

SULIT

PROGRAM PENINGKATAN PRESTASI AKADEMIK SPM TAHUN 2011

BIOLOGY

Paper 1

One hour and fifteen minutes

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.*

Kertas soalan ini mengandungi 32 halaman bercetak.

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**INFORMATION FOR CANDIDATES
MAKLUMAT UNTUK CALON**

1. These 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 ruang yang betul pada kertas jawapan objektif.
4. Blacken only **one** space for each question.
Hitamkan satu ruang sahaja bagi setiap soalan.
5. If you wish to change your answer, erase the blackened mark that you have made.
Then blacken the space for the new answer.
*Sekiranya anda hendak menukar jawapan, padamkan tanda yang telah dibuat.
Kemudian hitamkan jawapan baru.*
6. The diagrams in the questions provided are not drawn to scale unless stated.
Rajah yang mengiringi soalan tidak dilukis mengikut skala kecuali dinyatakan.
7. You may use a non-programmable scientific calculator.
Anda dibenarkan menggunakan kalkulator saintifik.

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Answer all questions.
Jawab semua soalan.

- 1 Diagram 1 shows the structure of a cell.
Rajah 1 menunjukkan struktur sejenis sel.

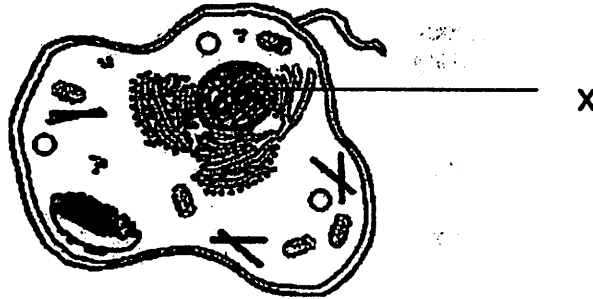


Diagram 1
Rajah 1

What is the function of organelle X?
Apakah fungsi organel X?

- | | | | |
|---|--|---|---|
| A | Produce ATP
<i>Menghasilkan ATP</i> | C | Site of protein synthesis
<i>Tapak penjaanaan protein</i> |
| B | Absorbed light energy
<i>Menyerap tenaga cahaya</i> | D | Coordinate cellular activities
<i>Mengkordinasi aktiviti sel</i> |
- 2 Diagram 2 shows gaseous exchange in a unicellular organism.
Rajah 2 menunjukkan pertukaran gas pada organisma unisel.

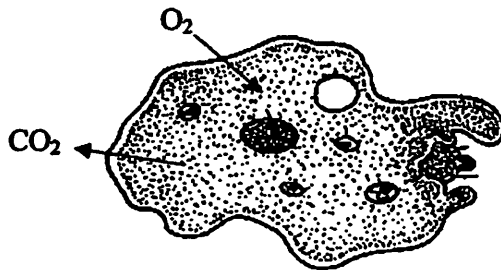


Diagram 2
Rajah 2

State the method of gaseous exchange at the organism.
Namakan cara bagaimana pertukaran gas berlaku pada organisma ini.

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

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- 3 Diagram 3 shows a plant cell.
Rajah 3 menunjukkan suatu sel tumbuhan.

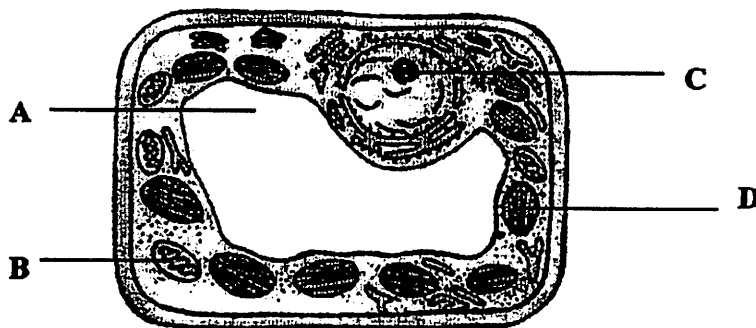


Diagram 3
Rajah 3

Which structure labeled A, B, C and D traps light energy from sunlight for the process of photosynthesis?

Struktur manakah yang berlabel A, B, C dan D yang memerangkap tenaga daripada cahaya matahari untuk menjalankan proses fotosintesis?

- 4 Diagram 4 shows the movement of molecules K across phospholipid bilayer.
Rajah 4 menunjukkan pergerakan molekul K merentasi lapisan fosfolipid.

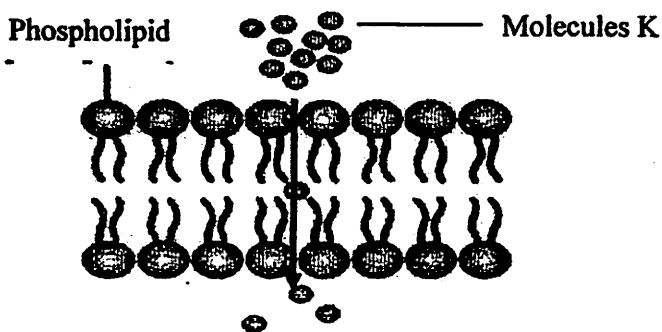


Diagram 4
Rajah 4

Name molecule K.
 Namakan molekul K.

- A Glucose
Glukosa
 B Amino acid
Asid amino

- C Fatty acids
Asid lemak
 D Glycoprotein
Glycoprotein

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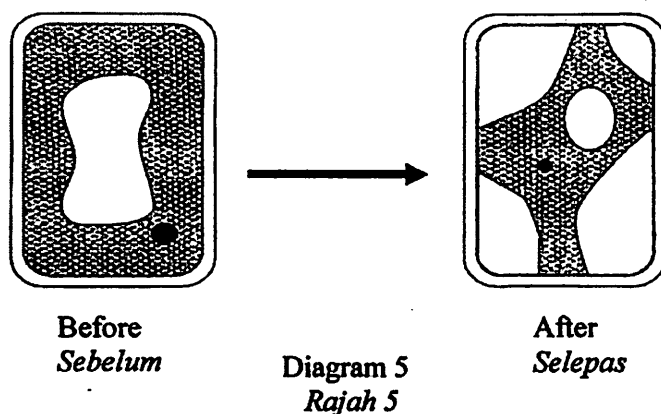
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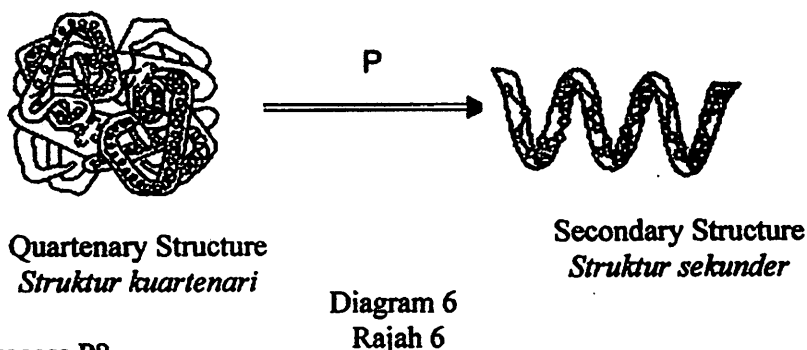
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- 5 Diagram 5 shows the condition of a plant cell after being immersed in 10% sucrose solution for 30 minutes.
Rajah 5 menunjukkan keadaan sel tumbuhan setelah direndam di dalam larutan sukrosa 10% selama 30 menit.



What has happened to the plant cell after 30 minutes?
Apakah yang telah berlaku kepada sel tumbuhan tersebut selepas 30 menit?

- | | |
|-------------------------------------|---|
| A Crenated
<i>Mengecut</i> | C Haemolysed
<i>Hemolisis</i> |
| B Plasmolysed
<i>Plasmolisis</i> | D Deplasmolysed
<i>Deplasmolisis</i> |
- 6 Diagram 6 shows the changes of protein level from quaternary structure to secondary structure through process P.
Rajah 6 menunjukkan perubahan peringkat protein dari kuarteneri ke sekunder melalui proses P.



What is process P?
Apakah proses P?

- | | |
|-------------------------------------|-------------------------------------|
| A Denaturation
<i>Denaturasi</i> | C Hydrolysis
<i>Hidrolisis</i> |
| B Deamination
<i>Deaminasi</i> | D Condensation
<i>Kondensasi</i> |

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- 7 Diagram 7 shows the effects of pH on the rate of reaction of enzyme Y in human alimentary canal.
Rajah 7 menunjukkan kesan pH terhadap kadar tindakan enzim Y di dalam salur alimentari manusia.

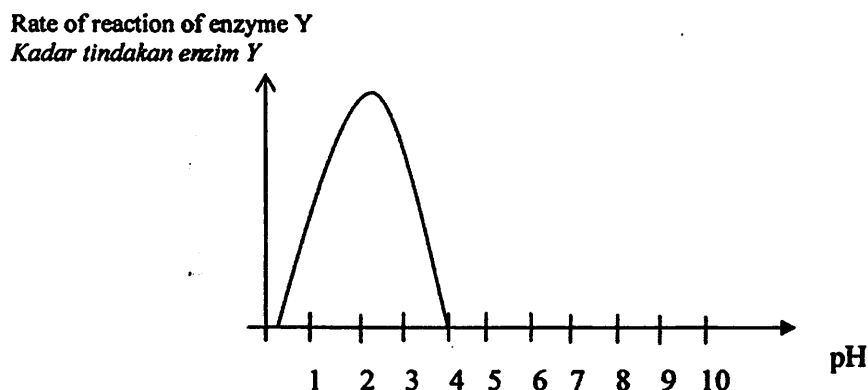


Diagram 7
 Rajah 7

What is enzyme Y?
Apakah enzim Y?

- | | | | |
|---|---------|---|---------|
| A | Rennin | C | Amylase |
| B | Trypsin | D | Lipase |

- 8 Diagram 8 shows an enzyme, P and four substrates, W, X, Y and Z.
Rajah 8 menunjukkan enzim P dan empat substrat, W, X, Y dan Z.

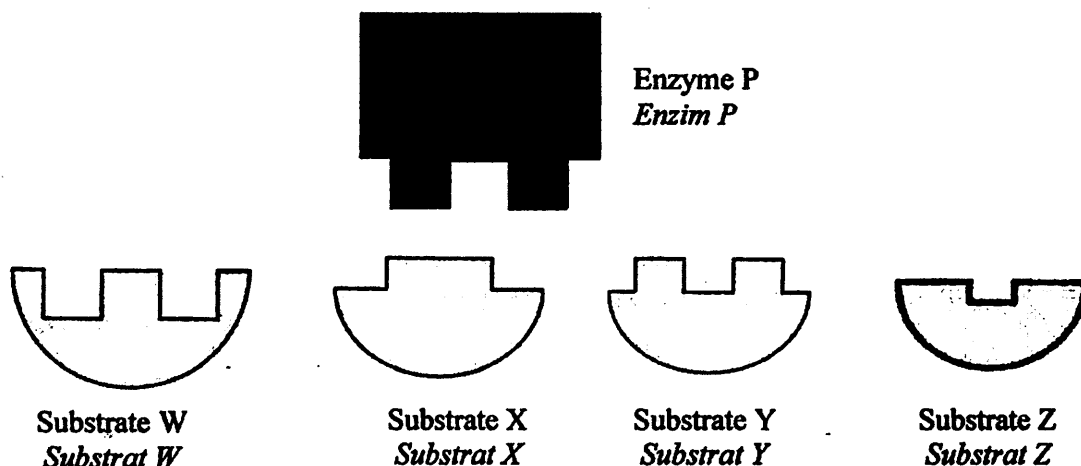


Diagram 8
 Rajah 8

Which substrate W, X, Y and Z can be hydrolysed by enzyme P?
Substrat manakah W, X, Y dan Z boleh dihidrolisiskan oleh enzim P?

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

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9 The information below shows the use of an enzyme in our daily lives.
Maklumat berikut merujuk kepada penggunaan sejenis enzim dalam kehidupan seharian.

- Tenderized meat
Melembutkan daging
- Remove the skin of fish
Menanggalkan kulit ikan
- Dissolved stains in clothes
Melarutkan kotoran pada pakaian

Based on the information above, which of the following is the enzyme?
Berdasarkan pernyataan di atas, manakah menunjukkan enzim tersebut?

- | | |
|------------|------------|
| A Lipase | C Amylase |
| B Protease | D Selulase |

10 Diagram 9 shows a cell undergoing meiosis.
Rajah 9 menunjukkan satu cell mengalami meiosis

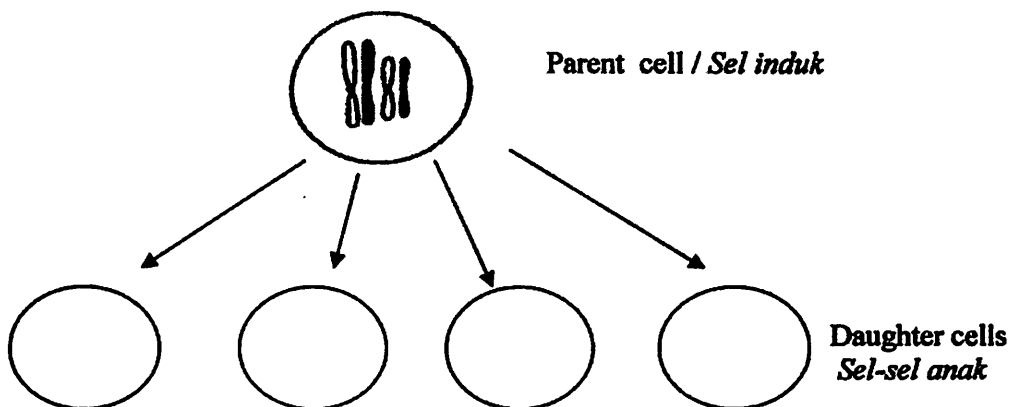
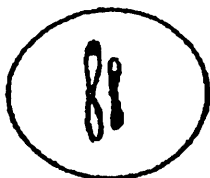


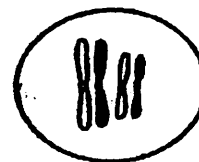
Diagram 9
Rajah 9

Which of the following daughter cells is the gamete of the parent cell.
Yang manakah dari sel anak yang berikut ialah gamet kepada sel induk.

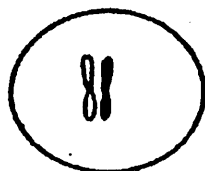
A



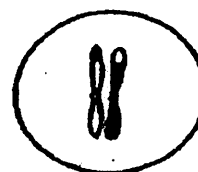
C



B



D



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- 11 Diagram 10 shows the life cycle of frogs.
Rajah 10 menunjukkan kitaran hidup katak



Diagram 10
Rajah 10

What is the chromosomal number of P, Q and R?
Berapakah nombor kromosom bagi P, Q dan R?

	P (Egg / Telur)	Q (Tadpole / Berudu)	R (Adult Frog / Katak Dewasa)
A	Haploid	Haploid	Diploid
B	Haploid	Diploid	Diploid
C	Diploid	Haploid	Diploid
D	Diploid	Diploid	Diploid

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- 12 Diagram 11 shows an aquatic plant *Hydrilla sp* carrying out photosynthesis.
Rajah 11 menunjukkan tumbuhan akuatik Hydrilla sp menjalankan fotosintesis

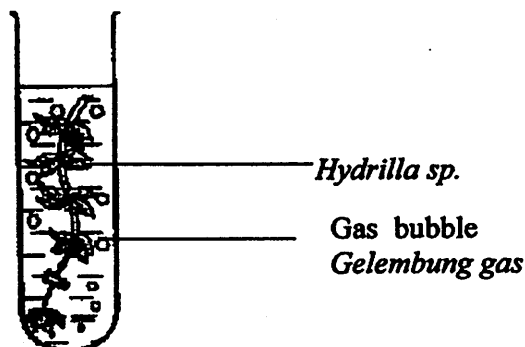


Diagram 11
Rajah 11

What is the gas?
Apakah gas tersebut?

- | | |
|--|-------------------------------|
| A Carbon dioxide
<i>Karbon dioksida</i> | C Oxygen
<i>Oksigen</i> |
| B Hydrogen
<i>Hidrogen</i> | D Nitrogen
<i>Nitrogen</i> |
- 13 An experiment is carried out to determine the concentration of vitamin C in a fruit juice. 1 cm³ of DCPIP solution was used.
Satu eksperimen dijalankan untuk menentukan kepekatan vitamin C dalam jus buah. 1 cm³ of DCPIP larutan digunakan.

Volume of 0.1% ascorbic acid used to decolourise 1 cm ³ of DCPIP <i>Isipadu 0.1% asid askorbik yang digunakan untuk melunturkan 1 cm³ of DCPIP</i>	1.0 cm ³
Volume of the fruit juice used to decolourised 1 cm ³ of DCPIP <i>Isipadu jus buah yang digunakan untuk melunturkan 1 cm³ of DCPIP</i>	1.2 cm ³

What is the concentration of vitamin C in the fruit juice?
Berapakah kepekatan vitamin C dalam jus buah?

- | |
|----------------------------|
| A 0.83 mg cm ⁻³ |
| B 1.10 mg cm ⁻³ |
| C 1.20 mg cm ⁻³ |
| D 8.30 mg cm ⁻³ |

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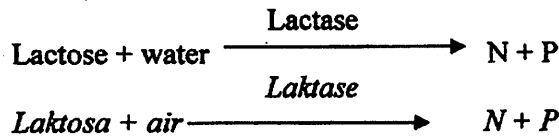
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- 14 In the intestine, lactose is hydrolysed by lactase. The following shows the equation of the process.
Dalam usus kecil, laktosa dihidrolisisikan oleh laktase. Berikut menunjukkan persamaan proses itu.



What are N and P?
Apakah N dan P?

	N	P
A	Glucose <i>Glukosa</i>	Glucose <i>Glukosa</i>
B	Glucose <i>Glukosa</i>	Fructose <i>Fruktose</i>
C	Glucose <i>Glukosa</i>	Galactose <i>Galaktosa</i>
D	Glucose <i>Glukosa</i>	Maltose <i>Maltosa</i>

- 15 Diagram 12 shows a ruminant that has a stomach with four chambers.
Rajah 12 menunjukkan ruminan yang mempunyai empat ruang perut.

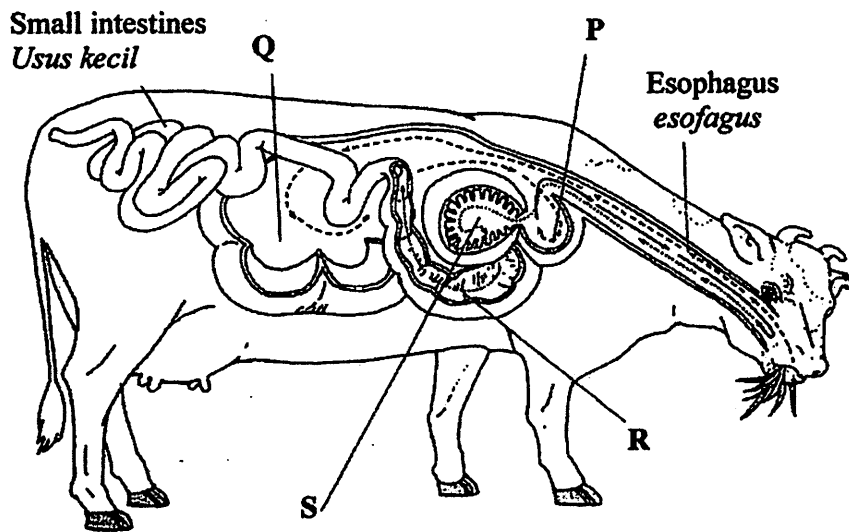


Diagram 12
Rajah 12

Which of the following P, Q, R and S is the true stomach of the cow?
Yang manakah berikut P, Q, R dan S ialah perut sebenar lembu?

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

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- 16 Three different tests were carried out on a food sample. The results are shown in Table 1.
Tiga ujian yang berbeza dijalankan atas sampel makanan . Keputusan ditunjukkan dalam Jadual 1

Food test <i>Ujian makanan</i>	Results <i>Keputusan</i>
Biuret test <i>Ujian Biuret</i>	Solution changes from blue to purple colour <i>Larutan berubah dari warna biru ke warna ungu</i>
Benedict's test <i>Ujian Benedict</i>	The solution remains blue, no changes occur <i>Larutan kekal warna biru, tiada perubahan berlaku</i>
Iodine test <i>Ujian Iodin</i>	Solution changes from yellow brown to blue black. <i>Larutan berubah dari warna kuning perang ke biru hitam</i>

Table 1
Jadual 1

What does the food sample contain?
Apakah kandungan sampel makanan?

- A Protein, reducing sugar
Protein, gula penurun
- B Protein, starch
Protein, kanji
- C Reducing sugar, starch
Gula penurun, kanji
- D Starch , lipid
Kanji, lipid

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- 17 Diagram 13 shows children suffering from a deficiency disease.
Rajah 13 menunjukkan kanak-kanak menghidap penyakit kekurangan zat makanan.

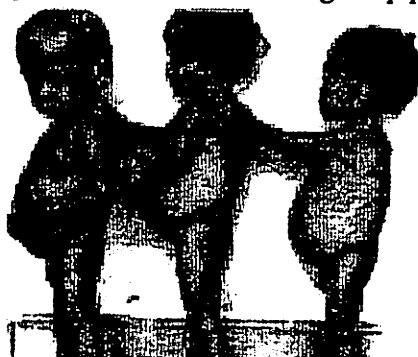


Diagram 13

Rajah 13

What deficiency disease is the children suffering from?

Apakah penyakit kekurangan zat makanan yang dihidapi oleh kanak-kanak ini?

- | | |
|---------------------------|--------------------------------------|
| A Scurvy / <i>Skurvi</i> | C Kwashiorkor / <i>Kwasyiorkor</i> |
| B Anaemia / <i>Anemia</i> | D Osteoporosis / <i>Osteoporosis</i> |
- 18 Diagram 14 shows a part of human respiratory structures.
Rajah 14 menunjukkan sebahagian daripada struktur respirasi manusia

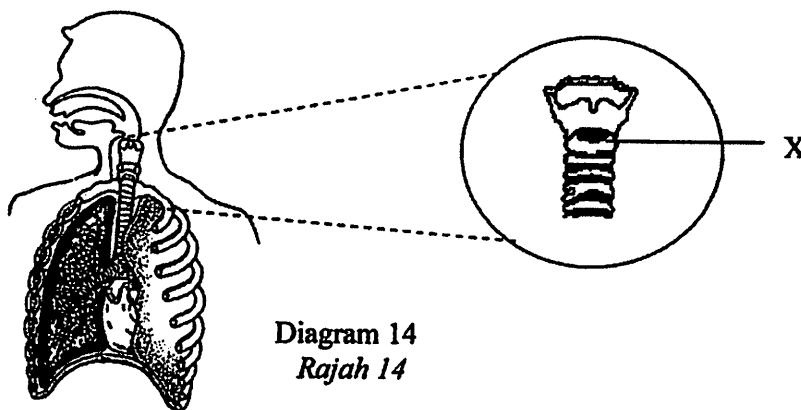


Diagram 14

Rajah 14

What is the function of X?

Apakah fungsi X?

- | |
|--|
| A To produce mucus
<i>Untuk menghasilkan mucus</i> |
| B To filter bacteria in the air
<i>Untuk menapis bakteria di udara</i> |
| C To increase surface area
<i>Untuk menambahkan luas permukaan</i> |
| D To prevent the trachea from collapsing
<i>Untuk mengelakkan trakea daripada ranap</i> |

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- 19 Diagram 15 shows inhalation and exhalation mechanisms of a fish.
Rajah 15 menunjukkan mekanisma menarik nafas dan menghembus nafas bagi seekor ikan

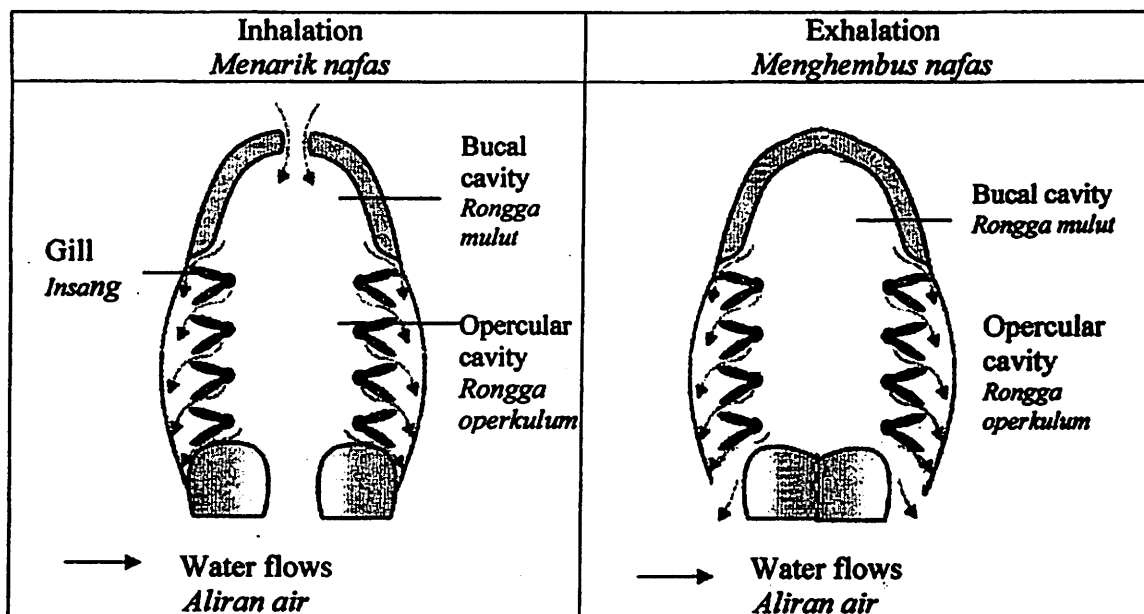


Diagram 15
Rajah 15

Which of the following statement is correct between the two processes?
Yang manakah pernyataan berikut adalah benar tentang kedua-dua proses di atas?

	Inhalation <i>Menarik nafas</i>	Exhalation <i>Menghembus nafas</i>
A	The floor of buccal cavity is raised <i>Lantai mulut diangkat</i>	The floor of buccal cavity is lowered <i>Lantai mulut diturunkan</i>
B	The opercular cavity becomes larger <i>Rongga mulut menjadi lebih besar</i>	The opercular cavity becomes smaller <i>Rongga mulut menjadi lebih kecil</i>
C	The external intercostal muscle contract <i>Otot interkostal luar mengecut</i>	The external intercostals muscle relax <i>Otot interkostal luar mengendur</i>
D	The pressure in the buccal cavity is higher than the pressure outside <i>Tekanan di dalam rongga mulut lebih tinggi daripada tekanan di luar</i>	The pressure in the buccal cavity is lower than the pressure outside <i>Tekanan di dalam rongga mulut lebih rendah daripada tekanan di luar</i>

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- 20 Diagram 16 shows a model of human rib cage
Rajah 16 menunjukkan model sangkar rusuk manusia

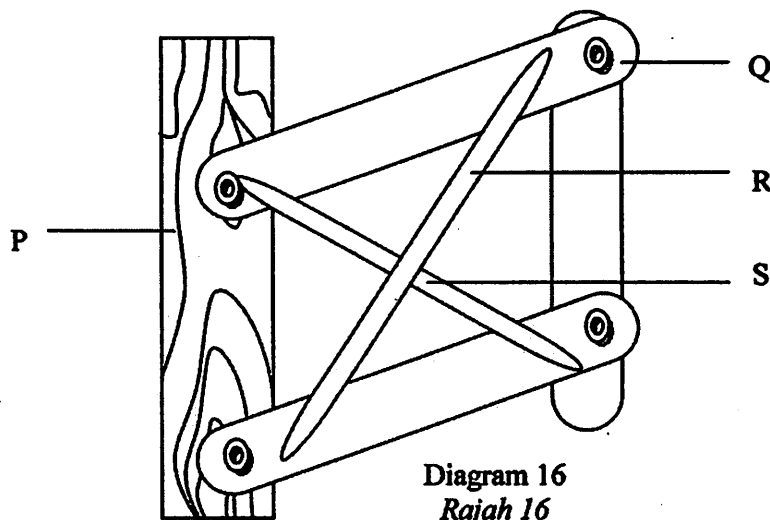


Diagram 16
Rajah 16

Which of the following P, Q R and S represent the correct parts of human rib cage during inhalation.

Manakah antara berikut P, Q, R dan S adalah bahagian yang benar tentang sangkar rusuk manusia semasa menarik nafas

	P	Q	R	S
A	Rib cage <i>Sangkar rusuk</i>	Internal intercostal muscle <i>Otot interkostal dalam</i>	External intercostal muscle <i>Otot interkostal luar</i>	Backbone <i>Tulang belakang</i>
B	Internal intercostal muscle <i>Otot interkostal dalam</i>	Rib cage <i>Sangkar rusuk</i>	Backbone <i>Tulang belakang</i>	External intercostal muscle <i>Otot interkostal luar</i>
C	Backbone <i>Tulang belakang</i>	Rib cage <i>Sangkar rusuk</i>	External intercostal muscle <i>Otot interkostal luar</i>	Internal intercostal muscle <i>Otot interkostal dalam</i>
D	Rib cage <i>Sangkar rusuk</i>	Backbone <i>Tulang belakang</i>	External intercostal muscle <i>Otot interkostal luar</i>	Internal intercostals muscle <i>Otot interkostal dalam</i>

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- 21 Which of the following are the products of aerobic respiration and anaerobic respiration in muscle tissue?
 Yang manakah berikut adalah hasil respirasi aerobik dan respirasi anaerobik yang berlaku dalam tisu otot?

	Aerobic respiration <i>Respirasi aerobik</i>	Anaerobic respiration <i>Respirasi anaerobik</i>
A	Ethanol <i>Etanol</i>	Carbon dioxide and water <i>Karbon dioksida dan air</i>
B	Carbon dioxide and water <i>Karbon dioksida dan air</i>	Ethanol <i>Etanol</i>
C	Lactic Acid <i>Asid laktik</i>	Carbon dioxide and water <i>Karbon dioksida dan air</i>
D	Carbon dioxide and water <i>Karbon dioksida dan air</i>	Lactic Acid <i>Asid laktik</i>

- 22 Diagram 17 shows the transport of carbon dioxide from the body cell to the blood capillary.
 Rajah 17 menunjukkan pengangkutan gas karbon dioksida daripada sel badan ke kapilari darah manusia

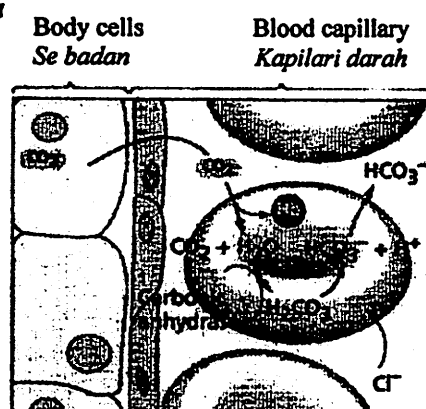


Diagram 17
 Rajah 17

Which statement is incorrect?
 Pernyataan manakah yang tidak benar?

- A Carbon dioxide is transported as dissolved carbon dioxide in blood plasma
 Karbon dioksida diangkut sebagai karbon dioksida terlarut dalam plasma darah
- B Carbon dioxide is transported in the form of bicarbonate ion
 Karbon dioksida diangkut dalam bentuk ion bikarbonat
- C Carbon dioxide is transported as carbaminohaemoglobin
 Karbon dioksida diangkut sebagai karbominohaemoglobin
- D Carbon dioxide is transported as carboxyhaemoglobin
 Karbon dioksida diangkut sebagai karboksahaemoglobin

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- 23 Which of the following enable the gaseous exchange in plants?
Yang manakah berikut membolehkan pertukaran gas berlaku di dalam tumbuhan?

- A Nostrils
Nostril
- B Spiracle
Spirakel
- C Lenticels
Lentisel
- D Hydatode
Hidatod

- 24 Diagram 18 shows an energy flow in a food chain.
Rajah 18 menunjukkan satu pengaliran tenaga dalam satu rantai makanan.

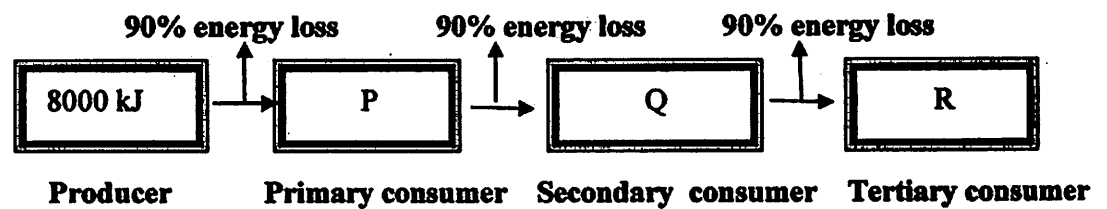


Diagram 18
Rajah 18

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

- A 800 kJ
- B 80 kJ
- C 88 kJ
- D 8 kJ

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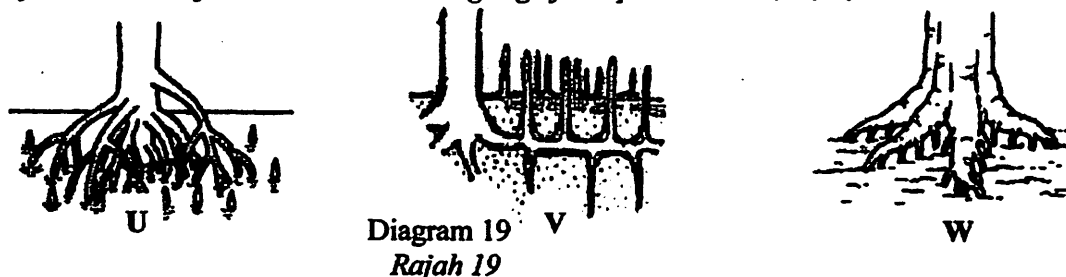
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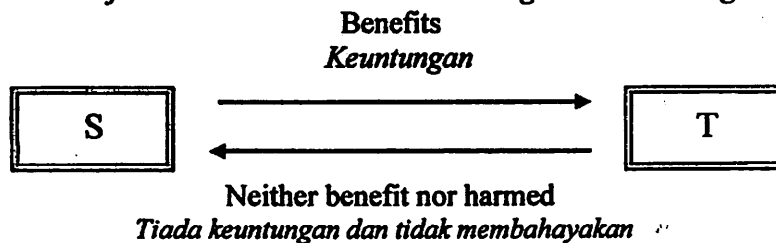
- 25 The Diagram 19 shows the root system of three types of mangrove plants, U, V and W.
Rajah 19 menunjukkan sistem akar bagi tiga jenis pokok bakau, U, V, dan W.



Which of the following is a correct match for U, V and W?
Antara yang berikut, yang manakah adalah padanan betul bagi U, V dan W?

	U	V	W
A	<i>Rhizophora sp.</i>	<i>Avicennia sp.</i>	<i>Bruguiera sp.</i>
B	<i>Avicennia sp.</i>	<i>Sonneratia sp.</i>	<i>Bruguiera sp.</i>
C	<i>Bruguiera sp.</i>	<i>Avicennia sp.</i>	<i>Rhizophora sp.</i>
D	<i>Sonneratia sp.</i>	<i>Bruguiera sp.</i>	<i>Rhizophora sp.</i>

- 26 Diagram 20 shows a type of interaction between organism S and organism T.
Rajah 20 menunjukkan satu interaksi diantara organism S dan organism T.



Neither benefit nor harmed
Tiada keuntungan dan tidak membahayakan

What may possibly be the organisms S and T?
Apakah kemungkinan organisma S dan T?

	S	T
A	Tapeworm <i>Cacing pita</i>	Human <i>Manusia</i>
B	Sea anemones <i>Buran laut</i>	Hermit crab <i>Ketam hermit</i>
C	Rhizobium <i>Rhizobium</i>	Leguminous plants <i>Tumbuhan legum</i>
D	Aphids <i>Afid</i>	Plant <i>Tumbuhan</i>

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27 Which of the following statements best describes biochemical oxygen demand (BOD)?
 Manakah pernyataan berikut menerangkan keperluan oksigen biokimia (BOD) dengan betul?

- A The volume of water sample to decolourise the methylene blue solution
 Isipadu sampel air untuk melunturkan larutan metelina biru
- B The amount of oxygen produced by plant plankton in 1 litre of water
 Amaun oksigen yang dihasilkan oleh tumbuhan fitiplankton dalam 1 liter air
- C The amount of oxygen used up by microorganism in 1 litre of water.
 Amaun oksigen yang digunakan oleh mikroorganisma dalam satu liter air.
- D The amount of excessive organic fertilisers dissolves in 1 litre of water.
 Amaun lebihan baja organic yang larut dalam satu liter air.

28 Diagram 21 shows the thinning of ozone layer in the earth's stratosphere.
 Rajah 21 menunjukkan penipisan lapisan ozon dalam stratosfera bumi

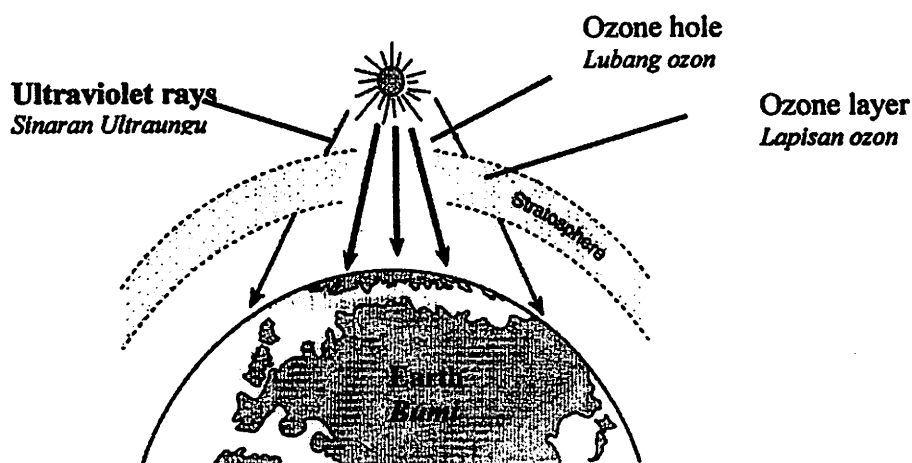


Diagram 21
 Rajah 21

Which of the following substances causes this phenomenon?
 Manakah antara bahan-bahan berikut menyebabkan fenomena ini?

- A Carbon dioxide / Karbon dioksida
- B Nitrogen dioxide / Nitrogen dioksida
- C Carbon monoxide / Karbon monoksida
- D Chlorofluorocarbon (CFC) / Klorofluorokarbon

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- 29 Diagram 22 shows the phenomenon of landslide caused by uncontrolled human activities.
Rajah 22 menunjukkan fenomena tanah runtuh yang disebabkan oleh aktiviti-aktiviti manusia yang tidak terancang.

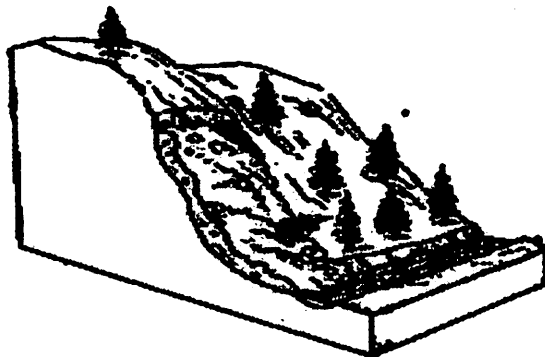


Diagram 22
Rajah 22

- A Farming / *Perladangan*
 B Industrialisation / *Perindustrian*
 C Deforestation / *Penebangan hutan*
 D Open burning / *Pembakaran terbuka*
- 30 Which of the following involved in the blood-clotting process?
Manakah yang berikut terlibat dalam proses pembekuan darah?
- A Globulin, thrombin and fibrin
Globulin, thrombin, dan fibrin
 B Albumin, globulin, and fibrinogen
Albumin, globulin, dan fibrinogen
 C Thrombin, thrombokinase and fibrinogen
Trombin, trombokinase, dan fibrinogen
 D Albumin, prothrombin, and thrombokinase.
Albumin, protrombin, dan trombokinase

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- 31 Diagram 23 shows the structure of phloem tissue.
Rajah 23 menunjukkan struktur tisu floem.

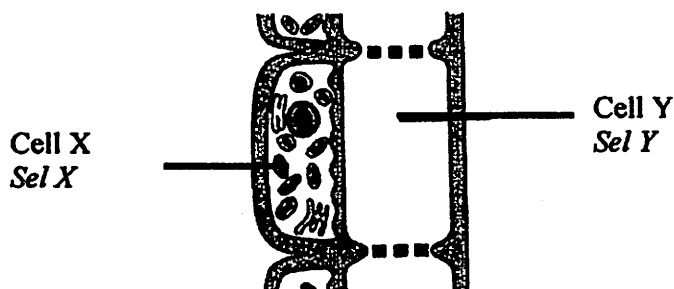


Diagram 23
Rajah 23

Which of the statements are true about the diagram above?
Manakah pernyataan berikut benar berkaitan rajah di atas?

	Cell X / Sel X	Cell Y / Sel Y
A	Gives mechanical support to plant <i>Memberi sokongan mekanikal kepada pokok.</i>	Has a nucleus when matured <i>Mempunyai nukleus apabila matang</i>
B	Has numerous mitochondria <i>Mempunyai banyak mitokondria</i>	Has cytoplasmic strands to help in translocation of organic matters. <i>Mempunyai bebenang sitoplasma untuk membantu dalam pengangkutan bahan-bahan organik.</i>
C	Provides the metabolic needs of the cell Y <i>Menyediakan keperluan metabolik bagi sel Y</i>	Gives mechanical support to plant <i>Memberi sokongan mekanikal kepada pokok.</i>
D	Transport organic matters in plants <i>Mengangkut bahan-bahan organik dalam tumbuhan</i>	Transport water and dissolved mineral salts in plants. <i>Mengangkut air dan garam-garam mineral terlarut dalam tumbuhan.</i>

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- 32 Diagram 24 shows the concentration of antibodies in the blood of two individuals A and B. Both of them have been given two injections respectively
Rajah 24 menunjukkan kepekatan antibodi dalam darah bagi dua individu A dan B. Kedua-duanya telah diberikan masing-masing dua suntikan.

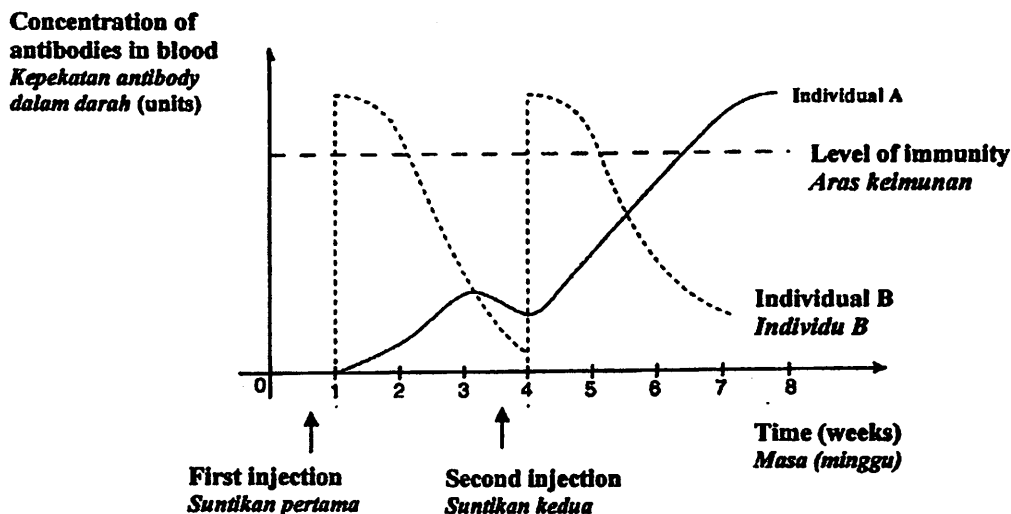
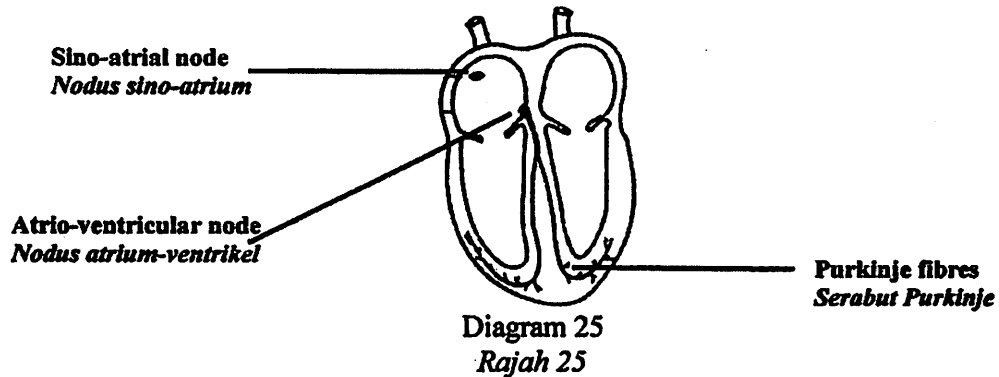


Diagram 24
Rajah 24

What type of immunity is obtained by individuals A and B?
Apakah jenis imuniti yang diperolehi oleh individu A dan B?

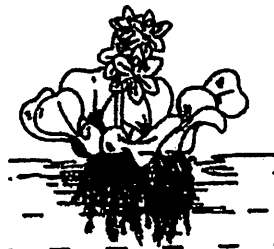
	Individual A <i>Individu A</i>	Individual B <i>Individu B</i>
A	Natural passive immunity <i>Keimunan pasif semulajadi</i>	Artificial active immunity <i>Keimunan aktif tiruan</i>
B	Artificial passive immunity <i>Keimunan pasif tiruan</i>	Artificial active immunity <i>Keimunan aktif tiruan</i>
C	Artificial passive immunity <i>Keimunan pasif tiruan</i>	Natural active immunity <i>Keimunan aktif semulajadi</i>
D	Artificial active immunity <i>Keimunan aktif tiruan</i>	Artificial passive immunity <i>Keimunan pasif tiruan</i>

- 33 Diagram 25 a vertical section through the human heart.
Rajah 25 menunjukkan keratan menegak jantung mamusia.



- Which of the following is the function of sino-atrial node (SAN)?
Manakah yang berikut adalah fungsi nodus sino-atrium (SAN)?

- A Control the ventricular contraction
Mengawal pengecutan ventrikel
 - B Transmit the impulse to the ventricular walls
Menghantar impul ke dinding ventrikel.
 - C Control the opening of semilunar valves
Mengawal pembukaan injap separa bulat.
 - D Act as a pacemaker which initiates the heart beat.
Berperanan sebagai perentak yang memulakan denyutan jantung.
- 34 Diagram 26 shows an aquatic plant
Rajah 26 menunjukkan tumbuhan air.



- Which of the following are adaptation help the plant to float?
Manakah yang berikut adalah adaptasi yang membantu tumbuhan ini terapung?

- A Thickened cell walls, broad leaves.
Sel berdinding tebal, daun yang lebar.
- B Broad leaves, Aerenchyma tissue
Daun lebar, tisu arenkima.
- C Aerenchyma tissue, thick cuticle on leaf surface.
Tisu arenkima, kutikel yang tebal pada permukaan daun.
- D Sclereids, have numerous vascular tissue.
Sklerid, mempunyai banyak tisu vascular.

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- 35 Diagram 27 shows the growth of coleoptil when exposed to uniform sunlight.
Rajah 27 menunjukkan pertumbuhan koleoptil apabila didedahkan kepada cahaya yang sekata

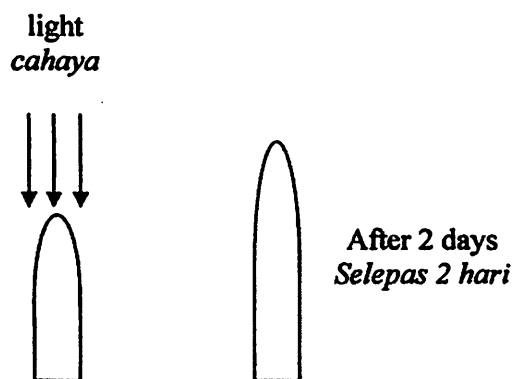


Diagram 27
Rajah 27

Which of the following explained why the coleoptil grow vertically upwards?
Yang manakah antara berikut menerangkan kenapa koleoptil tumbuh menegak ke atas?

- A Auxin is produced and evenly distributed
Auksin dihasilkan dan taburannya adalah sekata
- B Auxin produced is destroyed by light
Auksin yang dihasilkan telah dimusnahkan oleh cahaya
- C Auxin production is inhibited
Penghasilan auksin terbantut
- D No auxin is produced
Tiada auksin yang dihasilkan

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36 Diagram 28 shows the negative feedback mechanism during the regulation of blood osmotic pressure.

Rajah 28 menunjukkan mekanisme suap balik negatif semasa pengawalaturan tekanan osmosis darah

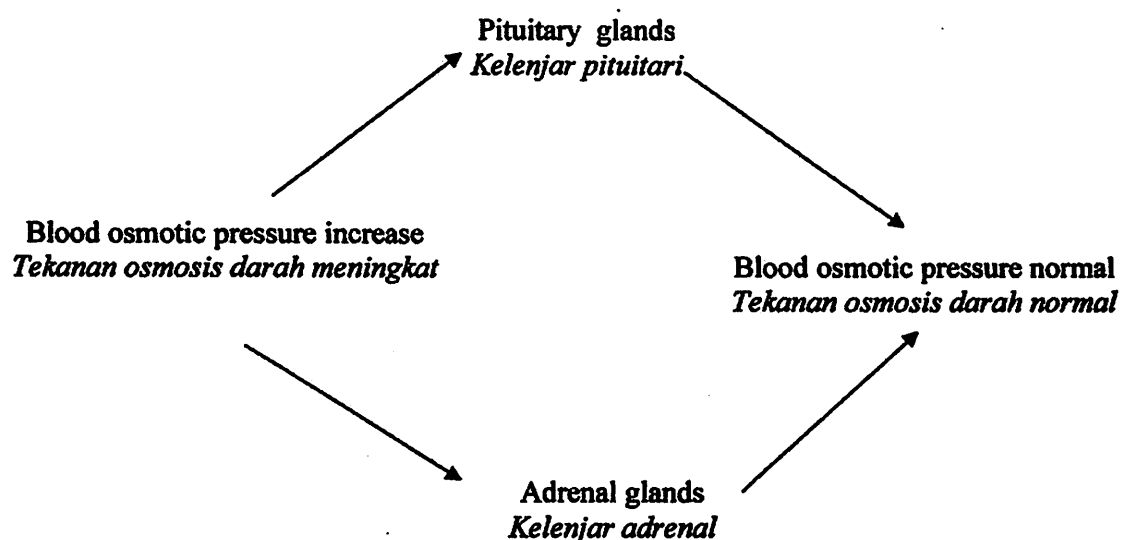


Diagram 28

Rajah 28

What is the response of pituitary and adrenal glands ?

Apakah hasil tindakbalas oleh kelenjar pituitari dan adrenal?

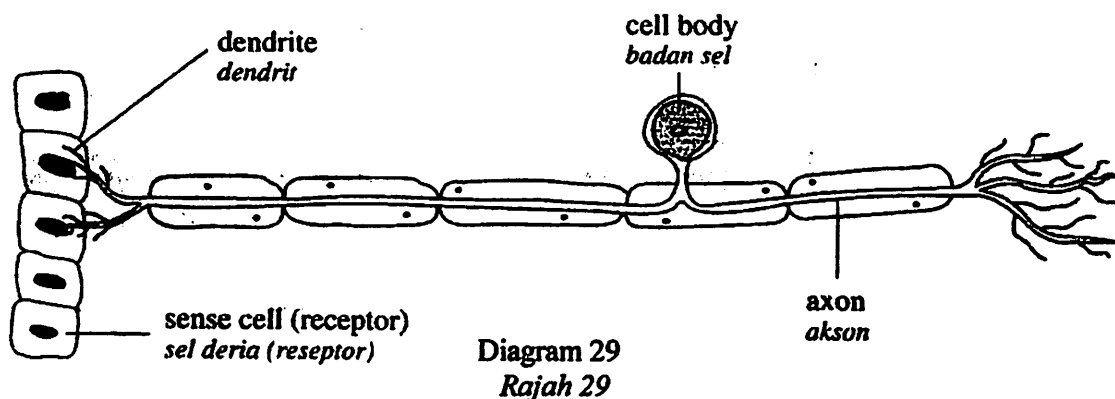
	Pituitary gland <i>Kelenjar pituitari</i>	Adrenal gland <i>Kelenjar adrenal</i>
A	Secretes more ADH <i>Merembeskan lebih ADH</i>	Secretes more aldosterone <i>Merembeskan lebih aldosteron</i>
B	Secretes less ADH <i>Merembeskan kurang ADH</i>	Secretes less aldosterone <i>Merembeskan kurang aldosteron</i>
C	Secretes more ADH <i>Merembeskan lebih ADH</i>	Secretes less aldosterone <i>Merembeskan kurang aldosteron</i>
D	Secretes less ADH <i>Merembeskan kurang ADH</i>	Secretes more aldosterone <i>Merembeskan lebih aldosteron</i>

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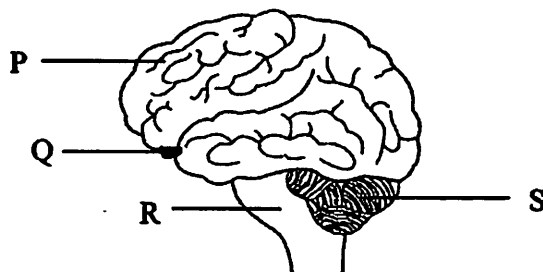
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- 37 Diagram 29 shows the structure of a neurone.
Rajah 29 menunjukkan struktur satu neuron.



What type of neuron is it?
Apakah jenis neuron ini?

- A Interneurone / *Interneuron*
 - B Motor neurone / *Neuron motor*
 - C Efferent neurone / *Neuron eferen*
 - D Afferent neurone / *Neuron aferen*
- 38 Diagram 30 shows part of human brain. A person injured his head and experienced breathing difficulties after an accident.
Rajah 30 menunjukkan sebahagian daripada otak manusia. Seseorang telah cedera di kepalanya selepas satu kemalangan dan mengalami masalah sukar untuk bernafas .



Which part of the brain is injured?
Bahagian otak yang manakah cedera?

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

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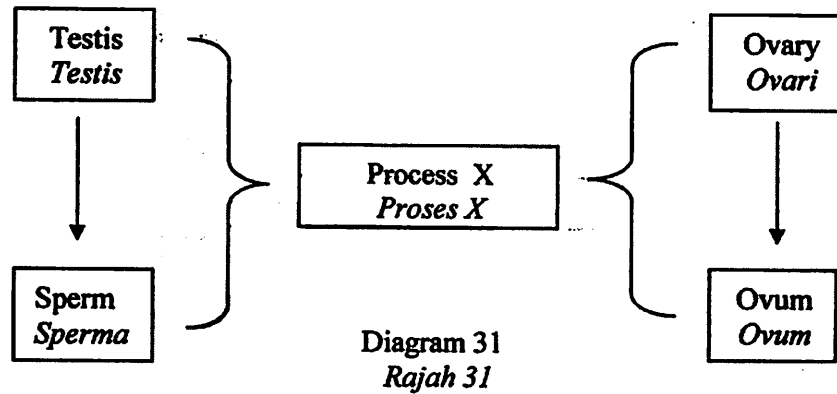
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- 39 Diagram 31 shows process X which involve in production of sperm and ovum .
Rajah 31 menunjukkan proses X yang melibatkan penghasilan sperma dan ovum .



What is process X?
Apakah proses X?

- A Spermatogenesis / *Spermatogenesis*
 B Gametogenesis / *Gametogenesis*
 C Oogenesis / *Oogenesis*
 D Spermatid / *Spermatid*
- 40 The following information represent ones of the hormones in menstrual cycle.
Pernyataan berikut merujuk kepada salah satu hormon dalam kitar haid.

- Reaches a peak at day 14.
- *Mencapai kemuncak pada hari ke 14*
- Triggers the mature follicle to rupture and release the egg
- *Menggalakkan pematangan folikel untuk ranap dan mengeluarkan telur*

What is the hormone?
Apakah hormon itu?

- A Oestrogen / *Estrogen*
 B Progesterone / *Progesteron*
 C Luteinizing hormone (LH) / *Luteinising hormon. (LH)*
 D Follicle stimulating hormone (FSH) / *Hormon perangsang folikel*

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- 41 Diagram 32 shows the structure of a sperm.
Rajah 32 menunjukkan struktur sperma.

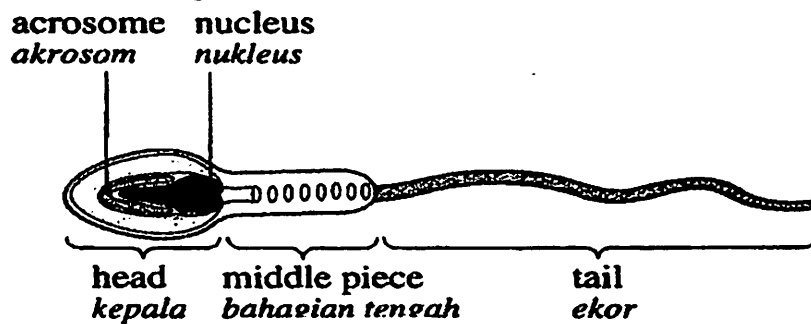


Diagram 32
Rajah 32

The middle piece contains a large number of a type of organelle.
Bahagian tengah mengandungi sejenis organel dalam bilangan yang banyak.
 What is the organelle?
Apakah organel itu?

- A Mitochondrion / *Mitokondria*
 - B Chloroplast / *Kloroplas*
 - C Ribosome / *Ribosom*
 - D Vacuole / *Vakuol*
- 42 Diagram 33 shows a cross section of a flower.
Rajah 33 menunjukkan keratan rentas bunga.

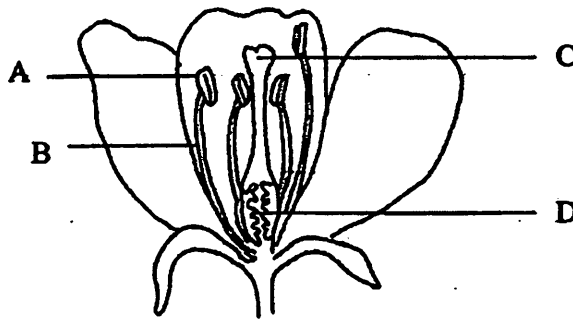


Diagram 33
Rajah 33

Which part A, B, C or D produce pollen grain?
Antara bahagian A, B, C atau D, yang manakah menghasilkan butir debunga?

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- 43 Diagram 34 shows the level of oestrogen and progesterone in the blood of a female.
Rajah 34 menunjukkan aras estrogen dan progesteron dalam darah seorang perempuan.

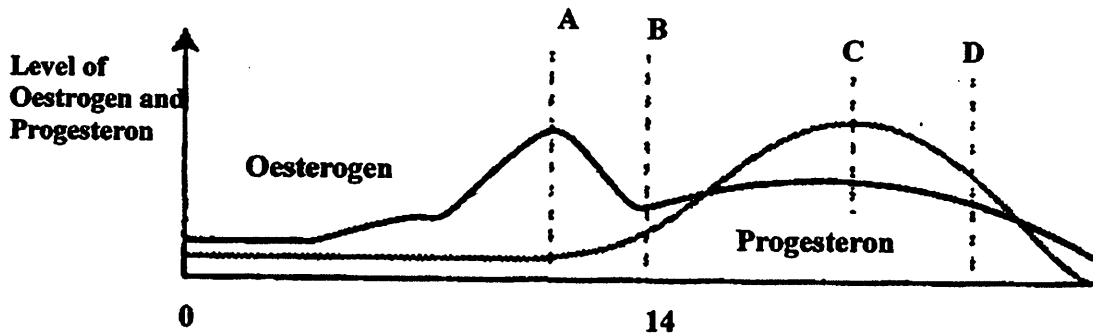


Diagram 34

Rajah 34

- Which of the labeled stage A, B C or D, ovulation occur?
Antara peringkat berlabel A, B, C atau D, yang manakah ovulasi berlaku?

- 44 Diagram 35 shows the female reproductive system.
Rajah 35 menunjukkan sistem pembiakan perempuan

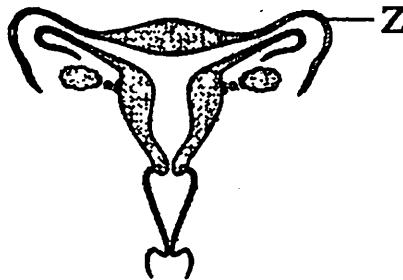


Diagram 35

Rajah 35

- What is the effect of cutting and tying up the part labelled Z?
Apakah kesan pemotongan dan pengikatan struktur yang berlabel Z?

- A Sperm cannot enter the uterus
Sperma tidak dapat masuk ke uterus
- B Fertilization does not occur
Persenyawaan tidak berlaku
- C The ovum is not produced
Ovum tidak terhasil
- D Ovulation does not occur
Ovulasi tidak berlaku

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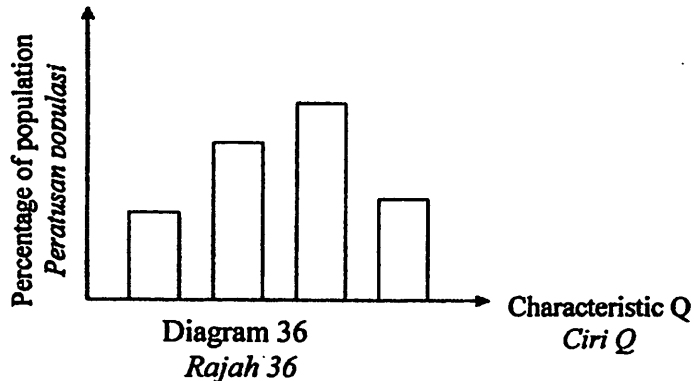
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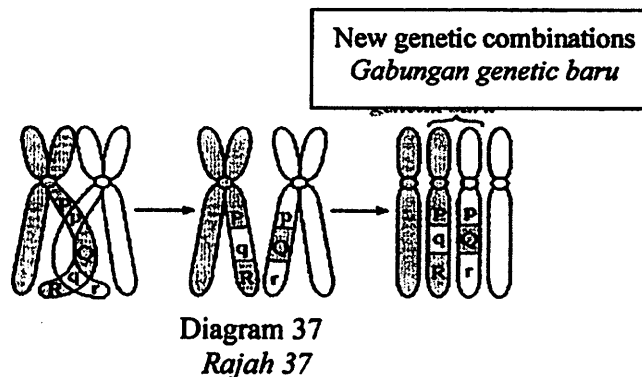
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- 45 Diagram 36 is a bar chart which shows the distribution of characteristics Q in human.
Rajah 36 adalah carta bar yang menunjukkan taburan untuk ciri Q dalam manusia



Which of the following characteristics is represented by the bar chart in Diagram 36?
Diantara ciri berikut yang manakah diwakili oleh carta bar dalam Rajah 36?

- A Blood group / *Kumpulan darah*
 - B Ear lobe type / *Jenis cuping telinga*
 - C Presence of dimple / *Mempunyai Lesung pipit*
 - D Ability to roll tongue / *Kebolehan menggulung lidah.*
- 46 Diagram 37 shows how new genetic combination is formed which contributes to variation.
Rajah 37 menunjukkan bagaimana kombinasi baru genetik terbentuk yang menyumbang kepada variasi.



Which of the process causes the new genetic combination in Diagram 37?
Proses yang manakah menyebabkan kombinasi genetik baru dalam Rajah 37?

- A Gene mutation
Mutasi gen
- B Crossing over
Pindah silang
- C Independent assortment
Gabungan bebas
- D Random fertilisation
Persenyawaan secara rawak

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- 47 The diagram 38 shows the karyotype of an individual who is suffering from a genetic disorder.
Rajah 38 menunjukkan kariotip seseorang yang menghadapi penyakit genetic.

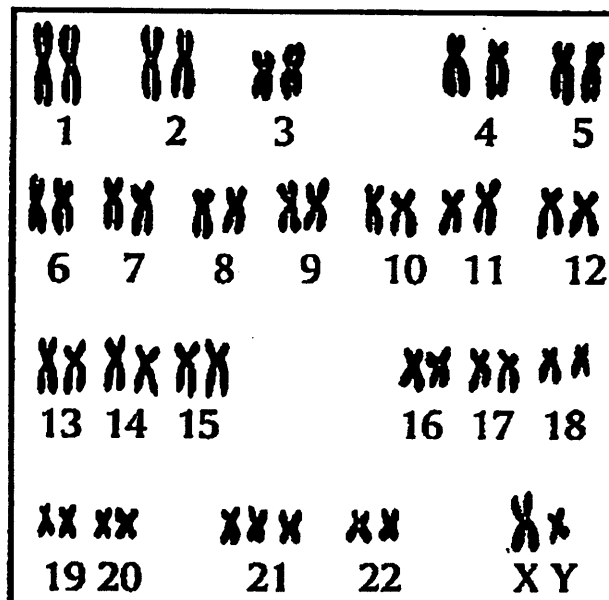


Diagram 38

Rajah 38

What is the genetic disorder?
 Apakah penyakit genetic tersebut?

- A Klinefelter's s syndrome / *Sindrom Klinefelter*
- B Turner's syndrome / *Sindrom Turner*
- C Down's Syndrom / *Sindrom Down*
- D Polydactyl / *Polidaktil*

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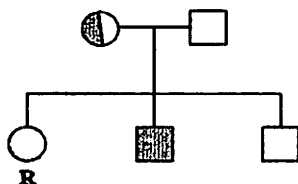
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- 48 Diagram 39 shows the pedigree for the inheritance of haemophilia in a family.
Rajah 39 menunjukkan pewarisan hemofilia dalam satu keluarga.



Key / Kekunci :





- | | | | |
|---|-------------------------------------|---|---|
|  | : Normal male
Lelaki normal |  | : Haemophiliac male
Lelaki hemofilia |
|  | : Normal female
Perempuan normal |  | : Carrier female
Perempuan pembawa |

Diagram 39
Rajah 39

If R marries a haemophiliac, what is the probability that her son will also be haemophiliac?
Sekiranya R berkahwin dengan seorang penghidap hemofilia, apakah kemungkinan anak lelakinya juga akan mengalami haemofilia?

- | | |
|-------|--------|
| A 0% | C 50% |
| B 25% | D 100% |

- 49 Diagram 40 shows a part of the DNA structure.
Rajah 40 menunjukkan sebahagian daripada struktur DNA.

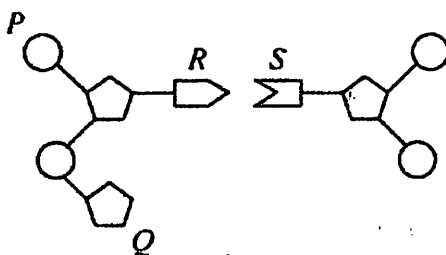


Diagram 40
Rajah 40

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

	P	Q	R	S
A	Phosphate <i>Fosfat</i>	Sugar <i>Gula</i>	Adenine <i>Adenina</i>	Thymine <i>Taimina</i>
B	Sugar <i>Gula</i>	Thymine <i>Taimina</i>	Phosphate <i>Fosfat</i>	Guanine <i>Guanina</i>
C	Phosphate <i>Fosfat</i>	Sugar <i>Gula</i>	Thymine <i>Taimina</i>	Guanine <i>Guanina</i>
D	Sugar <i>Gula</i>	Phosphate <i>Fosfat</i>	Thymine <i>Taimina</i>	Guanine <i>Guanina</i>

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- 50 Diagram 4 shows a dihybrid cross between two types of pea plants.
Rajah 4 menunjukkan satu kacukan dihibrid antara dua pokok kacang pea.

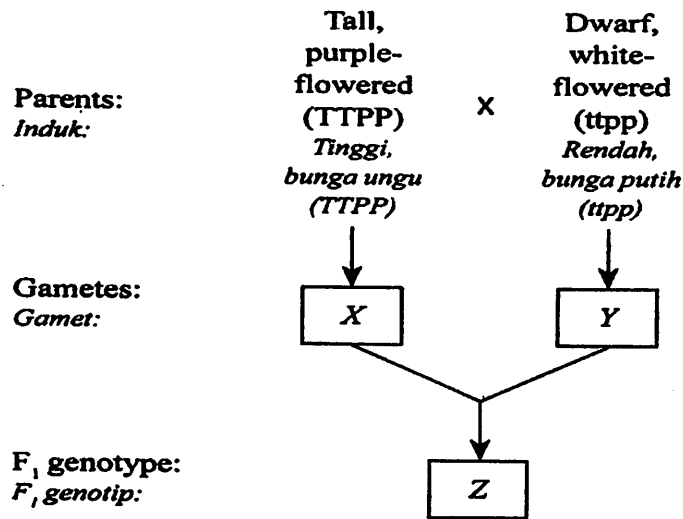


Diagram 4

What are the genotypes of X, Y and Z?
Apakah genotip bagi X, Y dan Z?

	X	Y	Z
A	TP	Tp	TTpp
B	pp	tt	Ttpp
C	TP	tp	TtPp
D	TT	Pp	TTpp

END OF QUESTION PAPER
 KERATS SOALAN TAMAT

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