heart relaxes, blood flow back into heart through ostium.
D Apabila jantung mengendur, hemolimfa mengalir keluar ke jantung melalui ostium.
When the heart relaxes, haemolymph flow out from heart through ostium.

14 Rajah 12 menunjukkan struktur jantung manusia.
Diagram 12 *shows the structure of a human heart.*



Rajah 12 / *Diagram* 12

Apakah struktur P?
What is structure P*?*

A Injap trikuspid
Tricuspid valves
B Nodus sinoatrium
Sinoatrial nodes
C Injap sabit
Semilunar valves
D Nodus atrioventrikel
Artrioventricular node

15 Pernyataan berikut adalah peringkat-peringkat dalam mekanisme pembekuan darah.
The following statements are the stages in blood clotting mechanism.

J : Platlet bergumpal pada luka

Platelets clump at the wound

K : Eritrosit terperangkap

Erythrocytes are trapped

L : Trombokinase menukar protrombin kepada trombin

Thrombokinase converts prothrombin into thrombin

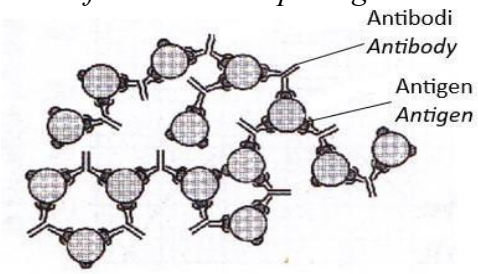
M : Trombin menukarkan fibrinogen kepada fibrin

Thrombin converts fibrinogen into fibrin

Antara berikut, yang manakah menunjukkan urutan betul bagi proses tersebut?
Which of the following shows the correct sequence of the process?

A J, K, L, M
B J, L, M, K
C L, J, M, K
D K, L, M, J

16 Rajah 13 menunjukkan tindakan antibodi terhadap patogen.
Diagram 13 *shows action of antibodies to pathogens.*

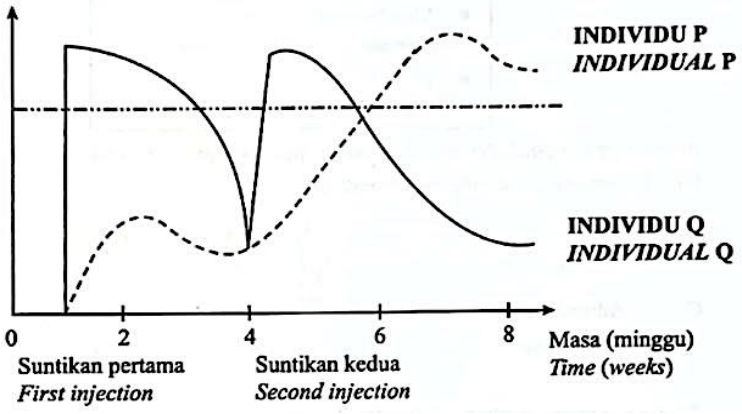


Rajah 13 / *Diagram* 13

Antara berikut, yang manakah menunjukkan tindakan tersebut?
Which of the following shows the correct action?

A Peneutralan
Neutralisation
B Pemendakan
Precipitation
C Pengopsoninan
Opsonisation
D Pengaglutinan
Agglutination

17 Rajah 14 menunjukkan kepekatan antibodi si dalam darah kedua-dua individu P dan Q dalam jangksa masa 8 minggu untuk memperolehi keimunan. Kedua-dua mereka masing-masing telah diberikan dua suntukan.
Diagram 14 *shows the concentration of antibody in the blood of both individual* P *and* Q *for period of* 8 *weeks to acquired immunity. Both of them were given two injections respectively.*



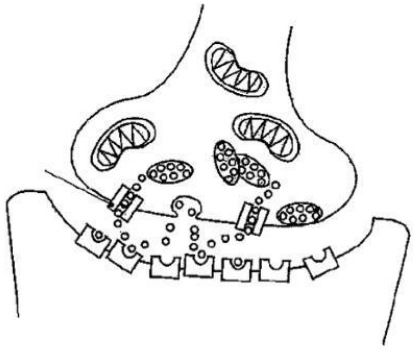
Rajah 14 / *Diagram* 14

Penerangan yang manakah betul bagi jenis keimunan yang diperolehi oleh individu P dan individu Q?
Which statement are correct explanation for types of immunity obtained by individual P *and* Q*?*

	Individu P *Individual* P	Individu Q *Individual* Q
I.	Suntikan vaksin diberikan sebelum dijangkiti penyakit. *Vaccine injection is given before being infected.*	Suntikan antibody diberikan selepas dijangkiti penyakit. *Antibody injection is given after being infected.*
II.	Suntikan antibodi diberikan selepas dijangkiti penyakit. *Antibody injection is given after being infected.*	Suntikan vaksin diberikan sebelum dijangkiti penyakit. *Vaccine injection is given before being infected.*
III.	Antibodi dihasilkan oleh sel limfosit. *Lymphocyte produce antibody.*	Antibodi diperolehi daripada sumber luar. *Antibodies are obtained from an external source.*
IV.	Contoh penyakit ialah poliomielitis. *Example of disease is poliomyelitis.*	Contoh penyakit ialah tibi. *Example of disease is tuberculosis.*

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

18 Rajah 15 menunjukkan struktur sinaps.
Diagram 15 *shows structure of synapse.*



Rajah 15 / *Diagram* 15

Antara penyataan berikut, yang manakah menerangkan fungsi P?
Which of the following statements explains the function of P*?*

A Merembeskan bahan kimia iaitu neurotransmitter
Secreted chemical substance such as neurotransmitter
B Menghantar impuls saraf ke hujung dendrit penerima
Transmitted nerve impulse to the end of the receiving dendrite
C Membenarkan impuls saraf dipindahkan dalam satu arah
To allow nerve impulse travel in one direction
D Menjana tenaga yang diperlukan untuk penghantaran impuls saraf
Generate the energy required for the transmission of nerve impulses

19 Apabila suhu badan menurun di bawah paras normal, mekanisme pembetulan yang terlibat ialah?
When body temperature drops below normal, the corrective mechanism involved is?

I Kurang berpeluh
Less sweating
II Penvasolidatan salur darah
Vasodilation of blood vessel
III Badan mengigil
Body shivers
IV Kadar metabolisme reendah
Low metabolism rate

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

20 Rajah 16 menunjukkan mekanisme gerak alih dalam burung.
Diagram 16 *shows the mechanism of locomotion in bird.*

Rajah 16 / *Diagram* 16

Antara penyataan berikut yang manakah menerangkan pergerakan tersebut?
Which of the following statements explains the movement?

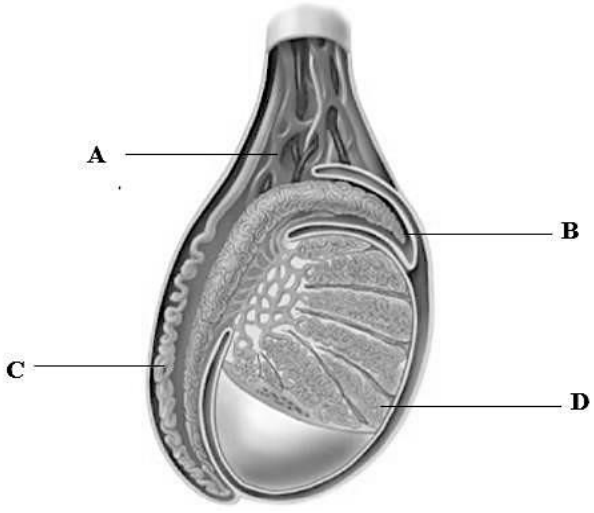
A Sayap ditolak ke atas dan burung terbang ke bawah.
The wings are pushed upward and bird flies downwards.

B Sayap ditolak ke bawah dan burung terbang ke atas.
The wings are pulled downwards and the bird flies upwards.

C Otot pektoralis minor mengecut dan otot pektoralis major mengendur, sayap dinaikkan ke atas.
When the pectoralis minor contracts and the pectoralis major relaxes, the wings are pulled up.

D Otot pektoralis major mengecut dan otot pektoralis minor mengendur, sayap digerakkan ke atas
When the pectoralis major contracts and the pectoralis minor relaxes, the wings are pulled up.

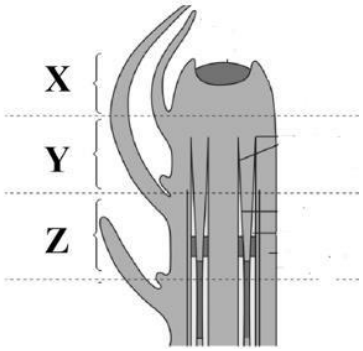
21 Rajah 17 menunjukkan struktur dalaman testis manusia
Diagram 17 *shows an internal structure of human testis.*



Rajah 17 / *Diagram* 17

Manakah antara struktur berlabel berikut **A, B, C** dan **D** ialah tubul seminiferus?
Which structure labelled **A, B, C** *and* **D** *is seminiferous tubule?*

22 Rajah 18 menunjukkan zon pertumbuhan pada hujung pucuk tumbuhan.
Diagram 18 *shows growth zone at the tip of the plant shoots.*



Rajah 18 / *Diagram* 18

Antara penyataan berikut yang manakah merupakan zon Y?
Which of the following is zone Y*?*

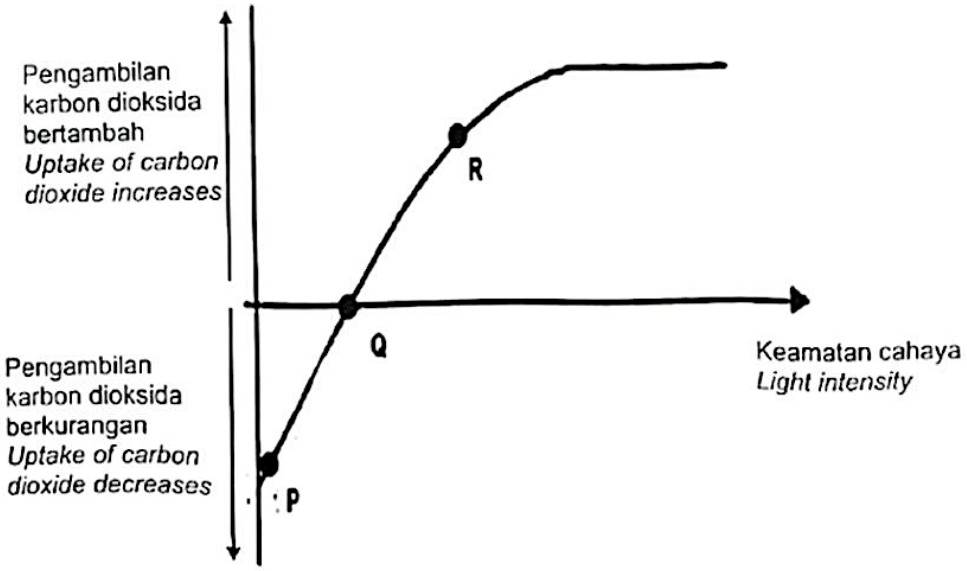
A Sel-sel meristem yang giat membahagi secara mitosis
Meristem cells actively divide through mitosis

B Sel berubah bentuk dan struktur untuk menjadi sel khusus
The cells change their shapes and structures to become specialised cells

C Pertambahan bilangan sel menyebabkan peningkatan kepanjangan batang tumbuhan
The increase of the number of cells causes the elongation of the plant stem

D Vakuol-vakuol kecil bergabung untuk membentuk vakuol yang bersaiz besar
Small vacuoles fuse to form a large vacuole

23 Rajah 19 menunjukkan graf hubungan antara penyerapan dan penghasilan karbon dioksida dengan keamatan cahaya.
Diagram 19 *shows a graph of the relationship between the absorption and production of carbon dioxide with light intensity.*

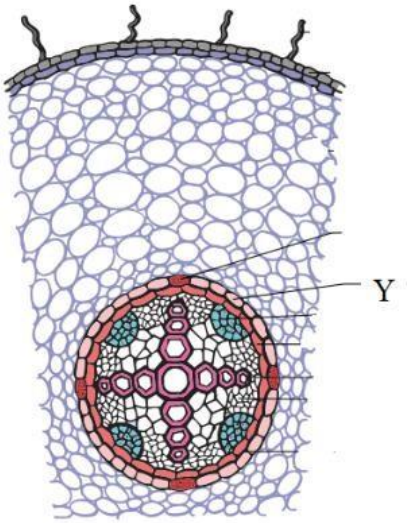


Rajah 19 / *Diagram* 19

Antara berikut, yang manakah merujuk kepada titik Q?
Which of the following refers to point Q*?*

A Kadar repirasi lebih rendah daripada kadar fotosintesis
The rate of respiration is lower than the rate of photosynthesis
B Kadar respirasi sama seperti kadar fotosintesis
The rate of respiration is the same as the rate of photosynthesis
C Kadar penghasilan glukosa melebihi kadar penggunaan glukosa
The rate of glucose production exceeds the rate of glucose usage
D Kadar fotosintesis meningkat melebihi kadar respirasi
The rate of photosynthesis exceeds the rate of respiration

24 Rajah 20 menunjukkan keratan rentas pada akar eudikot.
Diagram 20 *shows cross section of eudicot plant's root.*



Rajah 20 / *Diagram* 20

Apakah fungsi tisu Y?
What is the function of tissue Y*?*

I Memudahkan pergerakan air di dalam akar
Facilitate water movement in the roots
II Lapisan pemisah antara korteks dengan silinder vaskular
Separating layer between cortex and vascular cylinder
III Memudahkan pertukaran gasberlaku
Facilitate gaseous exchange
IV Membenarkan air dan garam mineral yang diserap daripada tanah memasuki silinder vascular tetapi bukan gelembung udara
Allows water and mineral salts absorbed from the soil to enter the vascular cylinder, but not air bubbles

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

25 Sekumpulan ahli botani menemui spesis baru di dalam hutan dekat Gunung Matang, Sarawak. Mereka mendapati tumbuhan ini mempunyai struktur akar 'haustorium' di mana boleh tumbuh menembusi tisu vaskular perumah untuk mendapatkan air dan nutrien daripada perumahnya.
A group of botanists had discovered a new species in the forest near Gunung Matang, Sarawak. They discovered that this plant had a root structure call haustorium which able to penetrate vascular tissues of host plant to obtain water and nutrients from their host.

Berdasarkan maklumat di atas, apakah penyesuaian nutrisi tumbuhan tersebut?
Based on the above information, what is the nutrient adaptation for this plant?

A Karnivor
Carnivorous
B Parasit
Parasitic
C Epifit
Epiphytic

26 Apakah keadaan yang menyebabkan gutasi berlaku pada tumbuhan?
What's the condition causes guttation to occur on a plant?

I Kadar transpirasi tinggi
The rate of transpiration is high
II Kadar transpirasi rendah
The rate of transpiration is low
III Tekanan akar yang tinggi
Root pressure is high
IV Tekanan akar yang rendah *Root pressure is low*

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

27 Antara berikut, yang manakah **tidak benar** tentang aplikasi fitohormon auksin dan giberelin dalam pertanian?
*Which of the following is **not true** about the application of phytohormone auxin and gibberellin in agriculture?*

	Auksin *Auxin*	Giberelin *Gibberellin*
A	Merawat tumbuhan kerdil tumbuh ke ketinggian normal *Treats dwarf plant to grow to normal height*	Menggalakkan pertumbuhan tanaman *Encourage growth in crops*
B	Menghasilkan buah tanpa biji *Produces seedless fruit*	Menghasilkan buah yang lebih besar *Produces larger fruits*
C	Melambatan pertunasan ubi kentang *Delay germination potatoes*	Menggalakkan percambahan biji bernih tanaman pada keadaan suhu rendah dan kekurangan cahaya *Promotes germination of seed during low temperature and light intensity*
D	Merangsang perkembangan akar pada keratan batang tumbuhan berkayu. *Promotes the growth of root on woody plant stem*	Merangsang permanjangan tangkai bunga denga cepat *Promotes rapid elongation of flower stems*

28 Antara yang berikut, urutan yang manakah betul bagi peringkat-peringkat perkembangan butir debunga?
Which of the following is the correct sequence for the stages in the development of pollen grain?

A Tetrad *Tetrad* → Sel induk mikrospora *Microspore mother cell* → Debunga *Pollen grain* → Debunga matang *Mature pollen grain*

B Debunga *Pollen grain* → Tetrad *Tetrad* → Sel induk mikrospora → Debunga matang *Mature pollen grain*

C Sel induk mikrospora *Microspore mother cell* → Tetrad *Tetrad* → Debunga *Pollen grain* → Debunga matang *Mature pollen grain*

D Sel induk mikrospora *Microspore mother cell* → Tetrad *Tetrad* → Debunga *Pollen grain* → Debunga matang *Mature pollen grain*

29 Rajah 21 menunjukkan buah-buahan yang dihasilkan oleh tumbuhan berbunga.
Diagram 21 *shows fruits produced from flowering plants.*

Strawberi
Strawberry

Mulberi
Mulberry

Rajah 21 / *Diagram* 21

Berapa bilangan kuntum bunga yang membentuk buah strawberi dan mulberi?
How many number of flowers to form strawberry and mulberry?

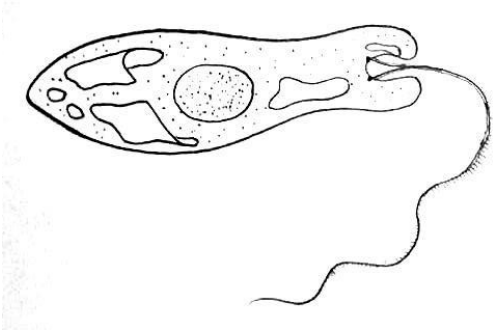
A Satu
One
B Sekelompok bunga
A cluster of flowers
C Tiada
None

30 Pokok manga hidup di habitat yang tidak terlalu kering dan tidak terlalu berair dengan mendapat bekalan air yang mencukupi.
Mango trees live in a habitat that is not too dry nor too wet with an adequate supply of water.

Apakah pengelasan bagi pokok manga berdasarkan habitat tersebut?
What is classification of mango trees based on the habitat?

A Halofit
Halophytes
B Mesofit
Mesophytes
C Hidrofit
Hidrophytes
D Xerofit
Xerophytes

31 Rajah 22 menunjukkan suatu organisma.
Diagram 22 shows an organism.



Rajah 22 / *Diagram 22*

Antara berikut yang manakah benar mengenai organisma itu?
Which of the following is true about the organism?

	Alam ***Kingdom***	**Kelas** ***Class***
A	Eubacteria *Eubacteria*	Kokus *Coccus*
B	Eubacteria *Eubacteria*	Basilus *Bacillus*
C	Protista *Protista*	Protozoa *Protozoa*
D	Protista *Protista*	Algae *Algae*

32 Antara berikut, yang manakah menerangkan peranan mikroorganisma sebagai pengurai dalam kitar nitrogen?
Which of the following describes the role of microorganisms as decomposers in nitrogen cycle?

A Menukarkan nitrogen di atmosfera kepada ion ammonium melalui proses pengikatan nitrogen
Changes nitrogen in atmosphere into ammonium ions via nitrogen-fixing process

B Menukarkan ion ammonium kepada ion nitrit melalui proses nitrifikasi
Changes ammonium ions into nitrite ions via nitrification

C Menukarkan nitrat di dalam tanah kepada gas nitrogen melalui proses denitrifikasi
Changes nitrate in the soil into nitrogen gas via denitrification

D Menukarkan sebatian protein dalam tisu badan kepada ion ammonium melalui proses ammonifikasi
Changes protein in body tissue into ammonium ions via ammonification

33 Interaksi manakah adalah mutualisme?
Which interaction is mutualism?

A

Ikan inggu dan anemon laut
Clown fish and sea anemone

B

Ikan jerung dan ikan remora
Remora fish and shark

C

Burung hantu dan tikus
Owl and rat

D

Teritip dan ketam
Barnacles and crab

34 Maklumat berikut adalah mengenai eutrofikasi.
The following information is about eutrophication.

P: BOD air meningkat
BOD of water increases
Q: Alga tumbuh pada permukaan kolam
Algae grow on the surface of the pond
R: Baja dibawa ke kolam oleh air hujan
Fertiliser is brought to the pond by rain water
S: Populasi bakteria meningkat
The population of bacteria increases
T: Kandungan oksigen dalam air menurun
Oxygen content in the water decreases

Antara urutan berikut, yang manakah betul tentang fenomena tersebut?
Which of the following sequences is correct about the phenomenon?

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

35 Rajah 23 menunjukkan rajah skema pewarisan kumpulan darah.
Diagram 23 *shows a schematic diagram of the blood group inheritance.*

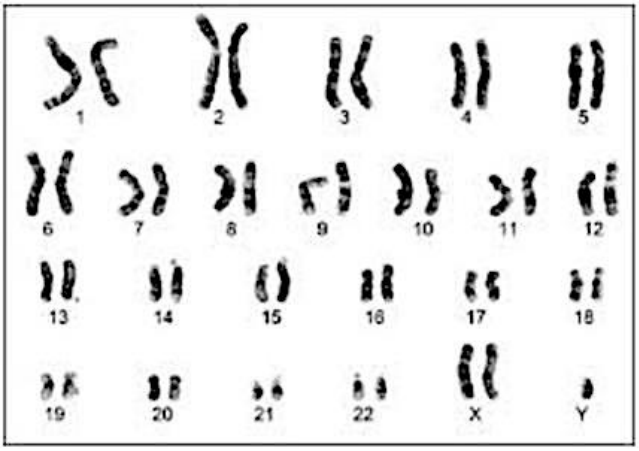
	Bapa *Father*	**X**	Ibu *Mother*
Fenotip induk : *Parent phenotype* :	**S**		Kumpulan darah A heterozigot *Heterozygote blood group A*
		↓	
Nisbah fenotip anak : *Phenotype offspring ratio* :		1 I^AI^A : 1 **T** : 1 **U** : 1 I^BI^O	

Rajah 23 / *Diagram* 23

Apakah kemungkinan genotip bagi **S, T** dan **U**?
What is a possible genotype for **S, T** *and* **U***?*

	S	T	U
A	I^AI^O	I^AI^O	I^AI^O
B	I^BI^O	I^BI^B	I^BI^O
C	I^AI^B	I^AI^O	I^AI^B
D	I^BI^O	I^AI^A	I^BI^B

36 Rajah 24 menunjukkan kariotip seorang kanak-kanak yang mengalami suatu penyakit genetik.
Diagram 24 *shows the karyotype of a child suffering from a certain genetic condition.*



Rajah 24 / *Diagram* 24

Apakah penyakit genetik yang dihadapi oleh kanak-kanak tersebut?
What is the genetic disease faced by this individual?

A Sindrom Down
Down syndrome
B Sindrom Klinefelter
Klinefelter syndrome
C Sindrom Turner
Turner syndrome

37 Antara berikut, yang manakah menunjukkan variasi tak selanjar?
Which of the following shows discontinuous variation?

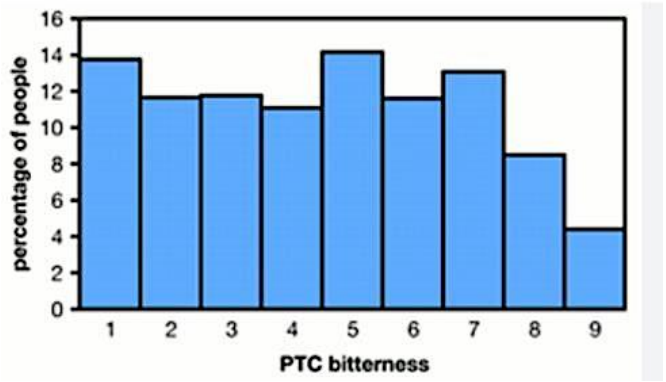
A 

B 

C 

D 

38 Guru Y telah melakukan aktiviti untuk mengkaji tahap kepekaan lidah pelajarnya terhadap larutan phenylthiocarbamide (PTC). Keputusannya ditunjukkan dalam Rajah 25.
Teacher Y *has done an activity to study the level of her students' tongue sensitivity towards phenylthiocarbamide* (PTC) *solution. The results is shown in Diagram* 25.



Rajah 25 / *Diagram* 25

Manakah antara berikut adalah benar berdasarkan keputusan kajian ini?
Which of the following is true based on the result of the investigation?

I Trait rasa PTC dikategorikan sebagai variasi tak selanjar
PTC *taste trait can be classified as a discontinuous variation*
II Trait rasa PTC dikawal oleh satu gen tunggal
PTC *taste trait is controlled by one single gene*
III Faktor persekitaran mempengaruhi trait rasa PTC
Environmental factors affect PTC *taste trait*
IV Graf menunjukkan taburan normal
Graph shows normal distribution

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

39 Seorang lelaki telah disarankan oleh doktor untuk menjalani terapi gen sebagai kaedah rawatan bagi penyakitnya. Antara berikut, yang manakah kemungkinan penyakit yang dihidapi oleh lelaki tersebut?
A man was advised by a doctor to undergo gene therapy as a treatment method for his disease. Which of the following is the most likely disease that the man is suffering from?

A Demam
Fever
B Influenza
Influenza
C Serangan jantung
Heart attack
D Sistik fibrosis
Cystic fibrosis

40 Antara berikut, yang manakah dipindahkan dari satu organisma ke organisma yang lain dalam proses kejuruteraan genetik?
Which of the following is transferred from one organism to another in the process of genetic engineering?

A Virus
Virus
B DNA
DNA
C Enzim
Enzyme
D Bakteria
Bacteria

KERTAS SOALAN TAMAT.

END OF QUESTION PAPER.

JAWAPAN KERTAS 1:

1	A	11	B	21	D	31	C
2	C	12	A	22	D	32	D
3	C	13	A	23	B	33	A
4	C	14	D	24	D	34	D
5	B	15	B	25	B	35	C
6	C	16	D	26	B	36	B
7	C	17	A	27	A	37	A
8	B	18	D	28	C	38	A
9	D	19	C	29	A	39	D
10	A	20	C	30	B	40	B