

1. The following information given is about a living component of a cell.
Maklumat berikut yang diberi adalah berkaitan dengan suatu komponen hidup di dalam sel.

Medium for biochemical reactions in the cell and provides substances to the organelles.

Medium bagi tindakan biokimia di dalam sel dan membekalkan bahan kepada organel.

Which of the following components best fit the information given above?
Komponen manakah yang paling tepat dengan maklumat yang diberi di atas?

- | | | | |
|---|---------------------------------|---|----------------------------------|
| A | Cell wall
<i>Dinding sel</i> | C | Protoplasm
<i>Protoplasma</i> |
| B | Cytoplasm
<i>Sitoplasma</i> | D | Nucleus
<i>Nukleus</i> |
2. Diagram 1 shows an organelle found in a cell.
Rajah 1 menunjukkan organel yang terdapat dalam sel.



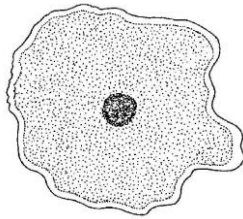
Diagram 1
Rajah 1

Which of the following statement is true about the organelle in Diagram 1?
Pernyataan yang manakah benar tentang organel di Rajah 1?

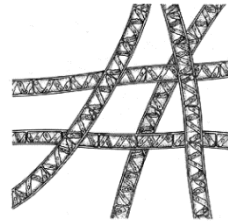
- A The organelle can only be found in animal cells.
Organel ini hanya boleh dijumpai dalam sel haiwan.
- B The organelle controls the secretory activity of cells.
Organel ini mengawal aktiviti rembesan dalam sel.
- C The organelle is involved in the synthesis of protein
Organel ini terlibat dalam sintesis protein dalam sel.
- D The organelle is involved in generate energy in cells.
Organel ini terlibat dalam menjana tenaga dalam sel.

3. Which of the following organisms is a unicellular organism?
Antara organism berikut, yang manakah organism unisel?

A



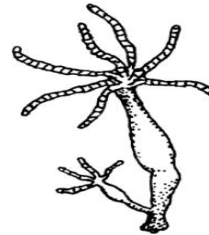
C



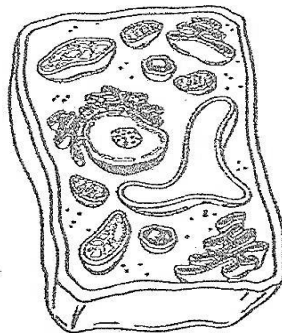
B



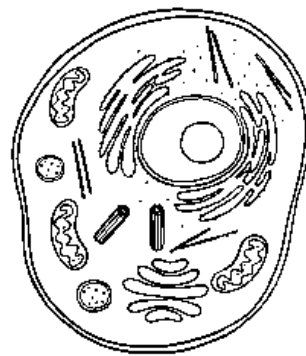
D



4. Diagram 2 shows the structure of two types of cell
Rajah 2 menunjukkan struktur dua jenis sel.



Cell P
Sel P



Cell Q
Sel Q

Diagram 2
Rajah 2

How does cell P differ from cell Q?
Bagaimanakah sel P berbeza daripada sel Q?

- A Cell P has a pair of centrioles.
Sel P mempunyai sepasang sentriol
- B Cell P has starch granules.
- C Cell P has glycogen granules.
Sel P mempunyai granul glikogen.
- D Cell P has numerous cell wall
Sel P mempunyai dinding cell.

granul kanji.

5. Diagram 3 shows the fluid-mosaic structure of the plasma membrane. What are A, B and C?
Rajah 3 menunjukkan struktur bendalir – mozek plasma membran. Apakah A, B and C?

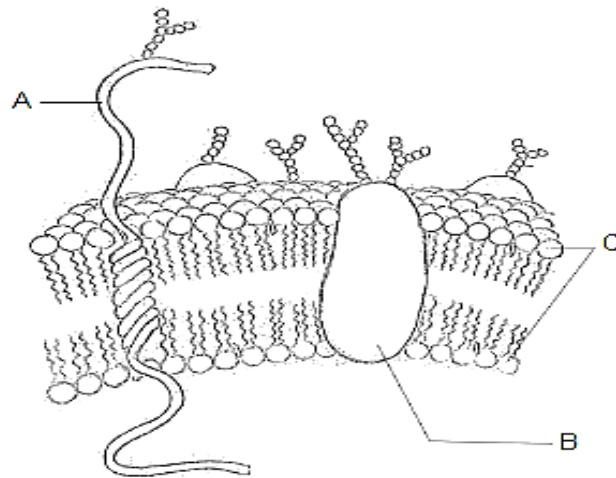


Diagram 3
Rajah 3

	A	B	C
A	Carbohydrate <i>Karbohidrat</i>	Protein <i>Protein</i>	Phospholipid <i>Fosfolipid</i>
B	Phospholipid <i>Fosfolipid</i>	Carbohydrate <i>Karbohidrat</i>	Protein <i>Protein</i>
C	Protein <i>Protein</i>	Phospholipid <i>Fosfolipid</i>	Carbohydrate <i>Karbohidrat</i>
D	Carbohydrate <i>Karbohidrat</i>	Phospholipid <i>Fosfolipid</i>	Protein <i>Protein</i>

6. Diagram 4 shows a cell which has undergone changes to its cell after it has been immersed into a particular solution in an experiment.
Rajah 4 menunjukkan sel yang telah mengalami perubahan kepada selnya selepas dimasukkan ke dalam larutan tertentu di dalam satu eksperimen.

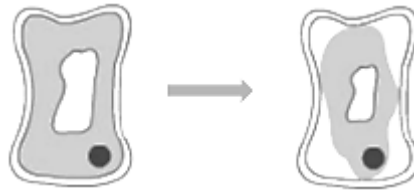


Diagram 4
Rajah 4

What solution has been used in the experiment and what is the condition of the cell after the experiment?

Apakah larutan yang digunakan dalam eksperimen dan apakah keadaan sel itu selepas eksperimen?

	Solution <i>Larutan</i>	Condition of cell <i>Keadaan sel</i>
A	10 % sucrose solution 10% larutan sukrosa	Plasmolysis Plasmolisis
B	10% sucrose solution 10% larutan sukrosa	Deplasmolysis Deplasmolisis
C	30% sucrose solution 30% larutan sukrosa	Plasmolysis Plasmolisis
D	30% sucrose solution 30% larutan sukrosa	Deplasmolysis Deplasmolisis

7. Diagram 5 shows the movement of substances X, Y and Z across the plasma membrane by passive transport and active transport.
Rajah 5 menunjukkan pergerakan bahan X, Y dan Z merentasi membran plasma melalui pengangkutan pasif dan pengangkutan aktif.

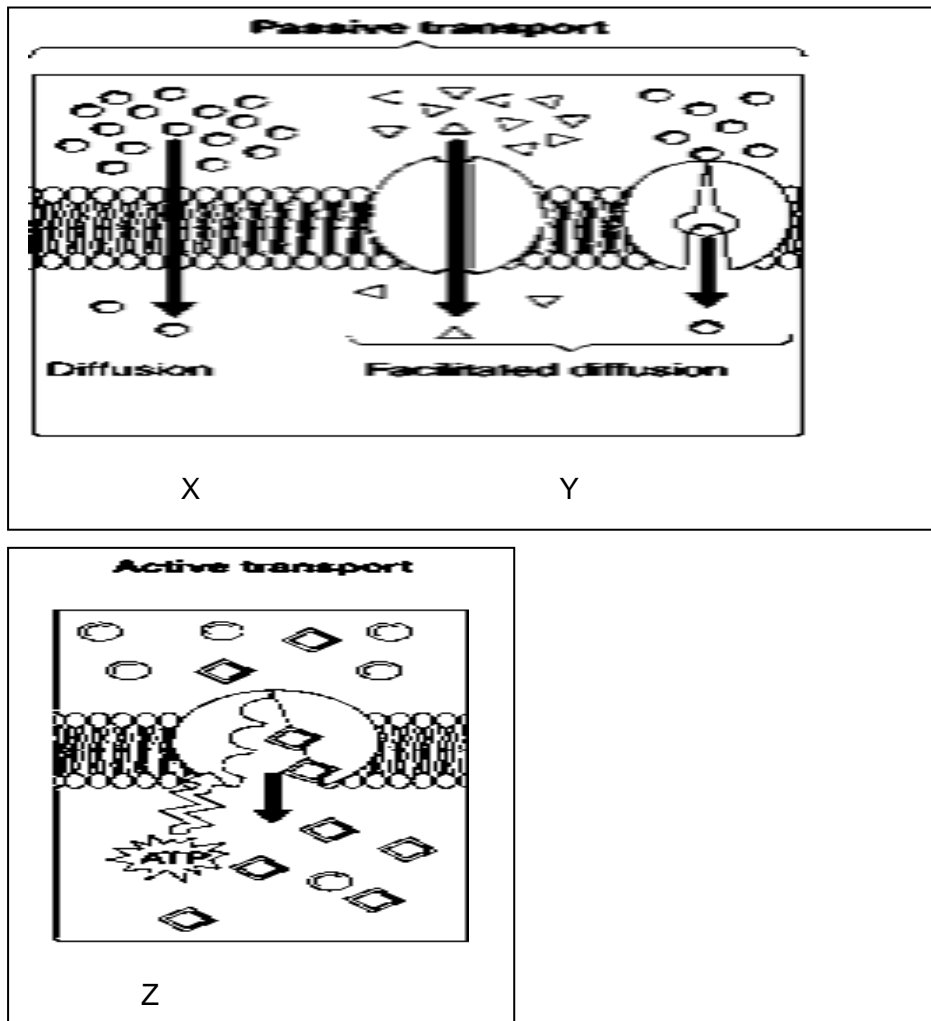


Diagram 5
Rajah 5

	X	Y	Z
A	Vitamin E <i>Vitamin E</i>	Potassium ions <i>Ion kalium</i>	Glucose <i>Glukosa</i>
B	Potassium ions <i>Ion kalium</i>	Vitamin E <i>Vitamin E</i>	Water <i>Air</i>
C	Potassium ions <i>Ion kalium</i>	Water <i>Air</i>	Vitamin E <i>Vitamin E</i>
D	Vitamin E	Glucose	Potassium ions

8.

Trace elements are required in very small amounts by an organism.
Unsur surih diperlukan dalam kuantiti yang sangat kecil oleh suatu organisma.

Which of the following elements is an example of a trace element?
Antara elemen-elemen yang berikut, yang manakah satu contoh elemen surih?

A Carbon
Karbon

C Phosphorus
Fosforus

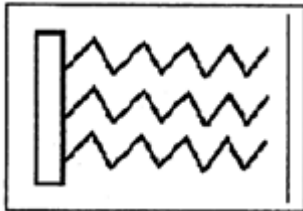
B Magnesium
Magnesium

D Manganese
Mangan

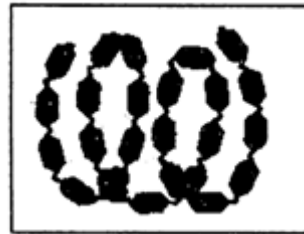
9.

Which of the following structures is a polysaccharides?
Yang manakah antara berikut merupakan struktur polisakarida?

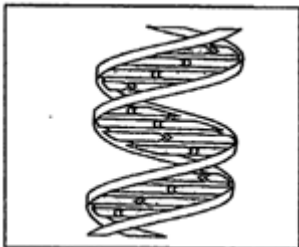
A



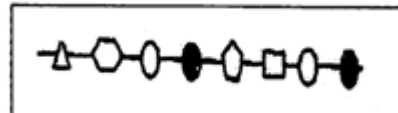
C



B



D



10.

Enzymes have great commercial and industrial importance. Enzymes can be used as catalyst in industries in processes known as enzyme technology.

Enzim sangat penting dalam bidang komersial dan industri. Enzim boleh digunakan sebagai pemangkin di dalam industri dalam proses yang dikenali sebagai teknologi enzim.

Which of the following are the correct match for the enzyme and its application?
Di antara pasangan enzim dan kegunaannya, yang manakah yang betul?

	Enzyme <i>Enzim</i>	Application / <i>Kegunaan</i>
I	Amylase Amilase	Removes starch from fabric <i>Menyingkirkan kanji daripada kain</i>
II	Protease Protease	Breakdown starch and protein <i>Menguraikan kanji dan protein.</i>
III	Trypsin Tripsin	Coagulant in cheese production <i>Pengental dalam penghasilan keju</i>
IV	Rennin Renin	Remove hairs from hides. <i>Mengeluarkan bulu daripada kulit haiwan</i>

A I and II
I dan II

C I and IV
I dan IV

B I and III
I dan III

D II and IV
II dan IV

11. Diagram 6 shows a phase in mitotic division.
Rajah 6 menunjukkan satu fasa dalam pembahagian mitosis.

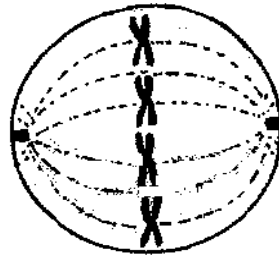


Diagram 6
Rajah 6

What is the event that occurs in this phase?
Apakah peristiwa yang berlaku dalam fasa ini?

- A Spindle fibres begin to form
Gentian gelendong mula terbentuk
 - B Chromosomes aligned at the equator plate
Kromosom tersusun pada metasatah khatulistiwa
 - C Spindle fibre disappears
Gentian gelendong hilang
 - D Sister chromatids of each chromosome separate
Kromatid kembar setiap kromosom berpisah
12. Diagram 7 shows the sequence of the stages in cell division.
Rajah 7 menunjukkan urutan peringkat dalam pembahagian sel.

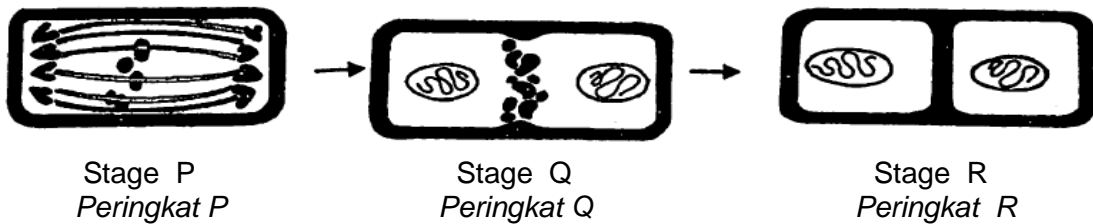


Diagram 7
Rajah 7

What is stage Q ?
Apakah peringkat Q?

- B Anaphase / *anafasa*
- D Cytokinesis / *sitokinesis*

13. Diagram 8 shows one of a process during meiosis.
Rajah 8 menunjukkan satu proses semasa meiosis.

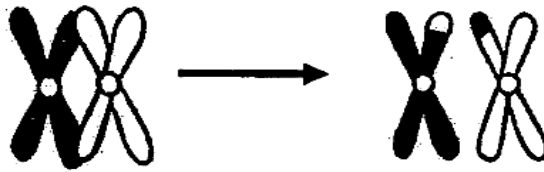


Diagram 8
Rajah 8

What is the importance of this process?
Apakah kepentingan proses ini?

- A Genetik composition of daughter cell is identical to the parent cell
Komposisi genetik sel anak seiras dengan sel induk.
- B Produces new cells for growth and repair of dead cells.
Menghasilkan sel baru untuk pertumbuhan dan membaiki sel mati.
- C Genetic variation occurs in the daughter cells
Variasi genetic berlaku dalam sel anak.
- D Two diploid daughter cells are produced.
Dua sel anak yang diploid terhasil
14. The number of chromosomes of a fruit fly, *Drosophila melanogaster* is 8.
What is the chromosomal number in its gamete?
*Bilangan kromosom dalam seekor lalat buah, Drosophila melanogaster ialah 8.
Apakah nombor bilangan dalam gametnya?*

- | | | | |
|---|---|---|----|
| A | 2 | C | 8 |
| B | 4 | D | 16 |

15. Diagram 9 shows a method used to improve the quality and quantity of food production.
Rajah 9 menunjukkan satu kaedah yang digunakan untuk meningkatkan kualiti dan kuantiti penghasilan makanan.

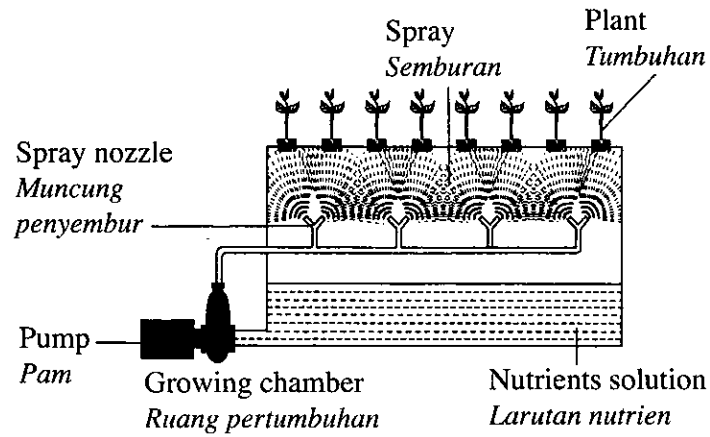


Diagram 9
Rajah 9

What is the method used?
Apakah kaedah yang digunakan?

- | | | | |
|---|---------------------------------|---|---|
| A | Aeroponics
<i>Aerponik</i> | C | Tissue culture
<i>Kultur tisu</i> |
| B | Hydroponic
<i>Hidroponik</i> | D | Plant bleeding
<i>Pembiakbakaan tumbuhan</i> |
16. What is the process involved in changing protein into amino acids?
Apakah proses yang terlibat dalam penukaran protein kepada asid amino?
- | | | | |
|---|---------------------------------|---|-----------------------------------|
| A | Photolysis
<i>Fotolisis</i> | C | Condensation
<i>Kondensasi</i> |
| B | Hydrolysis
<i>Hidrolisis</i> | D | Assimilation
<i>Asimilasi</i> |

17. Three different food tests were carried out on a food sample. The observations are shown in Table 1.

Tiga ujian makanan yang berlainan telah dijalankan keatas sampel makanan. Pemerhatian adalah seperti yang ditunjukkan dalam Jadual 1.

Test / Ujian	Observation / Pemerhatian
Benedict's test <i>Ujian Benedict</i>	Blue coloured solution remain <i>Larutan kekal berwarna biru</i>
Biuret test <i>Ujian Biuret</i>	Purple coloured solution formed <i>Larutan berwarna ungu terbentuk</i>
Iodine test <i>Ujian Iodin</i>	Iodine solution remain yellow <i>Larutan iodine kekal berwarna kuning</i>

Table 1
Jadual 1

Which of the following is the food sample?

Antara yang berikut, yang manakah sampel makanan itu?

- | | | | |
|---|--------------------------|---|----------------------|
| A | Biscuit
<i>Biskut</i> | C | Honey
<i>Madu</i> |
| B | Rice
<i>Nasi</i> | D | Milk
<i>Susu</i> |

18. Diagram 10 shows the levels in a food guide pyramid for a balanced diet.
Rajah 10 menunjukkan aras pada suatu pyramid panduan makanan untuk gizi seimbang.

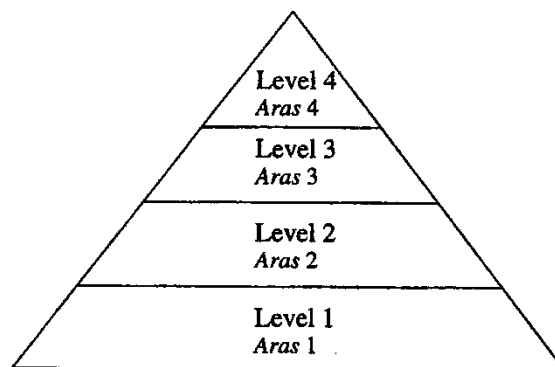


Diagram 10
Rajah 10

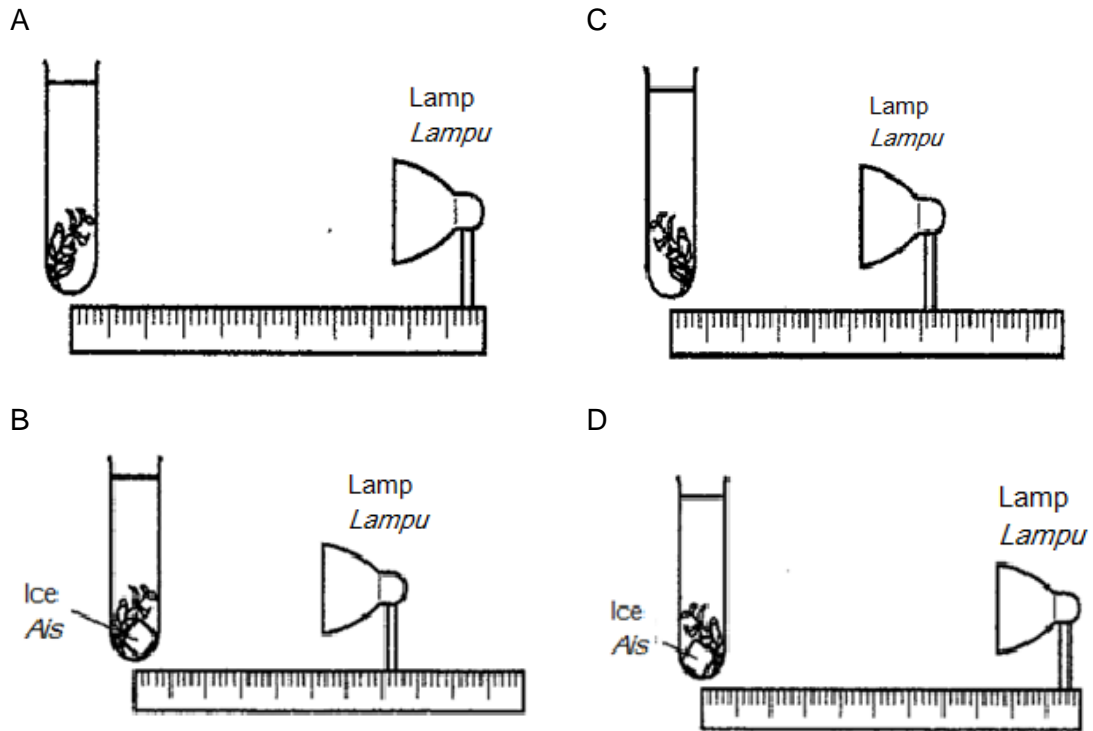
Which food is in Level 4?

Makanan manakah yang berada pada Aras 4?

- | | | | |
|---|---------------------|----|--------------------------|
| A | Egg
<i>Telur</i> | C | Carrot
<i>Lobak</i> |
| B | Rice
<i>Nasi</i> | D. | Butter
<i>Mentega</i> |

19. The diagrams show an experiment to find the rate of photosynthesis in an aquatic plant in different conditions.
Rajah-raja menunjukkan satu eksperimen untuk menentukan kadar fotosintesis tumbuhan akuatik di dalam keadaan yang berbeza.

Which plant produces the most bubbles per minute?
Tumbuhan yang manakah menghasilkan bilangan gelembung yang paling banyak dalam seminit?



20. Which structure is involved in the breathing of a frog?
Struktur yang manakah yang terlibat dalam pernafasan katak?

- | | | | |
|---|----------------------------------|---|--|
| A | Rib cage
<i>Sangkar rusuk</i> | C | Mouth cavity
<i>Rongga mulut</i> |
| B | Diafragma
<i>Diafragma</i> | D | Intercostal muscle
<i>Otot interkosta</i> |

21. The Diagram 11 shows a section of an alveolus and a capillary in a lung.
Rajah 11 menunjukkan bahagian alveolus dan kapilari darah dalam peparu.

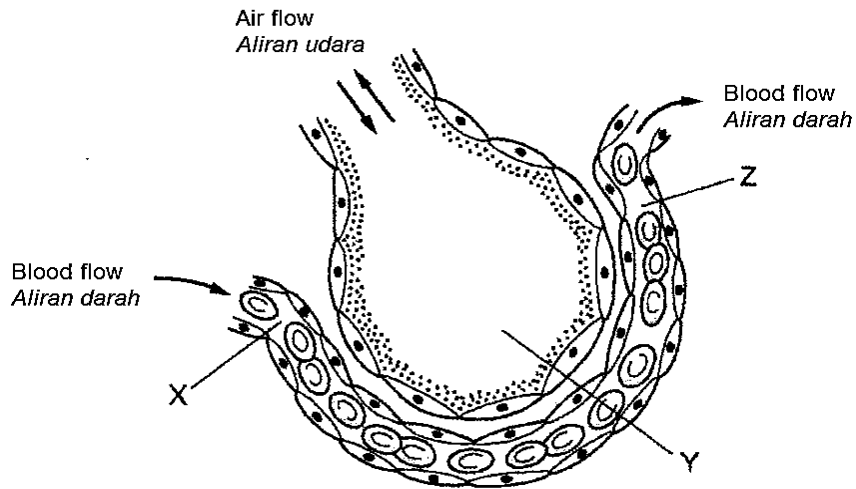


Diagram 11
Rajah 11

What are the concentrations of carbon dioxide at X, Y and Z?
Apakah kepekatan karbon dioksida di X, Y dan Z?

	X	Y	Z
A	High <i>Tinggi</i>	High <i>Tinggi</i>	High <i>Tinggi</i>
B	High <i>Tinggi</i>	Low <i>Rendah</i>	Low <i>Rendah</i>
C	Low <i>Rendah</i>	High <i>Tinggi</i>	High <i>Tinggi</i>
D	Low <i>Rendah</i>	High <i>Tinggi</i>	Low <i>Rendah</i>

22. The haemoglobin content of a pregnant mother is low. Which food should be taken to increase the haemoglobin content in her blood?
Kandungan haemoglobin seorang ibu mengandung adalah rendah. Makanan manakah yang perlu diambil untuk meningkatkan kandungan hemoglobin dalam darahnya?

- | | | | |
|---|---------------------------|---|--------------------------------|
| A | Banana
<i>Pisang</i> | C | Potatoes
<i>Ubi kentang</i> |
| B | Tomatoes
<i>Tomato</i> | D | Spinach
<i>Bayam</i> |

23. Diagram 12 shows the structure of the alveoli in the lungs of a normal person and in a smoker with emphysema.
Rajah 12 menunjukkan struktur alveolus paru paru individu yang normal dan seorang perokok yang mengidapi emfisema

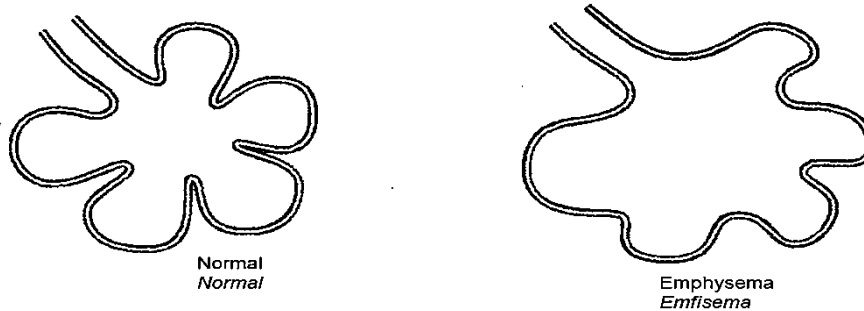


Diagram 12
Rajah 12

What is the effect of emphysema?
Apakah kesan emfisema?

- A Increase chances of lung cancer
Meningkat peluang kanser peparu
 - B Less difficulty in breathing in and out
Kurang kesukaran menarik dan menghembus nafas
 - C Less efficient in gaseous exchange
kurang cekap dalam pertukaran gas
 - D Inflammation of the walls of airways
Keradangan pada dinding salur pernafasan
24. What is the main function of the *Avicennia* sp. roots?
Apakah fungsi utama akar Avicennia sp.?
- A To supply more oxygen
Membekalkan lebih oksigen
 - B To trap mud from sea water
Memerangkap lumpur dari air laut
 - C To reduce the effects of sea waves on the plants
Mengurangkan kesan ombak terhadap tumbuhan
 - D To increase its surface area for the absorption of mineral salts
Meningkatkan luas permukaan bagi menyerap garam mineral.

25. The following statements show the characteristics of an organism.
Kenyataan berikut menerangkan ciri-ciri bagi sesuatu organisma

- Autotroph
Autotrof
- Grows on other plants
Tumbuh pada tumbuhan lain

Which organism is it referring to and what is its interaction with other plants?
Apakah organisma itu dan apakah interaksinya dengan tumbuhan lain?

	Type of organism <i>Jenis organisma</i>	Interaction <i>Interaksi</i>
A	Epizoite <i>Epizoit</i>	Mutualism <i>mutualisma</i>
B	Epiphyte <i>Epifit</i>	Commensalism <i>komensalisma</i>
C	Saprophyte <i>Saprofit</i>	Saprophytism <i>saprofitisma</i>
D	Parasite <i>Parasit</i>	Parasitism <i>parasitisma</i>

26. Which of the following diseases is caused by a virus?
Antara penyakit berikut, yang manakah disebabkan oleh virus?

- A Cholera
Taun
- B Dengue
Denggi
- C Malaria
Malaria
- D Ringworm
Kurap

27.

The pyramid of number represents the number of organisms at each trophic level of a food chain.

Piramid nombor mewakili bilangan organisma di setiap aras trofik rantai makanan.

Which of the following explains the above statement?

Yang manakah berikut menerangkan kenyataan di atas?

- A There is no loss of energy from one trophic level to another
Tiada kehilangan tenaga apabila bergerak dari setiap aras trofik.
- B The size of the organisms increases from the base to the apex of the pyramid.
Saiz organisma bertambah dari tapak ke puncak piramid.
- C The number of organisms increase from the base to the apex of the pyramid.
Bilangan organisma bertambah dari tapak ke puncak piramid.
- D There is a different between the number of consumers and the number of producers in a food chain.
Terdapat perbezaan antara bilangan pengguna dengan bilangan pengeluar di dalam rantai makanan

28. A student wants to estimate the population size of rats using the capture, mark, release and recapture technique. Table 2 below shows the results of the study. *Seorang murid ingin menganggarkan saiz populasi tikus dengan teknik tangkap, tanda, lepas dan tangkap semula. Jadual 2 di bawah menunjukkan keputusan kajian tersebut*

Capture <i>Tangkapan</i>	Number of rats captured <i>Bilangan tikus yang ditangkap</i>	
	Marked <i>Bertanda</i>	Unmarked <i>Tidak bertanda</i>
First <i>Pertama</i>	70	-
Second <i>Kedua</i>	10	15

Table 2
Jadual 2

Which of the following factors reduce the number of marked rats to less than 10 in the second capture?

Faktor-faktor yang manakah mengurangkan bilangan tikus bertanda menjadi kurang daripada 10 dalam tangkapan kedua?

- I Competition
Persaingan
 - II Migration
Migrasi
 - III An increase in the number of prey
Peningkatan bilangan mangsa
 - IV An increase in the amount of food
Peningkatan jumlah makanan
- A I and II
 - B I and III
 - C II and III
 - D III and IV

29. Which of the following types of pollution causes mental instability and upsets the thinking process and concentration?
Yang manakah jenis pencemaran menyebabkan ketidakstabilan emosi dan mengganggu pemikiran dan tumpuan?
- A Air pollution
Pencemaran udara
 - B Water pollution
Pencemaran air
 - C Sound pollution
Pencemaran bunyi
 - D Thermal pollution
Pencemaran haba
30. What is the effect of acid rain on the pond ecosystem?
Apakah kesan hujan asid kepada ekosistem kolam?
- A A drop in BOD
Penurunan nilai BOD
 - B Death of organisms
Kematian organisma
 - C A rise in temperature
Peningkatan suhu
 - D The soil becomes porous
Tanah menjadi kurang padat
31. Which of the following statements describes urbanization accurately?
Yang manakah kenyataan berikut menerangkan dengan betul tentang urbanisasi?
- A The rise in productivity of the industrial sector
Peningkatan produktiviti bagi sector perindustrian
 - B The use of information technology and the computer
Penggunaan teknologi maklumat dan komputer
 - C The progress achieved from the efficient use of technology
Kemajuan dicapai kesan daripada penggunaan teknologi
- f infrastructure and the increase in population.
Pembangunan prasarana dan peningkatan populasi

32. An experiment was carried out to determine the value of biochemical oxygen demand (BOD) in different zones in a pond. Diagram 13 shows the graph of the concentration of dissolved oxygen in zones A, B, C and D.
 Satu ujikaji telah dijalankan bagi menentukan nilai BOD di kawasan yang berlainan di sesebuah kolam. Rajah 13 menunjukkan graf bagi kepekatan oksigen terlarut di kawasan A, B, C dan D.

Concentration of dissolved oxygen
 Kepekatan oksigen terlarut

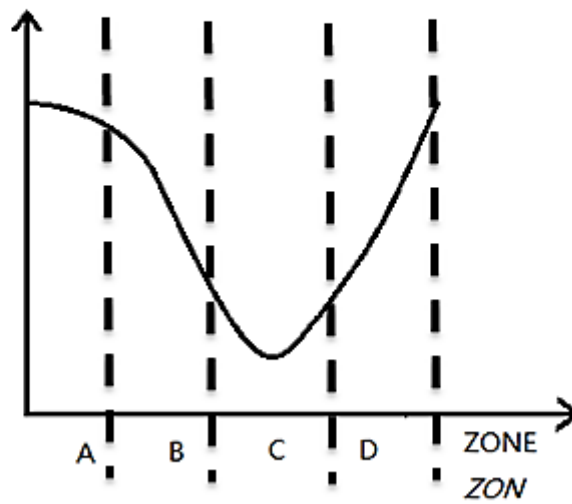


Diagram 13
 Rajah 13

Which zone A, B, C, or D has the highest BOD value?
 Antara zon A, B, C atau D yang manakah mempunyai nilai BOD yang paling tinggi?

33. What is the main problem faced by a multicellular organism in obtaining their cellular requirements and removing body waste?
 Apakah masalah utama yang dihadapi oleh organisma multisel bagi memperoleh keperluan nutrien dan menyingkirkan badan buangan?
- A Body volume is too large
 Saiz badan terlalu besar
 - B Total surface area per volume ratio becomes too large
 Nilai nisbah jumlah luas permukaan kepada isipadu terlalu tinggi
 - C Total surface area per volume ratio becomes too small
 Nilai nisbah jumlah luas permukaan kepada isipadu terlalu rendah
 - D Total surface area is insufficient
 Jumlah luas permukaan tidak mencukupi

34. Diagram 14 shows the fluctuation in the concentration of a certain type of an antibody in the blood of a patient.
Rajah 14 menunjukkan perubahan kepekatan sesetengah jenis antibodi dalam darah seorang pesakit.

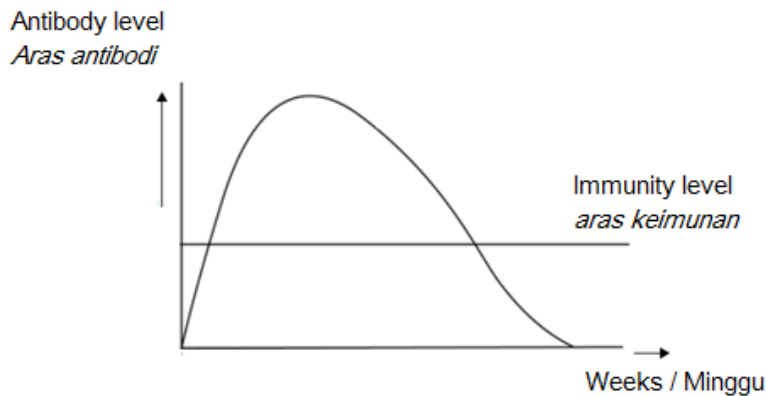


Diagram 14
Rajah 14

What type of immunity has this patient acquired?
Apakah jenis keimunan yang diperolehi pesakit ini?

- A Natural active immunity
Keimunan aktif semulajadi
 - B Artificial active immunity
Keimunan aktif buatan
 - C Natural passive immunity
Keimunan pasif semulajadi
 - D Artificial passive immunity
Keimunan pasif buatan
35. The leaves of a plant were exposed to radioactive carbon dioxide during the day.
 Diagram 15 shows a transverse section of the stem of the plant.
Daun bagi sepokon pokok telah didedahkan kepada gas karbon dioksida beradioaktif semasa siang hari. Rajah 15 menunjukkan keratan rentas bagi batang pokok tersebut

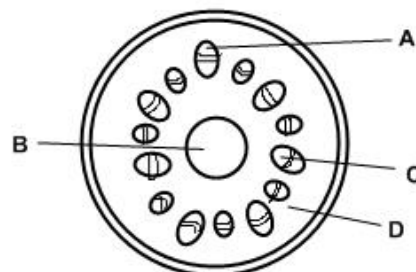


Diagram 15
Rajah 15

In which labelled tissues would radioactivity be detected?
Dalam tisu berlabel yang manakah bahan radioaktif dikesan?

36. P, Q, R and S in Diagram 16 are vertebrae found along the spine.
P, Q, R dan S dalam Rajah 16 adalah vertebra yang terdapat di sepanjang tulang belakang.

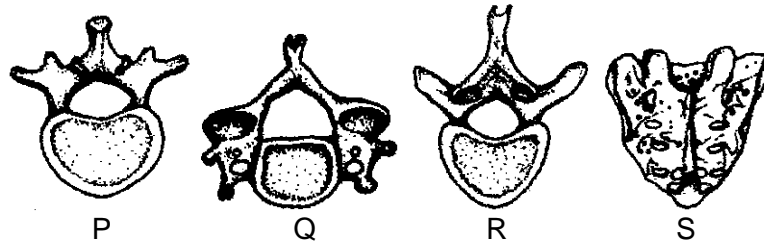


Diagram 16
Rajah 16

Which of the following shows the correct arrangement of the vertebrae in the spine?
Antara yang berikut, yang manakah menunjukkan susunan vertebra yang betul pada tulang belakang?

- | | | | |
|---|---------|---|---------|
| A | P,Q,R,S | C | Q,P,R,S |
| B | Q,R,P,S | D | R,Q,P,S |
37. Diagram 17 shows a type of support tissue in plants.
Rajah 17 menunjukkan sejenis tisu sokongan dalam tumbuhan.

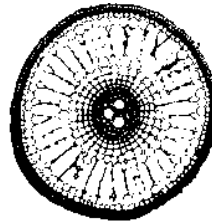






Diagram 17
Rajah 17

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

- | | | | |
|---|---|---|--|
| A |  | C |  |
| B |  | D |  |

38. Diagram 18 shows a straightened leg.
Rajah 18 menunjukkan kaki yang diluruskan.

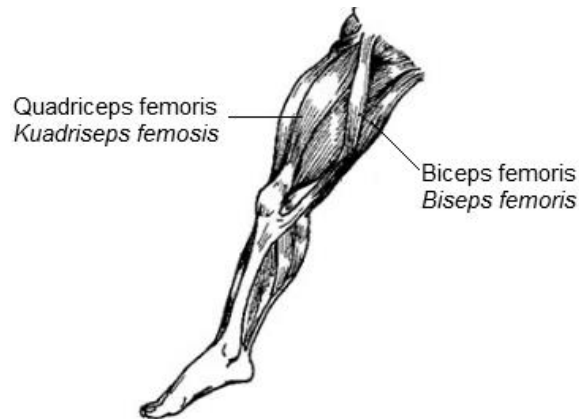


Diagram 18
Rajah 18

Which of the following muscle actions will bend the leg?
Antara tindakan otot berikut, yang manakah akan membengkokkan kaki?

	Quadriceps femoris <i>Kuadriseps femosis</i>	Biceps femoris <i>Biceps femoris</i>
A	Contracts <i>Mengecut</i>	Contracts <i>Mengecut</i>
B	Contracts <i>Mengecut</i>	Relaxes <i>Mengendur</i>
C	Relaxes <i>Mengendur</i>	Contracts <i>Mengecut</i>
D	Relaxes <i>Mengendur</i>	Relaxes <i>Mengendur</i>

39. Which of the following receptors is involves in detecting blood sugar level?
Manakah antara reseptor-reseptor berikut terlibat dalam mengesan aras gula darah?

- A Osmoreceptors
Osmoreseptor
- B Chemoreceptors
Kemoreseptor.
- C Baroreceptors
Baroreseptor
- D Thermoreceptors
Termoreseptor

- 40 Which of the following neurone structure and its function is correct?
 Manakah antara berikut benar tentang fungsi struktur-struktur pada satu neuron?

	Neurone Structure <i>Struktur neuron</i>	Function <i>Fungsi</i>
A	Dendrite <i>Dendrit</i>	Receives stimuli or signals from cell body and conduct it to other neurone or effectors. <i>Menerima ransangan atau isyarat daripada badan sel dan menghantarnya ke neurone atau efektor yang lain.</i>
B	Cell body <i>Badan sel</i>	Integrates impulse and coordinates the metabolic activities <i>Mengintegrasikan impuls dan mengkoordinatkan aktiviti metabolisme.</i>
C	Axon <i>Akson</i>	Conducts nerve impulses to the cell body <i>Membawa impuls saraf ke badan sel.</i>
D	Axon terminal <i>Terminal akson</i>	Receives signals from other dendrites or other receptors. <i>Menerima isyarat daripada dendrite atau reseptor yang lain.</i>

- 41 Diagram 19 shows a structure of a nephron.
 Rajah 19 menunjukkan satu struktur nefron.

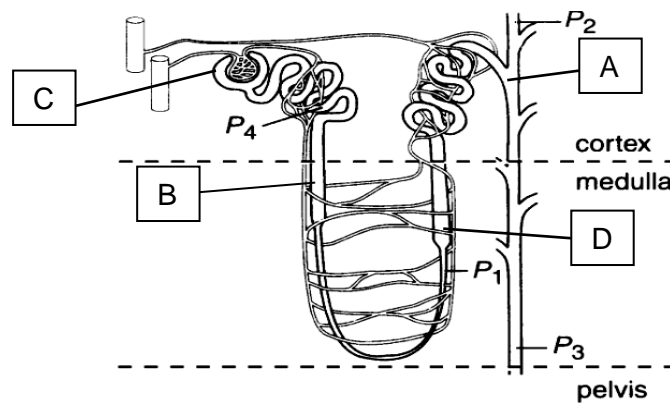


Diagram 19
 Rajah 19

Which of the following labelled structures **A**, **B**, **C** or **D** is involved in the reabsorption

Manakah antara struktur berlabel **A**, **B**, **C** atau **D** yang terlibat dengan penyerapan semula air?

Alicia attended her friend's birthday party. She consumed three cupcakes, a lollipop, sweets and carbonated drinks.

Alicia telah menghadiri majlis harijadi kawannya. Dia makan tiga kek cawan, satu lollipop , gula-gula dan air berkarbonat.

Which of the following happens in her body corrective mechanisms to control her blood sugar level?

Manakah antara berikut berlaku dalam mekanisma pembetulan badannya untuk mengawalatur aras gula darah?

- A The breakdown of glycogen to glucose by liver
Penguraian glikogen ke glukosa oleh hati
- B Islet cells in pancreas are stimulated to secrete glucagon.
Sel-sel islet di pankreas dirangsang untuk merembeskan glukagon.
- C The conversion of excess glucose in liver and muscle cells.
Penukaran glukosa berlebihan dalam hati dan sel-sel otot.
- D Lipid in the adipose tissues break down to release fatty acids that can be metabolized to generate energy.
Lipid dalam tisu adipos Tisu adipos diuraikan kepada asid lemak yang boleh dimetabolismakan untuk menjana tenaga.

- 43 Diagram 20 shows various stages of follicles in the human ovary.
Rajah 20 di bawah menunjukkan pelbagai peringkat folikel dalam ovari manusia.

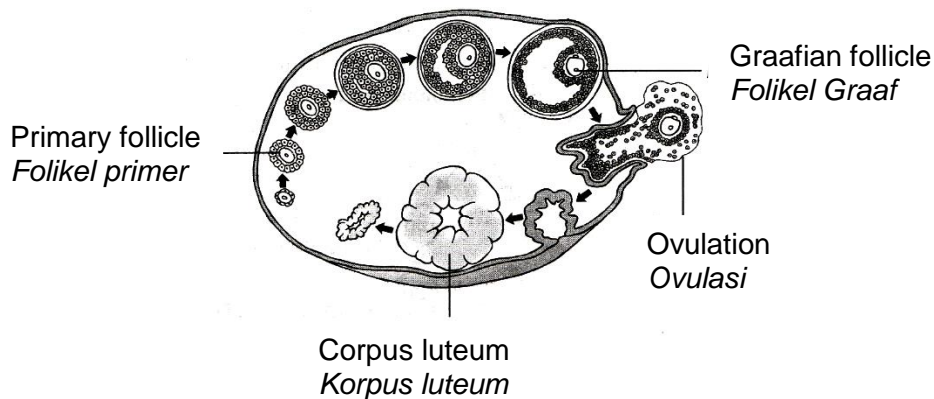


Diagram 20
Rajah 20

After ovulation, the empty follicle will form the corpus luteum that will stimulate the secretion of hormone Z.

What will happen if hormone Z is not secreted?

Selepas pengovulan, folikel yang kosong akan membentuk korpus luteum yang akan merangsang rembesan hormon Z.

Apakah yang akan berlaku jika hormon Z tidak dirembeskan?

- A The thickening of endometrium is not completed.
Penebalan endometrium tidak sempurna.
- B Inhibits the secretion of follicle stimulating hormone (FSH)
Menghalang rembesan hormon peransang folikel (FSH)
- C Inhibits the development of Graafian follicle.
Menghalang perkembangan folikel Graaf
- D The production of oestrogen hormone will not occur.
Penghasilan hormon estrogen tidak akan berlaku.

44

Diagram 21 below shows the growth zones at the root tip of a plant.
Rajah 21 di bawah menunjukkan zon-zon pertumbuhan pada hujung akar sebatang pokok.

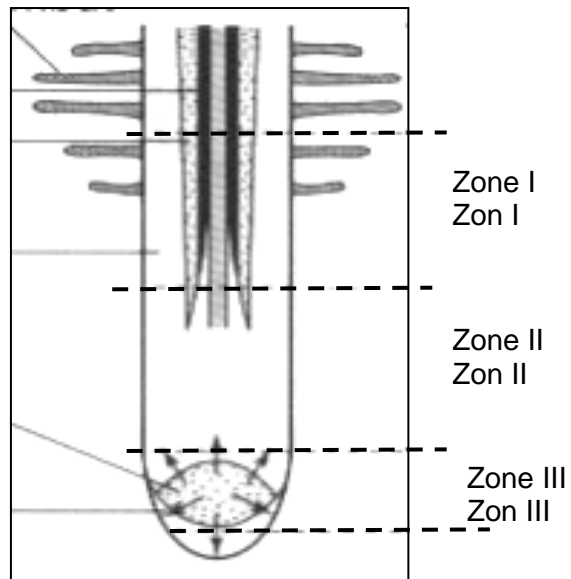


Diagram 21
Rajah 21

Which of the following options is the correct stages for zone I, zone II and zone III?

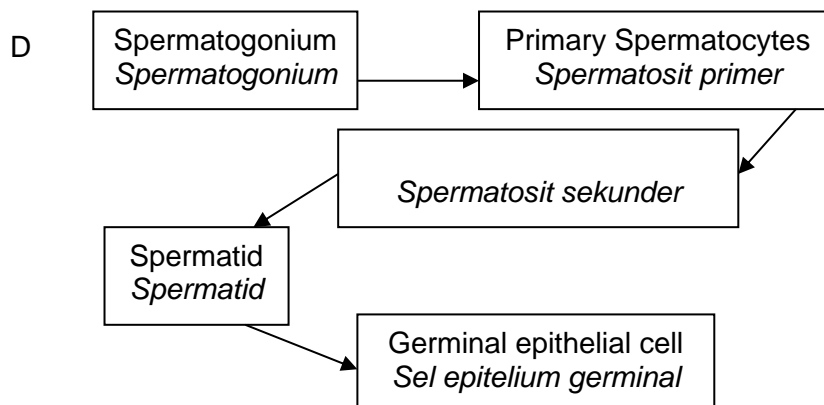
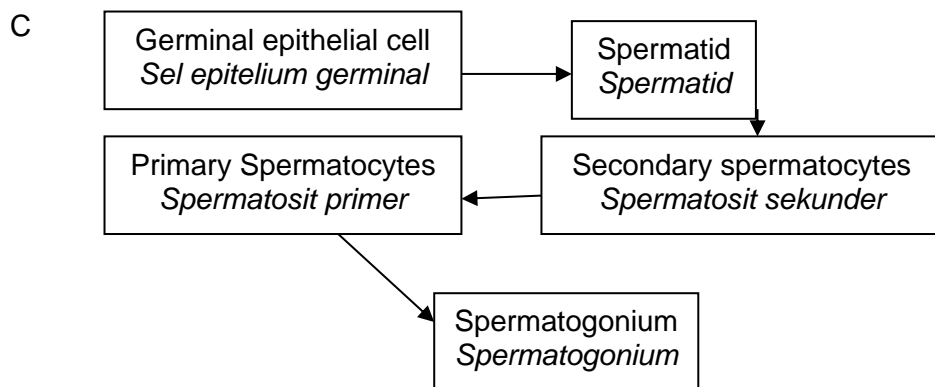
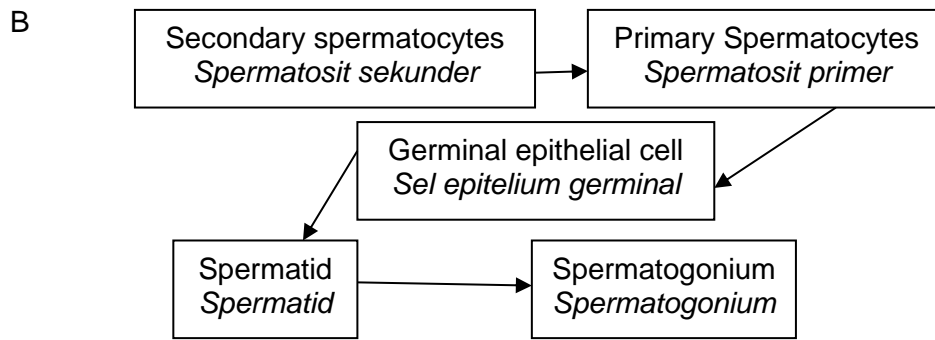
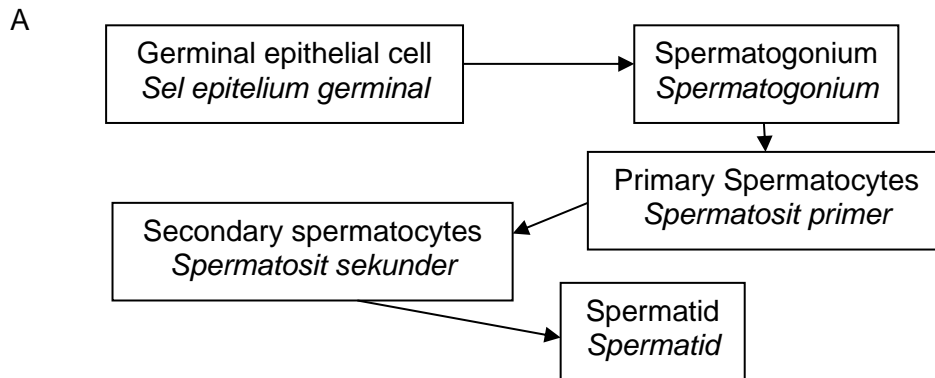
Manakah di antara berikut adalah peringkat-peringkat yang betul bagi zon I, zon II dan zon III?

	Zone I <i>Zon I</i>	Zone II <i>Zon II</i>	Zone III <i>Zon III</i>
A	Cell division <i>Pembahagian sel</i>	Cell differentiation <i>Pembezaan sel</i>	Cell elongation <i>Pemanjangan sel</i>
B	Cell differentiation <i>Pembezaan sel</i>	Cell elongation <i>Pemanjangan sel</i>	Cell division <i>Pembahagian sel</i>
C	Cell division <i>Pembahagian sel</i>	Cell elongation <i>Pemanjangan sel</i>	Cell differentiation <i>Pembezaan sel</i>
D	Cell differentiation <i>Pembezaan sel</i>	Cell division <i>Pembahagian sel</i>	Cell elongation <i>Pemanjangan sel</i>

45

Which of the following is the correct sequences for the stages of spermatogenesis at the seminiferous tubule in testis?

Manakah antara berikut merupakan susunan yang betul bagi peringkat-peringkat spermatogenesis di tubul seminiferus dalam testis?

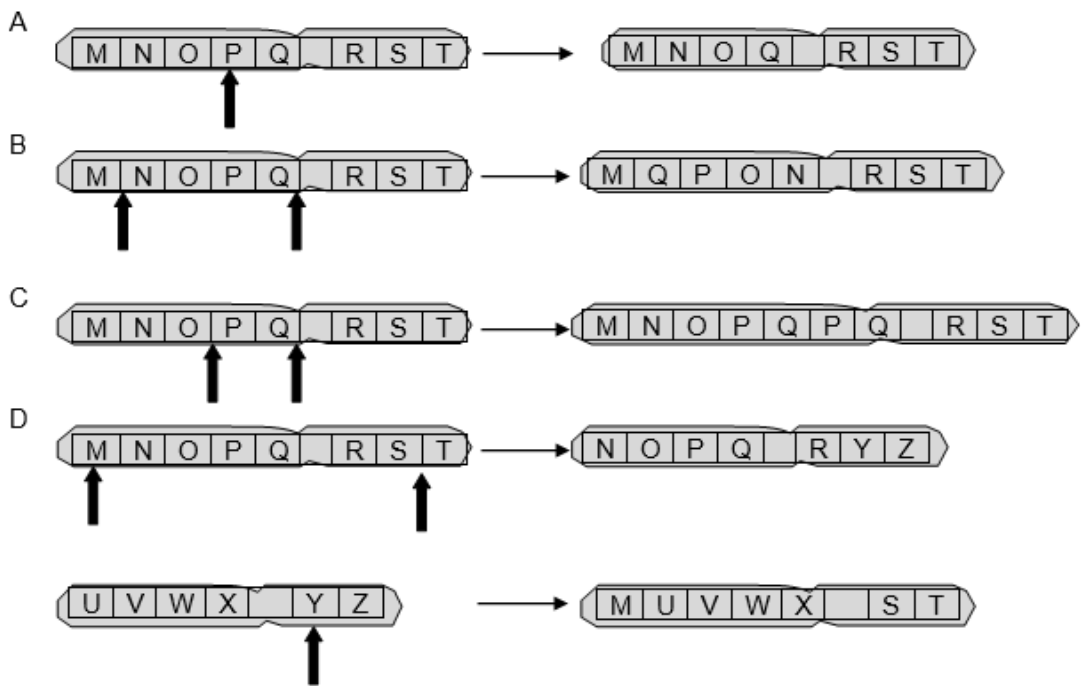


Chromosomal mutation occurs when there is a change in the number of chromosomes or change in the structure of chromosomes.

Mutasi kromosom berlaku apabila terdapat perubahan dalam bilangan kromosom atau perubahan dalam struktur kromosom.

Which of the following shows mutation that changes the structure of chromosomes. due to **translocation** of the chromosome?

*Manakah di antara berikut menunjukkan mutasi yang mengubah struktur kromosom akibat **translokasi** kromosom?*



- 47 Diagram 22 shows parts of a DNA molecule.
Rajah 22 menunjukkan sebahagian daripada molekul DNA.

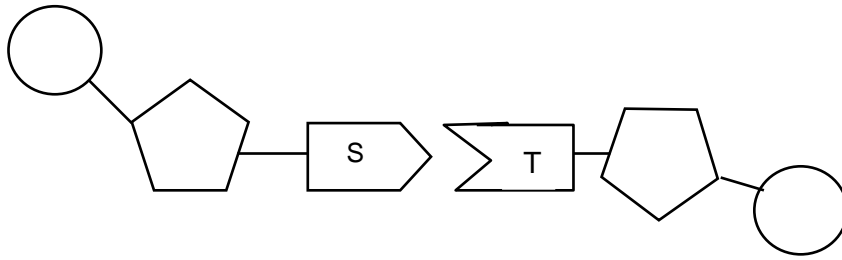


Diagram 22
Rajah 22

Which pair of nitrogenous base represents S and T?
Manakah pasangan bes bernitrogen yang mewakili S dan T?

	S	T
A	Cytosine/ <i>Sitosina</i>	Adenine/ Adenina
B	Adenine / Adenina	Guanine/ <i>Guanina</i>
C	Thymine/ <i>Tiamina</i>	Cytosine/ <i>Sitosina</i>
D	Guanine/ <i>Guanina</i>	Cytosine/ <i>Sitosina</i>

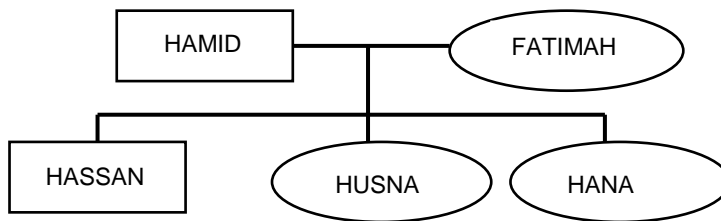
48 Haemophilia is a disease inherited by sex-linked gene. The information below is about the haemophilia allele.

Penyakit hemofilia adalah satu penyakit yang diwariskan oleh gen terangkai seks. Maklumat di bawah menerangkan alel hemofilia.

H	-	Dominant allele for normal <i>Alel dominan normal</i>
h	-	Recessive allele for haemophilia. <i>Alel resesif hemofilia</i>

Hamid, a haemophiliac man, married Fatimah and had three children. A normal son, Hassan, a daughter, Husna, who is a carrier and another daughter, Hana.

Hamid, seorang lelaki penghidap hemofilia, berkahwin dengan Fatimah dan mendapat tiga orang anak. Seorang anak lelaki yang normal, Hassan, seorang anak perempuan, Husna, yang merupakan seorang pembawa dan seorang lagi anak perempuan, Hana.



Which of the following are probably the genotypes for Hamid, Fatimah and Hana?
Manakah antara berikut adalah genotip yang mungkin bagi Hamid, Fatimah dan Hana?

	HAMID	FATIMAH	HANA
A	X^hY	X^HX^h	X^hX^h
B	X^HY	X^hX^h	X^HX^h
C	X^HY	X^HX^h	X^HX^h
D	X^hY	X^hX^h	X^hX^h

49 Which of the following is an example of discontinuous variation?
Manakah antara berikut adalah satu contoh variasi tak selanjar?

- A Height
Ketinggian
- B Weight
Berat badan
- C Type of blood
Jenis darah
- D Chest circumference
Lilitan dada

50 Diagram 23 shows a boy who has Down's syndrome .
Rajah 23 menunjukkan seorang budak lelaki yang mengalami sindrom Down.



Diagram 23
Rajah 23

What is the number of chromosomes he has?
Apakah bilangan kromosom yang dipunyai olehnya?

- A 45 (44+XO)
- B 46 (44+XY)
- C 47 (45+XY)
- D 47 (44+XXY)

Section A
Bahagian A

[60 marks]
[60 markah]

Answer **all** questions in this section.
Jawab **semua** soalan dalam bahagian ini.

- 1 Diagram 1.1 shows a part of cells organization in human.
Rajah 1.1 menunjukkan sebahagian daripada organisasi sel pada manusia

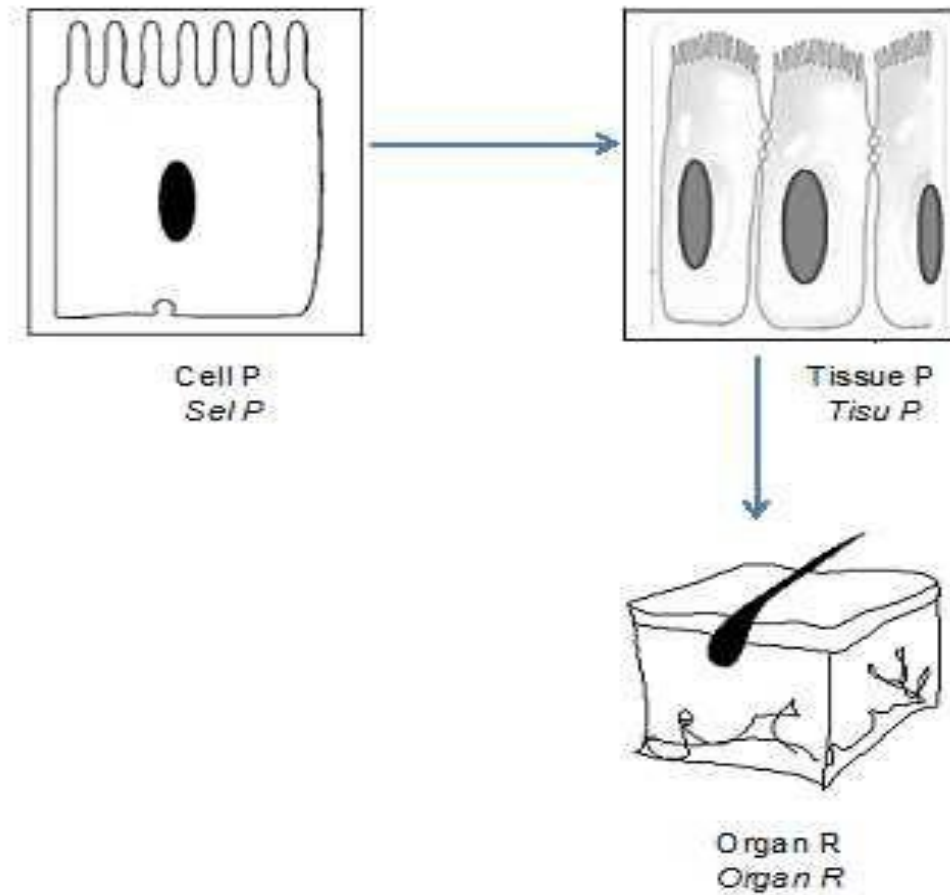


Diagram 1.1 / Rajah 1.1

- (a) (i) Name cell P
Namakan sel P

[1 mark / markah]

- (ii) What is the function of cell P?
Apakah fungsi sel P?

[1 mark/ markah]

- (iii) Explain how organ R is formed
Terangkan bagaimana organ R terbentuk

[2 marks/ markah]

- (iv) State one function of organ R in human.
Nyatakan satu fungsi organ R kepada manusia.

[1 mark / markah]

- (b) Diagram 1.2 shows tissue Y and cell Z in human digestion system.
Rajah 1.2 menunjukkan tisu Y dan sel Z dalam sistem pencernaan manusia.

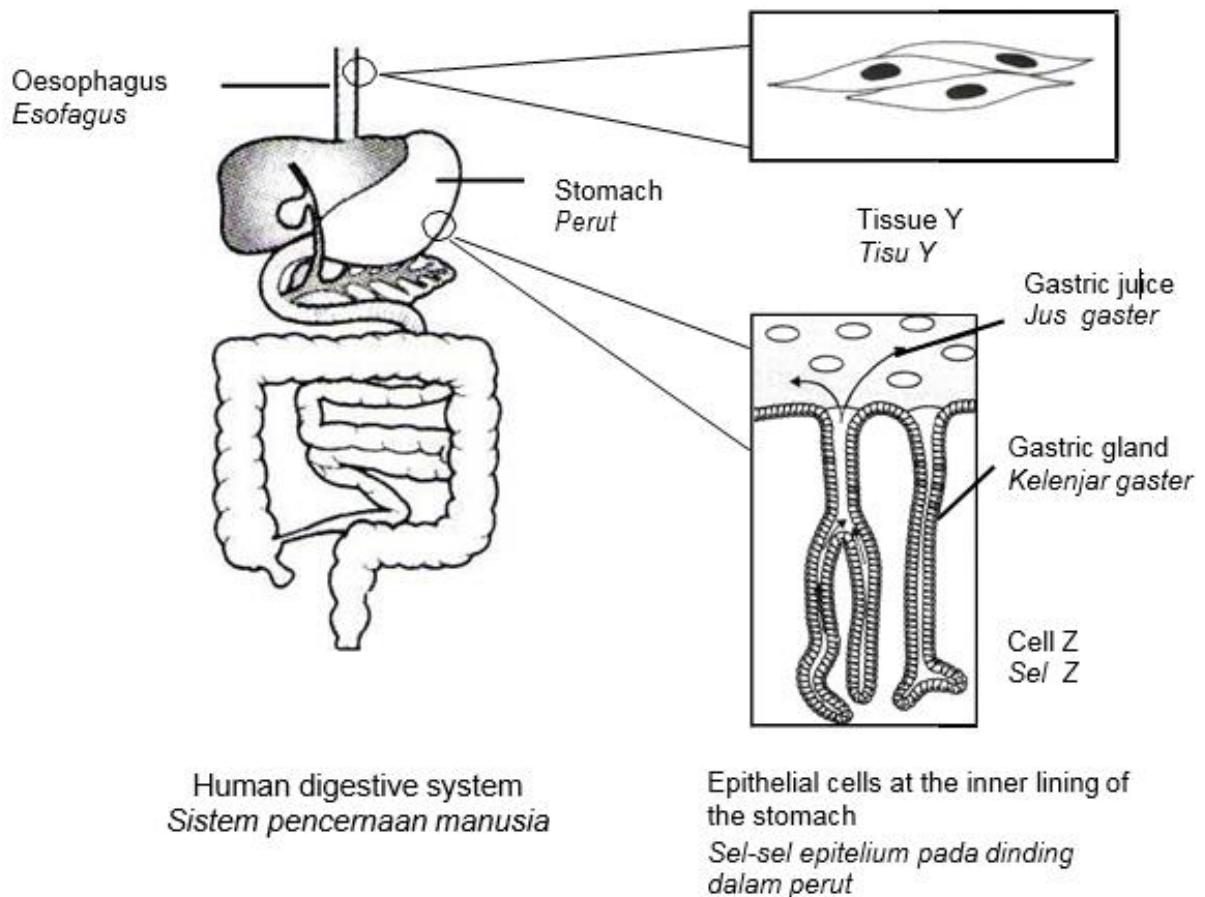


Diagram 1.2 / Rajah 1.2

- (i) Name a type of enzyme secreted by the cell Z.
Namakan satu jenis enzim yang dirembeskan oleh sel Z.

[1 mark / markah]

(ii) Cell Z also able to produce hydrochloric acid.

Explain the importance of hydrochloric acid in digesting process.

Sel Z juga boleh menghasilkan asid hidroklorik.

Terangkan kepentingan asid hidroklorik dalam proses pencernaan

[3 marks / markah]

(c) Diagram 1.3 shows the movement of a bolus of food in oesophagus.

Rajah 1.3 menunjukkan pergerakan bolus makanan dalam esofagus.

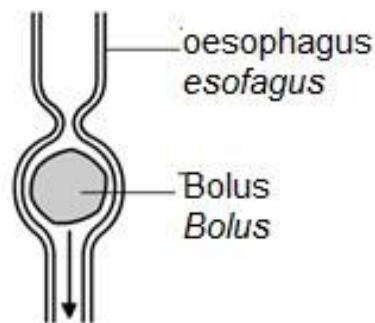


Diagram 1.3 / Rajah 1.3

Explain the role of tissue Y in assisting the movement of food down from the oesophagus to the stomach.

Jelaskan fungsi tisu Y dalam membantu pergerakan makanan bergerak turun dari esofagus ke perut

[3 marks/ markah]

2. Diagram 2.1 (a) and 2.1(b) shows an experiment to differentiate two type of sugar, Solution J and Solution K.

Rajah 2.1 (a) dan 2.1(b) menunjukkan satu eksperimen untuk membezakan dua jenis gula, Larutan J dan Larutan K.

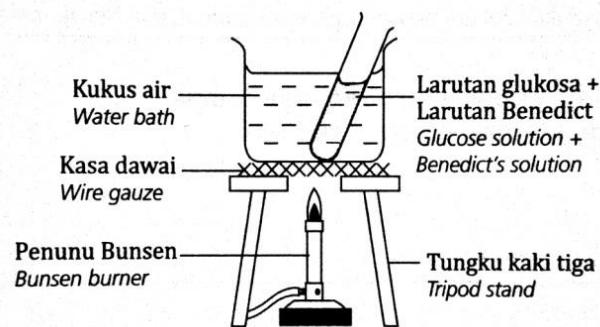


Diagram 2.1(a)

Rajah 2.1(a)

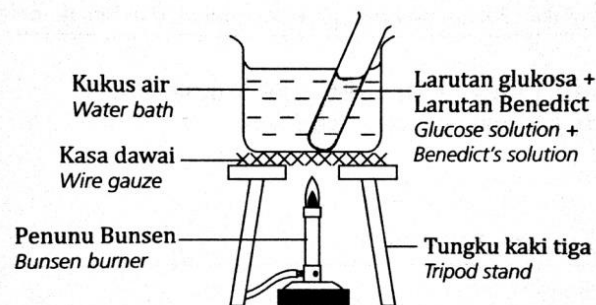


Diagram 2.1 (b)

Rajah 2.1(b)

The result of the experiment shown in the Table 2.

Keputusan eksperimen ditunjukkan dalam Jadual 2

- (a) (i) State one example of Solution J and Solution K.

Nyatakan satu contoh bagi Larutan J dan Larutan K

Solution <i>Larutan</i>	Benedict's test <i>Ujian Benedict</i>	Example <i>Contoh</i>
J	Brick red precipitate <i>Mendakan merah bata</i>	
K	Blue solution <i>Larutan biru</i>	

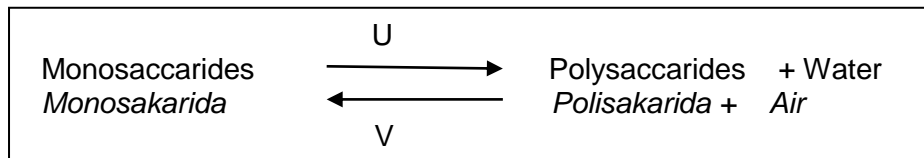
Table 2 / Jadual 2

1]

- (ii) Based in the result, what is the different between Solution J and Solution K.

Berdasarkan keputusan eksperimen, apakah perbezaan di antara Larutan J dan Larutan K.

- (b) The word equation below shows a type process
Persamaan perkataan di bawah menunjukkan satu proses



- (i) Name one example of polysaccharides.
Namakan satu contoh polisakarida .

[1 mark] / [1 markah]

- (ii) State one characteristic of polysaccharides that differ from monosaccharides
Nyatakan satu ciri yang dapat membezakan polisakarida dan monosakarida.

[1 mark] / [1 markah]

- (iii) Name process U and V.
Namakan proses U dan V

U : _____ V: _____

[2 marks] / [2 markah]

- (iv) Ali uses pepsin enzyme to do process V but he finds out that the process does not occur successfully. Explain why.

Ali menggunakan enzim pepsin untuk menjalankan proses V tetapi dia mendapati proses ini

[2 marks] / [2 markah]

(c) Digestion process can be done through enzyme reactions. Diagram 2.2 shows the mechanism of enzyme action.

Proses pencernaan boleh dilakukan dengan tindakbalas enzim. Rajah 2.2 menunjukkan mekanisme tindakan enzim.

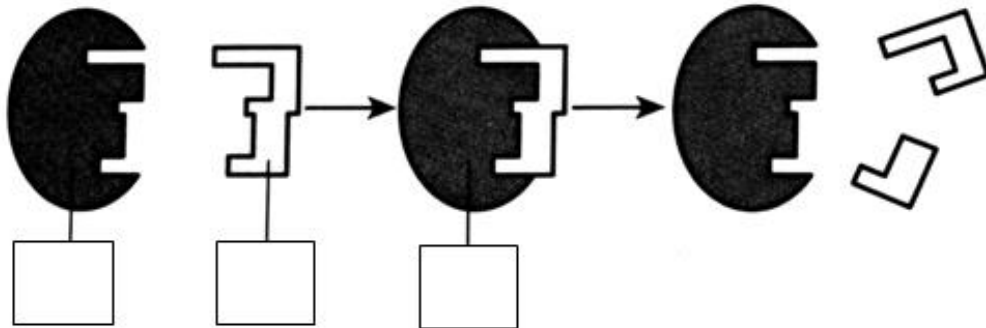


Diagram 2.2 / Rajah 2.2

(i) Tick (✓) in the box in Diagram 2.2 that represent enzyme.

Tandakan (✓) di dalam kotak pada Rajah 2.2

[1 mark] / [1markah]

(ii) Based on the Diagram 2.2, state two characteristics of enzyme.

Berdasarkan Rajah 2.2, nyatakan dua ciri enzim.

1. _____

2. _____

[2 marks] / [2 markah]

- 3 Diagram 3.1 shows the structure of a human respiratory system.
Rajah 3.1 menunjukkan satu struktur sistem respirasi manusia.

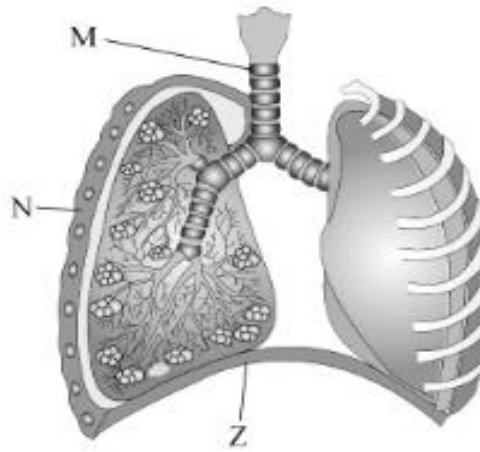


Diagram 3.1 / *Rajah 3.1*

- (a) (i) What is structure M found in the inner wall of the trachea?
Apakah struktur M yang dijumpai pada dinding dalam trakea?

[1 marks] / [1 markah]

- (ii) State the function of M stated in (a)(i).
Nyatakan fungsi M yang dinyatakan di (a)(i)

[1 marks] / [1 markah]

- (b) (i) Name of the structure N.
Namakan struktur N.

[1 marks] / [1 markah]

- (ii) State the **two** sets of muscles that control the movement of structure N.
*Nyatakan **dua** set otot yang mengawal pergerakan struktur N.*

[2marks] / [2 markah]

(c) Diagram 3.2 shows a model of the rib cage.

Rajah 3.2 menunjukkan satu model tulang rusuk.

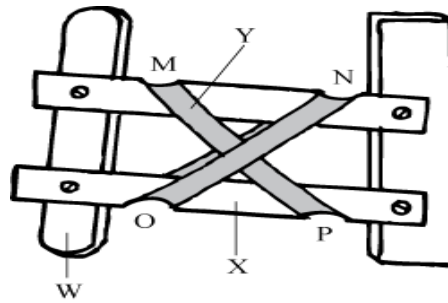


Diagram 3.2 / *Rajah 3.2*

(i) Name the structure represented by X .

Namakan struktur yang diwakili oleh X

[1 marks] / [1 markah]

(ii) Explain the role of W and X, Y during inhalation.

Terangkan peranan W, X, dan Y menjalankan fungsi masing masing semasa proses menarik nafas.

[3 marks] / [3 markah]

(d) Read the statement below

Baca pernyataan di bawah

The ribs of the kid are not easily broken because their ribs are more flexible and stronger than adults. The risk of broken ribs often occurs among adults aged 50 and above
Tulang rusuk kanak kanak tidak mudah patah kerana tulang rusuk mereka lebih lentur dan kuat berbanding orang dewasa.Kejadian tulang rusuk patah kerap berlaku dalam kalangan orang dewasa yang berumur 50 tahun dan keatas

- (i) Based on the statement above, explain why the broken of the rib cage is easily happen among adult aged 50 and above.

Berdasarkan pernyataan di atas terangkan kenapa orang dewasa berumur 50 tahun ke atas mudah mengalami tulang rusuk patah.

[2 mark] / [2 markah]

- (ii) Predict what will happen if broken ribs are stabbed to the lungs.

Ramalkan apa yang akan terjadi jika tulang rusuk yang patah tertusuk paru paru.

[1 marks] / [1 markah]

4. Diagram 4.1 shows the meiosis process on an insect cells

Rajah 4.1 menunjukkan sel seekor serangga yang mengalami meiosis

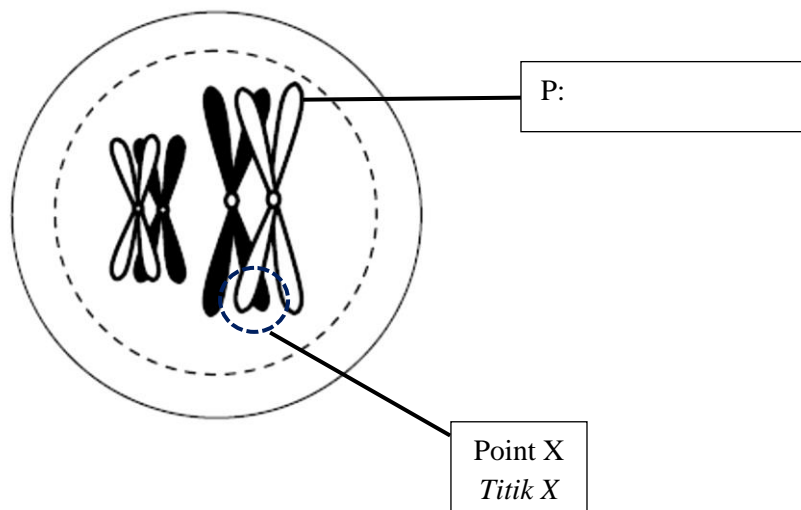


Diagram 4.1

Rajah 4.1

Based on the diagram 4.1

Berdasarkan rajah 4.1

- (a) (i) Label P on the diagram 4.1

Labelkan P pada rajah 4.1

(1 mark)/(1 mark)

- (ii) Name point X
Namakan titik X

(1 mark)/(1markah)

- (iii) Explain the process that take place at point X.
Terangkan proses yang berlaku di titik X.

(2 marks)/(2 markah)

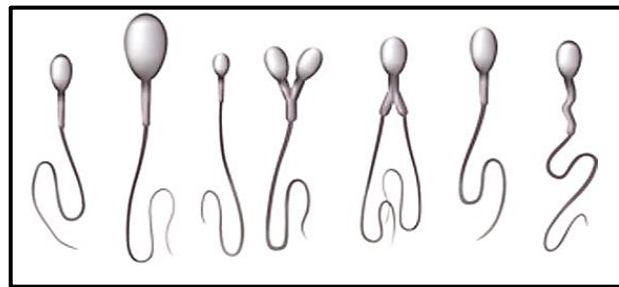
- (b) State **one** importance of the chromosomal behavior in 3(a)(iii)
*Nyatakan **satu** kepentingan perlakuan kromosom dalam 3(b)*

(1 mark)/(1 markah)

- (c) Diagram 4.2a shows a normal human cell sperm and diagram 4.2b shows an abnormal cell sperm.
Rajah 4.2a menunjukkan sel sperma manusia yang normal dan rajah 4.2b menunjukkan sel sperma manusia yang tidak normal



Diagram
4.2a



Diagram

State the chromosome number of human sperm cell
Nyatakan bilangan kromosom bagi sel sperma manusia.

[1 mark /1 markah]

- (d) A couple has been married for 10 years but has not been successful in getting children. After consultation with the doctor, they found out that, the husband has some problems with the sperm. Explain the problem and its effects.

Satu pasangan telah berkahwin selama 10 tahun tetapi tidak mempunyai anak. Setelah berbincang dengan doktor, didapati suami mempunyai masalah berkaitan sperma. Jelaskan masalah tersebut dan kesannya.

(3 marks) / (3 markah)

- (e) There are applications of reproductive technology to solve infertility problems in male. Name one method and explain.

Terdapat aplikasi-aplikasi teknologi pembiakan bagi membantu masalah kemandulan dikalangan lelaki. Namakan satu kaedah dan terangkan

(3 marks) / (3 markah)

- 5 Diagram 5.1 shows blood circulation system of a human
Rajah 5.1 menunjukkan sistem peredaran darah manusia

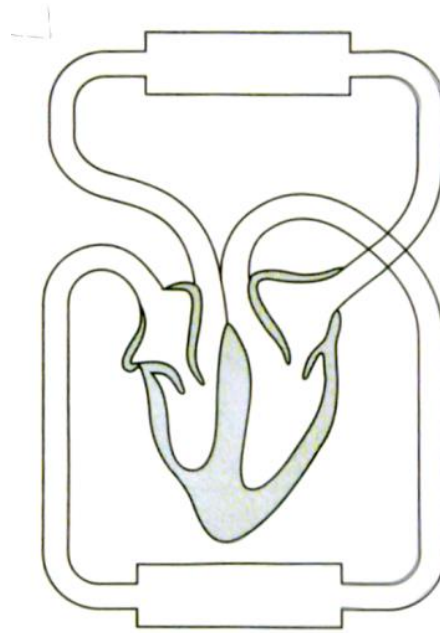


Diagram 5.1 / Rajah 5.1

- (a) Mark with arrow \longrightarrow the pathway of the oxygenated blood in the above system.
Tandakan dengan anak panah \longrightarrow laluan darah beroksigen di dalam sistem di atas

[1mark / 1 markah]

- (b) Diagram 5.2 shows the outer part of the heart with it's blood vessels.
 The coronary arteri at point B is blocked due to unbalanced diet.
Rajah 5.2 menunjukkan bahagian luar jantung dan salur darahnya.
Arteri koronari pada B telah tersumbat akibat daripada pemakanan yang tidak seimbang.

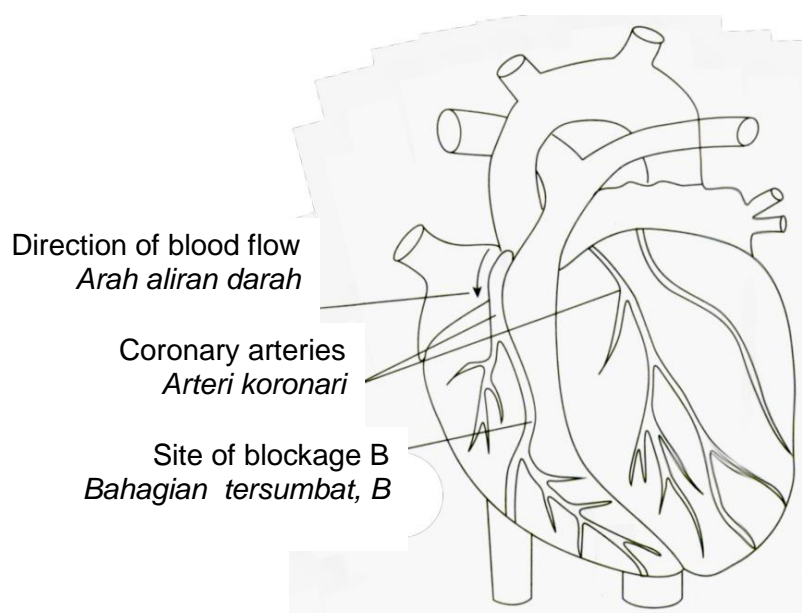


Diagram 5.2 / Rajah 5.2

- (i) Shade the part of the artery affected by this blockage.

Lorekkan bahagian arteri yang mengalami kesan daripada bahagian yang tersumbat

[1mark / 1 markah]

- (ii) A patient has undergone the coronary bypass operation.

What advice can be given to the patient to keep a healthy life after the operation?

Seorang pesakit telah menjalani pembedahan pintasan koronari.

Apakah nasihat yang boleh diberikan kepada beliau untuk memastikan kesihatan beliau sentiasa baik selepas pembedahan tersebut?

[2marks / 2 markah]

- (c) Read the information below

Baca maklumat di bawah

Varicose veins are veins that have become enlarged and twisted. The term commonly refers to the veins on the leg.

Vena varikos adalah vena yang mengalami pembesaran dan bersimpul. Istilah ini biasanya merujuk kepada vena pada kaki.

Smoker's leg is a severe peripheral arterial occlusive disease (PAOD) which refers to the damage of the arteries in the leg due to smoking. This disease can cause the leg to be amputated due to gangrene.

"Smoker's leg" pula adalah penyakit pengecutan arteri periferi (PAOD) yang merujuk kepada kerosakan arteri di kaki akibat merokok. Penyakit ini boleh menyebabkan kaki dipotong akibat gangrene.

Smoking habit is always related to the risk of poor blood circulation system such as varicose veins and smoker's leg.

Tabiat merokok seringkali dikaitkan dengan risiko sistem peredaran darah yang lemah seperti penyakit vena variskos dan juga penyakit "smoker's leg".

Explain briefly how the smoking habit can cause these diseases

Terangkan dengan ringkas bagaimana tabiat merokok ini menyebabkan penyakit-penyakit tersebut

[3marks / 3 markah]

- (d) Diagram 5.3 shows a healing mechanism that occur when a person is wounded.
Rajah 5.3 menunjukkan satu mekanisma penyembuhan yang berlaku apabila seseorang itu mengalami luka

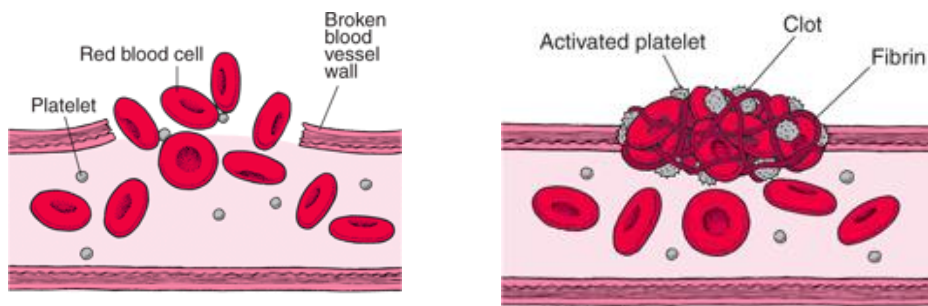


Diagram 5.3 / *Rajah 5.3*

- (i) Based on the diagram 5.3 , explain how will the wound can be healed naturally?
Berdasarkan rajah, terangkan bagaimanakah luka tersebut dapat disembuhkan secara semulajadi?

[3 marks / 3markah]

- (ii) A man suffering from a genetic disease had an accident and bleeding badly.
State the genetic disease suffered by the man and the treatment that can be done by the paramedics to save his life

Seorang lelaki yang menghidap suatu penyakit genetic telah mengalami kemalangan jalanraya dan didapati mengalami pendarahan yang teruk.

Nyatakan penyakit genetic yang dihidapi oleh lelaki tersebut dan apakah tindakan rawatan yang boleh dilakukan oleh paramedik untuk menyelamatkan nyawa lelaki tersebut

Section B / Bahagian B
[40 marks] / [40 markah]

Answer any **two** questions / Jawab mana-mana **dua** soalan

- 6(a) Diagram 6.1 shows the beginning and the end of an experiment to illustrate a physical process.

Rajah 6.1 menunjukkan permulaan dan akhir satu eksperimen untuk menggambarkan satu proses fizikal.

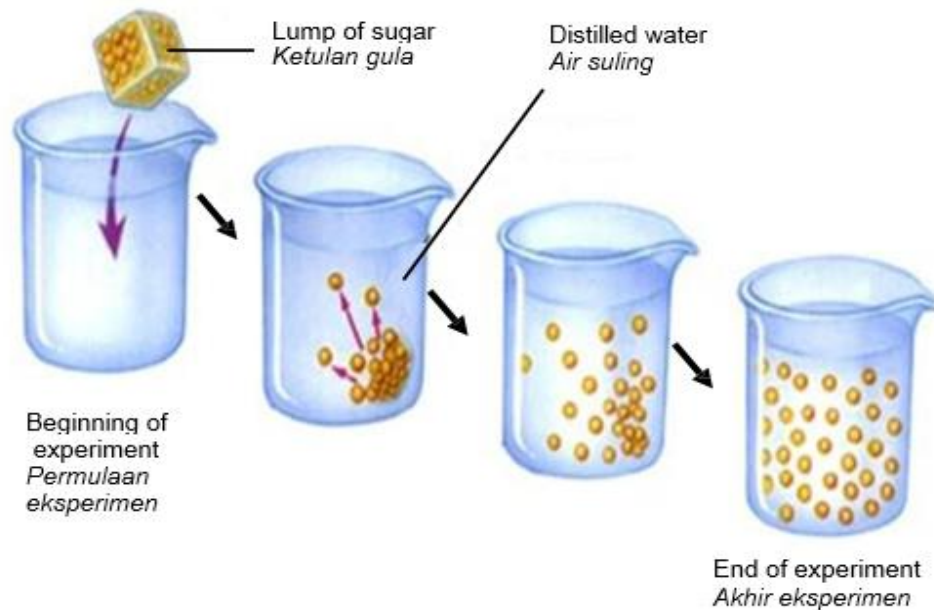


Diagram 6.1 / Rajah 6.1

Explain the process shown in Diagram 6.1

Terangkan proses yang ditunjukkan pada Rajah 6.1

[4 marks]

- (b) Diagram 6.2 shows two type of transport in the movement of molecule across the plasma membrane.

Rajah 6.2 menunjukkan dua jenis pengangkutan dalam pergerakan molekul merentasi membran plasma.

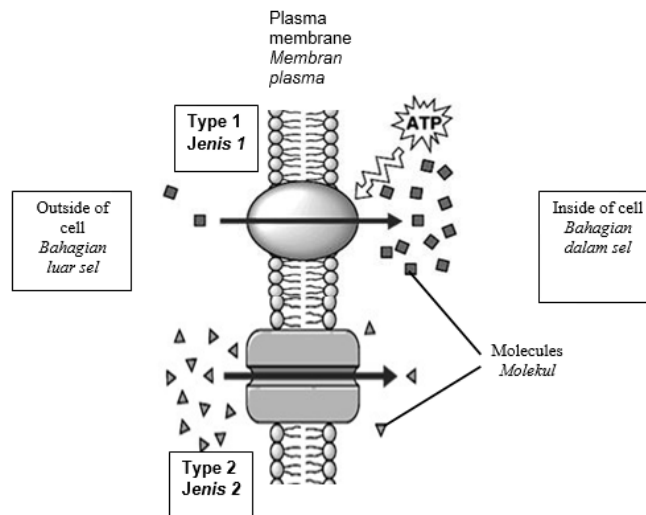


Diagram 6.2 / Rajah 6.2

Explain the similarities and differences between the movement of molecule across plasma membrane in type 1 and type 2.

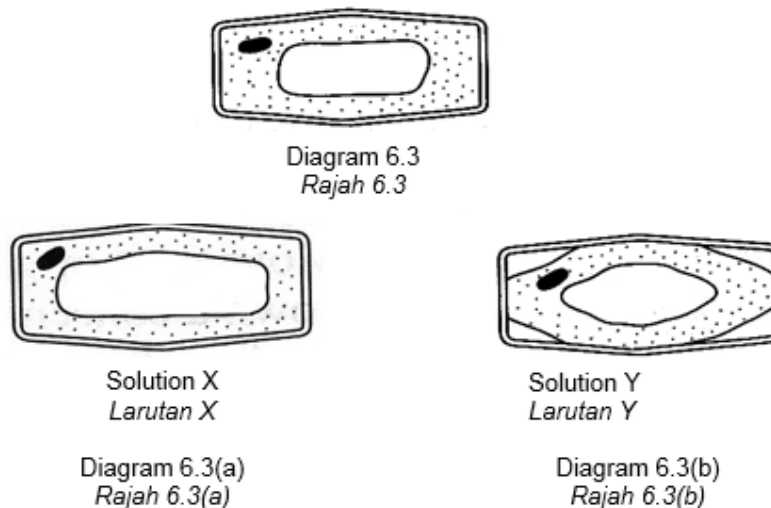
Terangkan persamaan dan perbezaan pergerakan molekul merentasi plasma membrane dalam jenis 1 dan jenis 2.

[6 marks / 6 markah]

- (c) Diagram 6.3 shows the condition of a plant cell before treatment. Diagram 6.3(a) and Diagram 6.3(b) show the condition of the plant cell after it has been immersed in solutions X and Y.

Rajah 6.3 menunjukkan keadaan satu sel tumbuhan sebelum dirawat.

Rajah 6.3(a) dan Rajah 6.3 (b) menunjukkan keadaan sel tumbuhan tersebut selepas direndam dalam larutan X dan Y.



Explain what happens to the cell in each diagram.
Explain yang berlaku kepada sel dalam setiap rajah.

[10 marks / 10 markah]

- 7(a) Diagram 7.1 shows a part of grasshopper leg muscle that involve in support and locomotion.
Rajah 7,1 menunjukkan sebahagian daripada otot kaki belalang yang terlibat dalam sokongan dan pergerakan

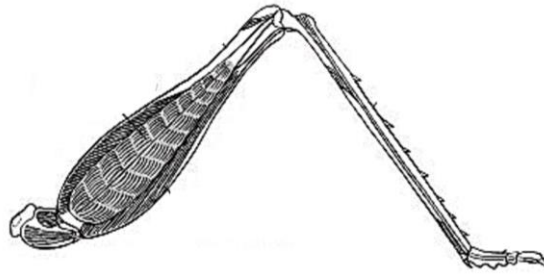


Diagram 7.1 / Rajah 7.1

Explain the action of muscles which cause the movement of grasshopper.

Terangkan tindakan otot yang menyebabkan pergerakan bagi belalang.

(4 marks) / (4 markah)

(b) Diagram 7b(i) shows organism X and Y which have different support system.

Rajah 7b(i) menunjukkan organisma X dan Y yang mempunyai sistem sokongan yang berbeza.

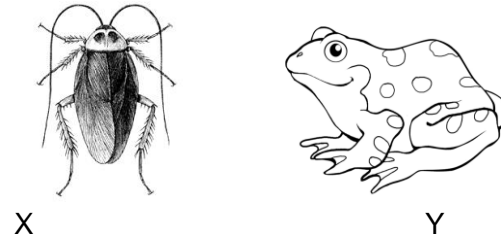


Diagram 7b(i)

Rajah 7b(i)

Name and explain the support system in X and Y

Namakan dan terangkan sistem sokongan dalam X dan Y

(6 marks) / (6 markah)

(c)(i) Diagram 7c(i) shows a disease that related to impaired musculoskeleton system.

Rajah 7c(i) menunjukkan sejenis penyakit yang berkait dengan masalah sistem otot rangka.

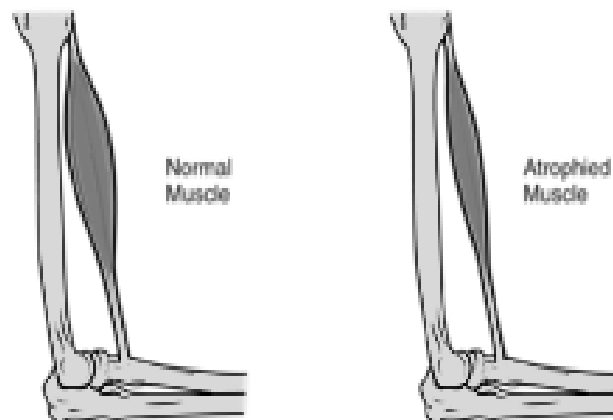


Diagram 7c(i) *Rajah 7c(i)*

Explain this disease the characteristic and why it mainly effects boys.

Terangkan penyakit ini dan mengapa ia hanya berlaku kepada lelaki.

(6 marks) / (6 markah)

- (c)(ii) Encik Kamal has a son who suffers from a disease that stated in 7c(i). As a doctor what should you advice him for a best treatment.

Encik Kamal mempunyai seorang anak lelaki yang menghidap sejenis penyakit yang dinyatakan dalam rajah 7c(i). Sebagai seorang doctor, apakah nasihat yang paling sesuai untuk rawatan yang terbaik

(4 marks) / (4 markah)

- 8 A group of Form 5 students carry out an activity to study variation among them. Based on the data, they have plotted a graph.

Sekumpulan pelajar Tingkatan Lima menjalankan satu aktiviti untuk mengkaji variasi di antara mereka. Berdasarkan data yang diperolehi, mereka telah memplot satu graf .

Diagram 8.1 shows a graph to represent this variation

Rajah 8.1 menunjukkan graf yang mewakili variasi ini.

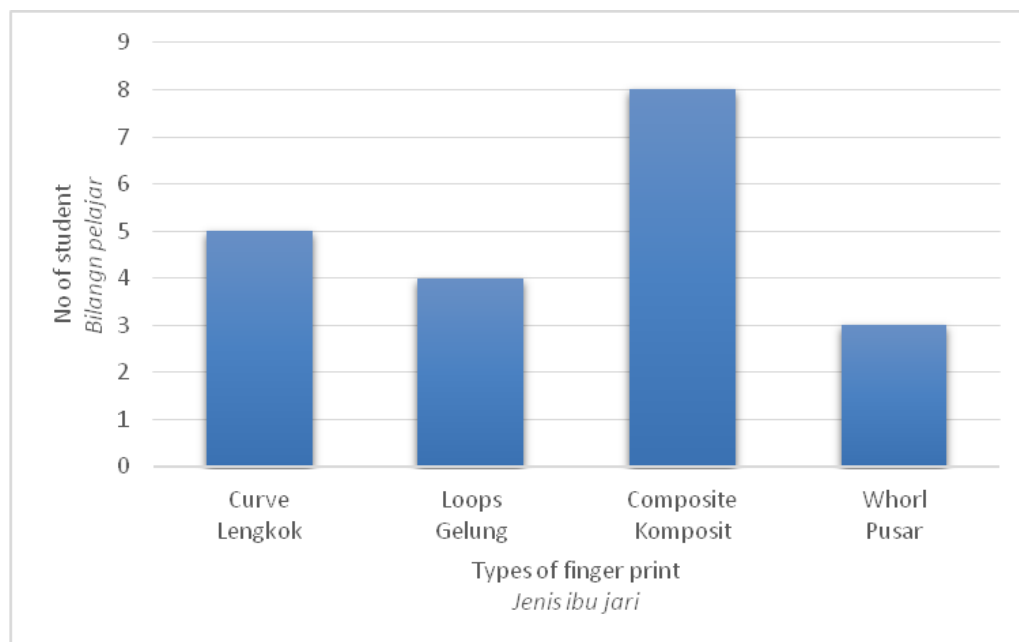


Diagram 8.1 / Rajah 8.1

- (a) Based on your knowledge, identify the type of this variation and discuss the factors which cause this variation,

Berdasarkan pengetahuan anda, kenalpasti jenis variasi ini dan bincangkan faktor-faktor yang menyebabkan variasi ini.

[10 marks] / [10 markah]

(b) Mutation is a sudden random change in genetic composition of a cell. Mutation in gamete can be inherited causing abnormal development in the offspring.

Mutasi adalah perubahan spontan pada komposisi genetik dalam sel. Mutasi pada gamet boleh diwarisi yang menyebabkan perkembangan yang abnormal pada anak.

Diagram 8.2 shows example of genetic diseases which is caused by mutation. The diseases are caused of chromosomal mutation or gene mutation

Rajah 8.2 menunjukkan contoh penyakit- penyakit genetik yang disebabkan oleh mutasi. Penyakit ini disebabkan oleh mutasi kromosom atau mutasi gen.

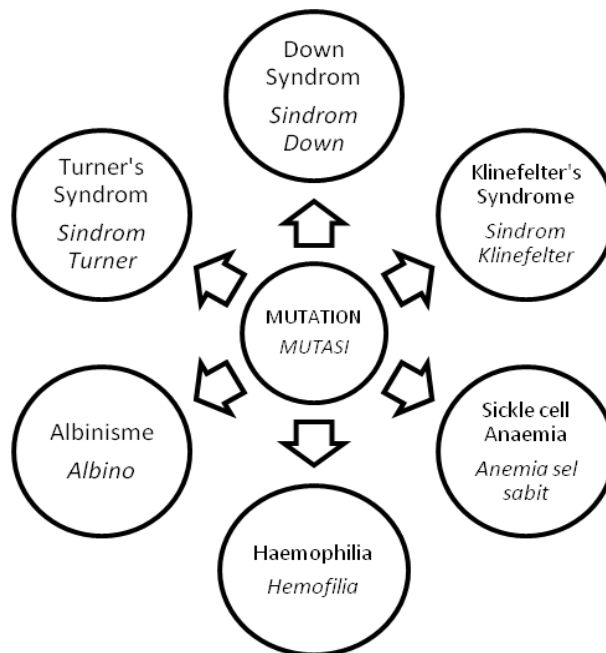


Diagram 8.2 / Rajah 8.2

As a student in Biology class, you are asked to explain about mutation to your friend in your class referred to Diagram 8.2.

Sebagai seorang pelajar kelas Biologi, anda diminta memberi penerangan mengenai mutasi kepada rakan sekelas anda berpandukan Rajah 8.2.

[10 marks] / [10 markah]

- 9(a) Diagram 9(a) shows the scenery at the one of the district in Malaysia 25 years ago. In order to fulfill the needs of country development, the scenery changes from diagram 9(i) to diagram 9(ii)
Rajah 9(a) di bawah menunjukkan suasana sebuah daerah di Malaysia 25 tahun yang lalu. Untuk memenuhi pembangunan negara, suasana telah berubah dari Rajah 9(i) kepada Rajah 9(ii)

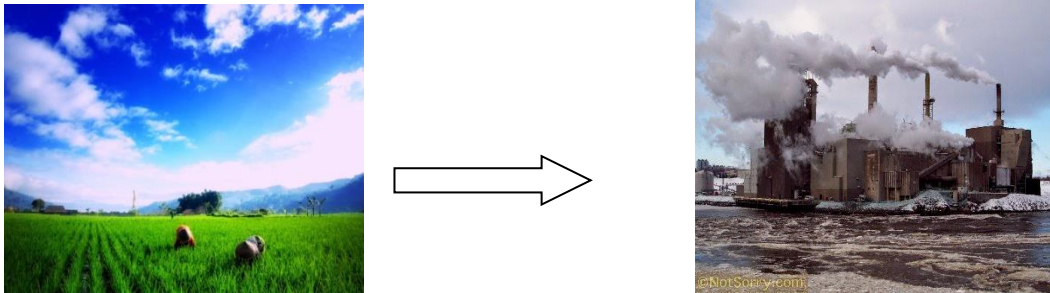


Diagram 9(a) /

Discuss the impression of good and bad consequences of the development

Bincangkan kesan baik dan buruk akibat dari pembangunan tersebut

[10 marks] / [10 markah]

- (b) Read the story below

Baca cerita di bawah

Yati has completed her education for 7 years abroad and has returned to her hometown. It was really surprised to see the rapid development that took place in the village. Yati feel sad when she saw the condition of the pond where she and her friends had previously fishing because there is an agricultural area run near the pond that is not well managed. The water surface of the pond is full with a lot of small green plant.

Yati telah menamatkan pengajiannya selama 7 tahun di luar negara dan telah kembali ke kampung halamannya..Yati sungguh terkejut apabila melihat pembangunan pesat yang berlaku di kampung tersebut.Yati merasa sedih apabila melihat keadaan tasik yang merupakan tempat dia dan rakan-rakannya memancing dahulu telah tercemar kerana terdapatnya kawasan pertanian yang dijalankan berdekatan kolam tersebut yang tidak diuruskan secara sempurna.Permukaan air kolam tersebut kelihatan dipenuhi tumbuhan kecil berwarna hijau .

In your opinion what Yati meant about the condition of the pond. Discuss the implications of the impact on the pond caused by the failure of the responsible party to manage the farm properly.

Pada pendapat anda apakah yang dimaksudkan Yati tentang keadaan kolam tersebut.Bincangkan secara terperinci kesan yang berlaku kepada kolam tersebut yang disebabkan oleh kegagalan pihak yang bertanggungjawab menguruskan ladang dengan sempurna.

[10 marks] / [10 markah]

END OF QUESTION PAPER
KERTAS SOALAN TAMAT

Answer all questions
Jawab semua soalan

- 1 The population distribution of an organism is affected by the changes in abiotic factor such as humidity. This relationship can be investigated by estimating the percentage coverage of *Protococcus* sp., which is a unicellular green algae found on the bark of tree. An experiment was carried out by a group of student to investigate the effect of humidity on the population distribution of *Protococcus* sp.. Diagram 1 shows two quadrats of 10cm x 10cm placed at two different aspects on a tree trunk.

*Taburan populasi sesuatu organism dipengaruhi oleh perubahan faktor abiotik seperti kelembapan. Hubungan ini dapat dikaji dengan menganggar peratusan litupan *Protococcus* sp., iaitu sejenis alga hijau unisel yang terdapat pada kulit pokok.*

*Satu eksperimen dijalankan untuk sekumpulan murid untuk mengkaji kesan kelembapan ke atas taburan populasi *Protococcus* sp... Rajah 1 menunjukkan dua kuadrat yang setiap satu berukuran 10 cm x 10 cm, diletakkan pada dua aspek berlainan pada batang pokok.*

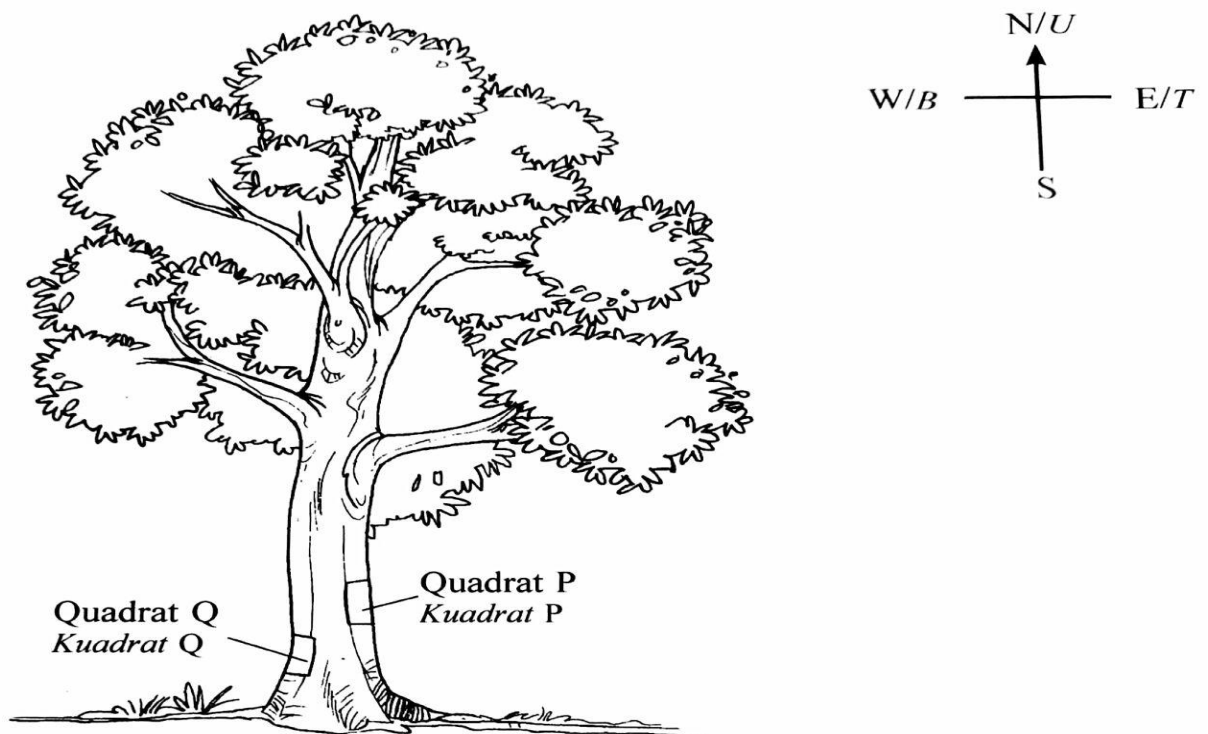


Diagram 1
Rajah 1

Quadrat P was put facing north east where the humidity is higher while quadrat Q was put facing south

Kuadrat P diletak menghadap ke timur laut di mana kelembapan lebih tinggi manakala kuadrat Q di letak menghadap ke tenggara di mana kelembapan lebih rendah.

Table 1 shows the surface area covered by *Protococcus* sp.. on quadrat P and quadrat Q.
Jadual 1 menunjukkan luas permukaan yang dilitupi oleh Protococcus sp.. pada kuadrat P dan kuadrat Q.

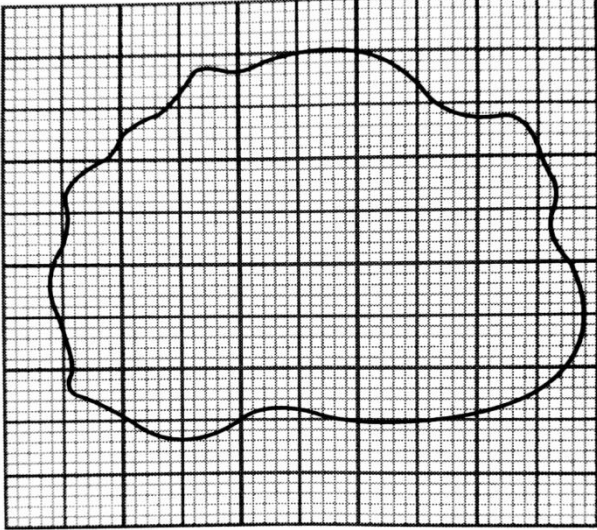
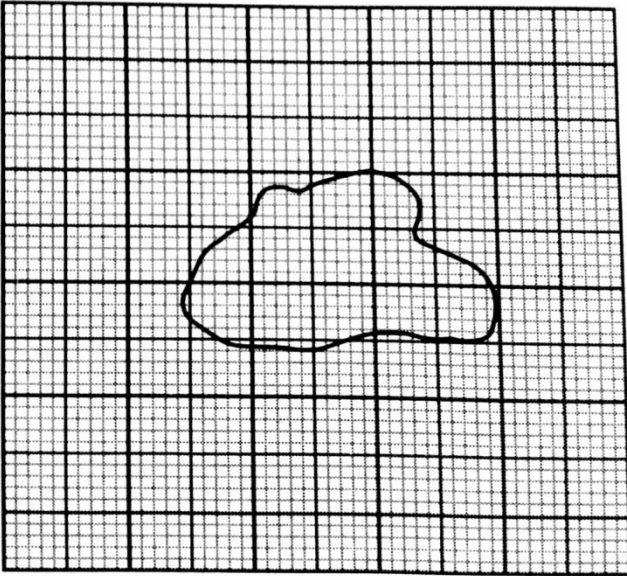
Kuadrat Kuadrat	Total surface are (cm ²) Luas permukaan (cm ²)
P	 <div style="float: right; border: 1px solid black; width: 150px; height: 60px; margin-top: 20px;"></div>
Q	 <div style="float: right; border: 1px solid black; width: 150px; height: 60px; margin-top: 20px;"></div>

Table 1
Jadual 1

1(a) Calculate and record the total coverage of *Protococcus* sp.. in the quadrat P and the quadrat Q

Hitung dan rekod jumlah bilangan Protococcus sp.. pada kuadrat P dan kuadrat Q dalam Jadual 1.

3 marks
 (3 markah)

	3
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(b)(i) State two different observations made from the diagrams above in Table 1.
Nyatakan dua pemerhatian berbeza yang dibuat daripada rajah yang ditunjukkan pada Jadual 1
Observation 1
Pemerhatian 1

.....
.....
.....

Observation 2
Pemerhatian 2

.....
.....
.....

3 marks
(3 markah)

3

1(b)(ii) State one inference for each observation made in 1(b)(i)
Nyatakan satu inferens bagi setiap pemerhatian yang dibuat pada 1 (b)(i)

Inference 1
Inferens 1

.....
.....
.....

Inference 2
Inferens 2

.....
.....
.....

3 marks
(3 markah)

3

(c) State the variables in the experiment and explain how the variables are handled.
Nyatakan pemboleh ubah dan cara mengendalikan pemboleh ubah

Variables <i>Pemboleh ubah</i>	Method to handle variables <i>Cara mengendalikan pemboleh ubah</i>
<p style="text-align: center;">Manipulated variable <i>Pemboleh ubah dimanipulasikan</i></p> <p>.....</p> <p>.....</p> <p>.....</p>	<p>.....</p> <p>.....</p> <p>.....</p>
<p style="text-align: center;">Responding variable <i>Pemboleh ubah bergerak balas</i></p> <p>.....</p> <p>.....</p> <p>.....</p>	<p>.....</p> <p>.....</p> <p>.....</p>
<p style="text-align: center;">Constant variable <i>Pemboleh ubah dimalarkan</i></p> <p>.....</p> <p>.....</p> <p>.....</p>	<p>.....</p> <p>.....</p> <p>.....</p>

3 marks
(3 markah)

	3
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(d) State the hypothesis for this experiment
Nyatakan hipotesis bagi eksperimen ini

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.....

.....

3 marks
(3 markah)

	3
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e(i) Construct a table and record all the data collected in the experiment
Bina satu jadual dan rekodkan semua data yang dikumpul dalam eksperimen ini.

Your table should have the following titles:
Jadual anda hendaklah mengandungi tajuk-tajuk berikut:

- Quadrat
Kuadrat
- Total surfaces area covered by Protococcus sp..
Jumlah luas permukaan dilitupi oleh Protococcus sp..
- Percentage of area covered by Protococcus sp..
Peratus kawasan dilitupi oleh Protococcus sp..

3 marks
(3 markah)

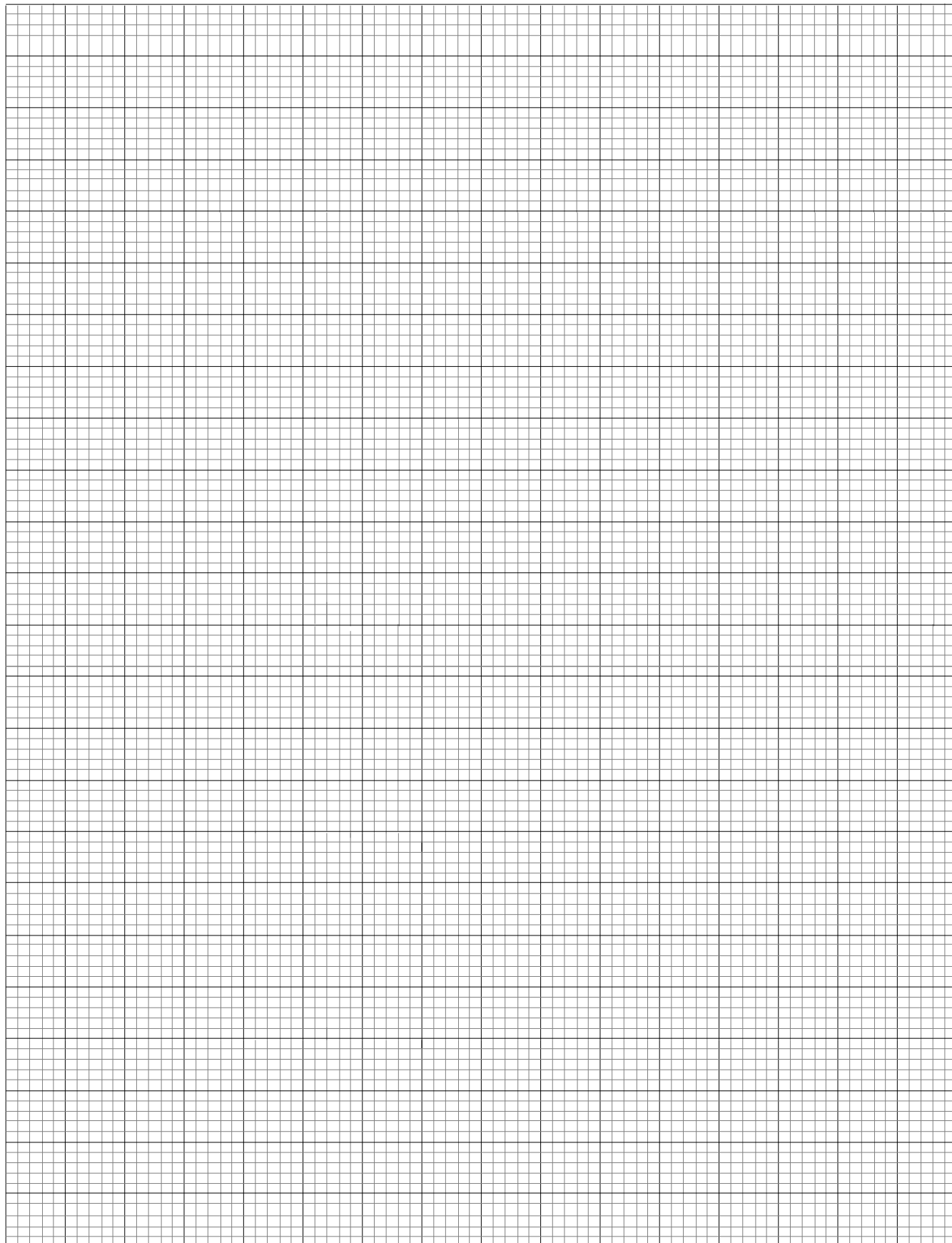


(e)(ii) Use the graph provided on page 7, draw a bar chart to show the percentage coverage of Protococcus sp. to the position of quadrat on the tree trunk.
Dengan menggunakan kertas graf yang disediakan di muka surat 7, lukis carta bar yang menunjukkan peratus litupan Protococcus sp. dan kedudukan kuadrat atas kulit pokok.

3 marks
(3 markah)



Percentage coverage of Protococcus sp. against the position of quadrat on the tree trunk
Peratusan litupan Protococcus sp. melawan kedudukan kuadrat pada batang pokok.



- (f) The population distribution of *Protococcus* sp.. is represented by the percentage coverage. Based on the bar chart drawn in 1 (e) (ii), explain the relationship between the population distribution of *Protococcus* sp.. and humidity.

Taburan populasi Protococcus sp diwakili oleh peratusan litupannya.

Berdasarkan pada carta palang yang dilukis di 1 (e)(ii), terangkan hubungan antara taburan populasi Protococcus sp. dengan kelembapan.

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.....

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3 marks
(3 markah)

3

- (g) Based on the experiment, state the operational definition for percentage coverage of *Protococcus* sp..

Berdasarkan eksperimen, nyatakan defini secara operasi bagi peratusan litupan Protococcus sp..

.....

.....

.....

.....

3 marks
(3 markah)

3

- (h) Predict what will happen to the percentage coverage of *Protococcus* sp.. on the tree trunk if there is no rain for one month, Explain your prediction.

Ramalkan apa yang akan berlaku pada peratusan litupan Protococcus sp.. pada batang pokok jika tiada hujan selama satu bulan. Terangkan ramalan anda.

.....

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3 marks
(3 markah)

3

- (i) Classify the following biotic and abiotic factors.
Kelaskan faktor biotik dan abiotik berikut

Prawn, eagle, light intensity, topography, mushrooms, microclimate, remora fish
Udang, helang, keamatan cahaya, topografi, cendawan, iklim mikro, ikan remora

Biotic factors <i>Faktor biotik</i>	Abiotic factors <i>Faktor abiotik</i>

3 marks
(3 markah)

3

2 Kidney functioned as excretory organ in urine formation. Other than that, kidney also functioned as osmoregulation organ to regulate water and salt balance in the body so that blood osmotic pressure maintained at normal range. Osmoregulation is a homeostasis mechanism to maintain blood osmotic pressure. One way to maintain the optimum osmotic pressure of our body is to excrete excess water by producing urine.

Ginjal berfungsi sebagai organ perkumuhan dalam pembentukan air kencing. Selain itu, ginjal berfungsi sebagai organ pengosmokawalaturan untuk mengawal atur keseimbangan air dan garam dalam badan supaya tekanan osmosis darah dikekalkan pada julat normal. Pengosmokawalaturan adalah mekanisma homeostasis untuk mengekalkan tekanan osmosis darah. Satu cara mengekalkan tekanan osmosis yang optimum bagi bendalir badan ialah menyingkirkan air berlebihan melalui penghasilan air.



Yes..me too. And not during hot day right.
Ya, saya juga. Dan bukan pada hari panas, betul tak!



Why I keep going to the toilet during cold day?
Mengapakah saya kerap ke tandas apabila cuaca sejuk?

Based on the above situation, plan a laboratory experiment to study the effect of temperature on volume of urine produced.

The planning of our experiment should include the following aspects:

Berdasarkan maklumat di atas, rancang satu eksperimen makmal untuk mengkaji kesan suhu ke atas isipadu air kencing yang dihasilkan.

Perancangan eksperimen anda hendaklah meliputi aspek-aspek berikut:

- Problem statement
Pernyataan masalah
- Hypothesis
Hipotesis
- Variables
Pembolehubah
- List of materials and apparatus
Senarai radas dan bahan
- Procedure of the experiment
Prosedur eksperimen
- Presentation of data
Persembahan data

[17 marks]
[17 markah]

END OF QUESTION PAPER
KERTAS SOALAN TAMAT