

SULIT
4551/1
Biology
September 2009
1¼ jam

PEPERIKSAAN PERCUBAAN SPM 2009

BIOLOGY

Kertas 1

Satu Jam Lima Belas Minit

JANGAN BUKA KERTAS SOALAN INI SEHINGGA DIBERITAHU

1. *Kertas soalan ini adalah dalam dwibahasa mengandungi 50 soalan. Jawab **semua** soalan dalam tiap-tiap bahagian.*
2. *Soalan dalam bahasa Inggeris mendahului soalan yang sepadan dalam bahasa Melayu.*
3. *Rajah yang mengiringi soalan dimaksudkan untuk memberi maklumat yang berguna bagi menjawab soalan. Rajah tidak dilukis mengikut skala kecuali dinyatakan sebaliknya.*
4. *Penggunaan kalkulator saintifik yang **tidak** boleh diprogramkan adalah dibenarkan.*

Kertas soalan ini mengandungi 29 halaman bercetak .

1. Which organ consists of cells which has the highest density of rough endoplasmic reticulum ?

Organ manakah mengandungi sel-sel yang mempunyai kepadatan jalinan endoplasmik kasar paling tinggi?

A Stomach
Perut

C Brain
Otak

B Heart
Jantung

D Kidney
Ginjal

2. Diagram 1 shows three types of cells.

Rajah 1 menunjukkan tiga jenis sel.

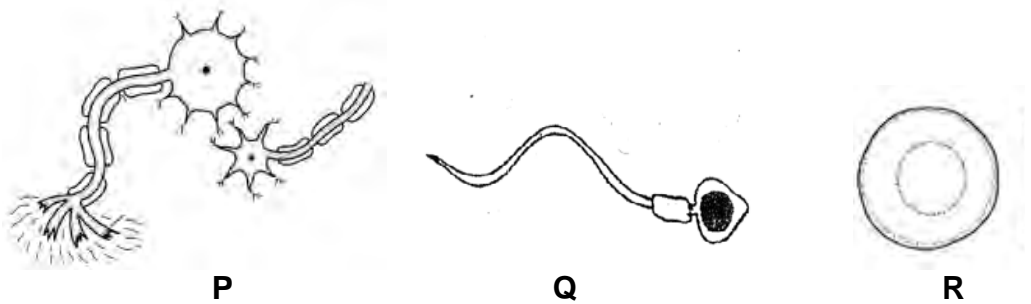


Diagram 1

To which systems do the cells shown above belong?

Kepada system manakah sel-sel di atas dipadankan ?

	P	Q	R
A.	Digestive system <i>Sistem pencernaan]</i>	Respiratory system <i>Sistem respirasi</i>	Nervous system <i>Sistem saraf</i>
B.	Nervous system <i>Sistem saraf</i>	Reproductive system <i>Sistem pembiakan</i>	Circulatory system <i>Sistem peredaran</i>
C.	Respiratory system <i>Sistem respirasi</i>	Circulatory system <i>Sistem saraf</i>	Digestive system <i>Sistem pencernaan</i>
D.	Reproductive system <i>Sistem pembiakan</i>	Digestive system <i>Sistem pencernaan</i>	Nervous system <i>Sistem saraf</i>

3. Diagram 2 shows a unicellular organism living in freshwater pond.
Rajah 2 menunjukkan sejenis organisma unisel yang hidup di dalam kolam air tawar.

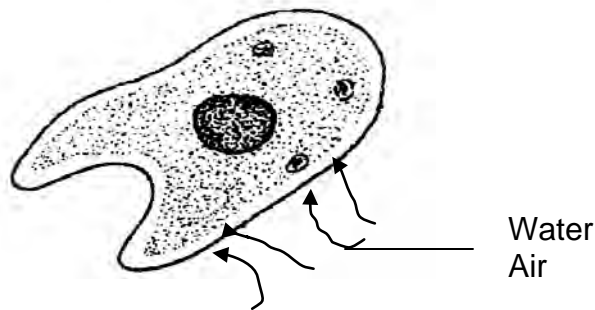


Diagram 2

Which process involves in the movement of water ?
Apakah proses yang terlibat dalam pergerakan air.

- | | |
|-------------------------------|--|
| A Diffusion
<i>Resapan</i> | C Active transport
<i>Pengangkutan aktif</i> |
| B Osmosis
<i>Osmosis</i> | D Facilitated diffusion
<i>Resapan berbantu</i> |
4. Diagram 3 shows a cross section of a leaf.
Rajah 3 menunjukkan keratan rentas daun

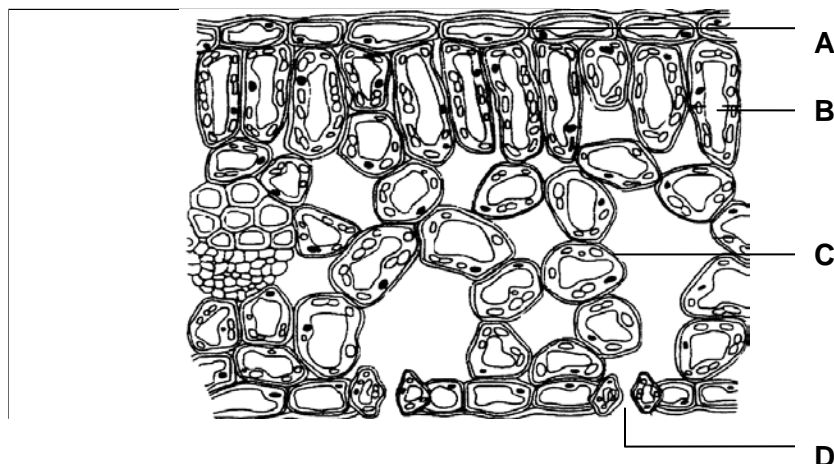


Diagram 3

Which of the cell labelled **A**, **B**, **C** and **D** does not contain chloroplast?

Antara sel yang berlabel A, B, C dan D yang manakah tidak mengandungi kloroplas?

5. Diagram 4 shows a type of plant tissue.
Rajah 4 menunjukkan sejenis tisu tumbuhan.

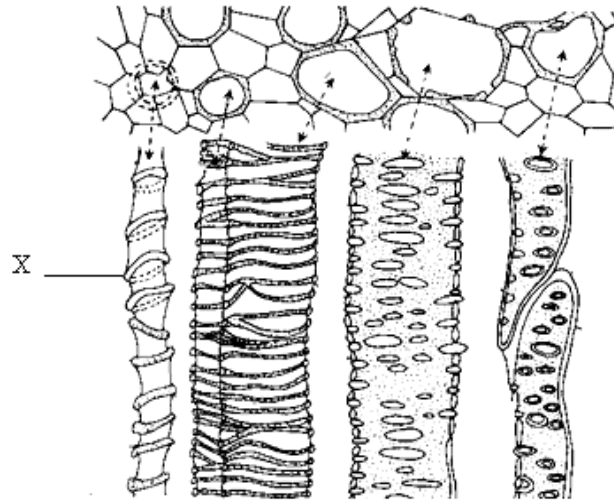


Diagram 4

What is the importance of the thickening of substance X to the plant tissue?
Apakah kepentingan penebalan bahan X terhadap tisu tersebut ?

- A** To transfer photosynthesis products
Untuk memindahkan hasil fotosintesis
- B** To give turgidity to the tissues
Untuk memberikan kesegahan kepada tisu
- C** To transfer water and mineral salts
Untuk memindahkan air dan garam mineral
- D** To give support and mechanical strength
Untuk memberikan sokongan dan kekuatan mekanikal
6. Which of the following sequence of organelles involved in the synthesis of extracellular enzymes is **correct**?
*Manakah di antara urutan berikut **betul** yang melibatkan organel dalam sintesis enzim luar sel?*
- A** Golgi apparatus→Ribosomes →Rough endoplasmic reticulum
Alat Golgi → Ribosom → Jalinan endoplasmik kasar
- B** Rough endoplasmic reticulum→Ribosomes→Golgi apparatus
Jalinan endoplasmik kasar → Ribosom → Alat Golgi
- C** Ribosomes→Golgi apparatus→Rough endoplasmic reticulum
Ribosom → Alat Golgi → Jalinan endoplasmik kasar
- D** Ribosomes→Rough endoplasmic reticulum→Golgi apparatus
Ribosom → Jalinan endoplasmik kasar → Alat Golgi]

7. Carrot slices are immersed in 0.1% sucrose solution. After 4 hours, the slices are found to be turgid and hard.

Hirisan lobak merah direndam di dalam larutan sukrosa 0.1%. Selepas 4 jam, hirisan itu didapati segar dan keras.

Which of the following statement explains this phenomenon?

Antara pernyataan berikut, yang manakah menerangkan fenomena ini ?

- A The carrot cell wall prevent it from shrinking .
Dinding sel karot menghalangnya dari mengecut.
- B The high concentration of the cell sap in the vacuole causes water to diffuse. .
Kepekatan yang tinggi dalam sap sel vakuol menyebabkan air meresap ke dalam Sel.
- C The cell sap is hypotonic towards the sucrose solution.
Sap sel adalah hipotonik kepada larutan sukrosa.
- D The carrot cell wall allows the sucrose molecules to diffuse into the cell.
Dinding sel karot membenarkan molekul selulosa meresap ke dalam sel.
8. Diagram 5 shows a cell after immersed into a particular solution.
Rajah 5 menunjukkan sel yang telah direndamkan ke dalam larutan tertentu.



Diagram 5

Which is experienced by the cell?

Apakah yang dialami oleh sel itu ?

- | | |
|-------------------------------------|---|
| A Crenation
<i>Krenasi</i> | C Deplasmolysis
<i>Deplasmolisis</i> |
| B Plasmolysis
<i>Plasmolisis</i> | D Haemolysis
<i>Hemolisis</i> |

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9. Diagram 6 shows the action of an enzyme on a substrate.
Rajah 6 menunjukkan tindakan enzim ke atas suatu substrat.

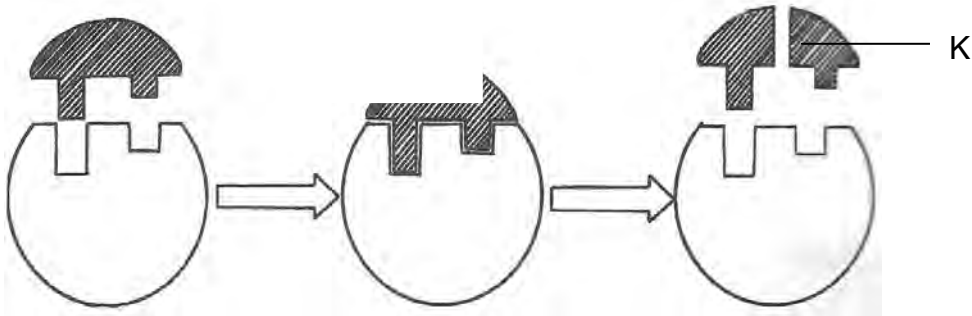


Diagram 6

What is represented by K?
Apakah yang diwakili oleh K?

- | | |
|--|---|
| A Enzyme
<i>Enzim</i> | C Products of reaction
<i>Hasil tindak balas</i> |
| B Enzyme-substrate complex
<i>Kompleks-enzim substrat</i> | D Substrate
<i>Substrat</i> |
10. Based on the information below, name the enzyme that can be used.
Berdasarkan maklumat di bawah, namakan enzim yang sesuai digunakan.

Extracting agar jelly from seaweeds
Mengasingkan agar-agar daripada laut.]

Removing the seed coats from cereal grains
Mengeluarkan kulit dari bijirin

- | | |
|-----------------------------|-------------------------------|
| A Zymase
<i>Zimase</i> | C Celulase
<i>Selulosa</i> |
| B Amylase
<i>Amilase</i> | D Protease
<i>Protease</i> |
11. Diagram 7 shows a graph between the rate of reaction at different substrate concentration when factor Q is changed.
Rajah 7 menunjukkan graf diantara kadar tindak balas dan kepekatan substrat apabila faktor Q diubah.

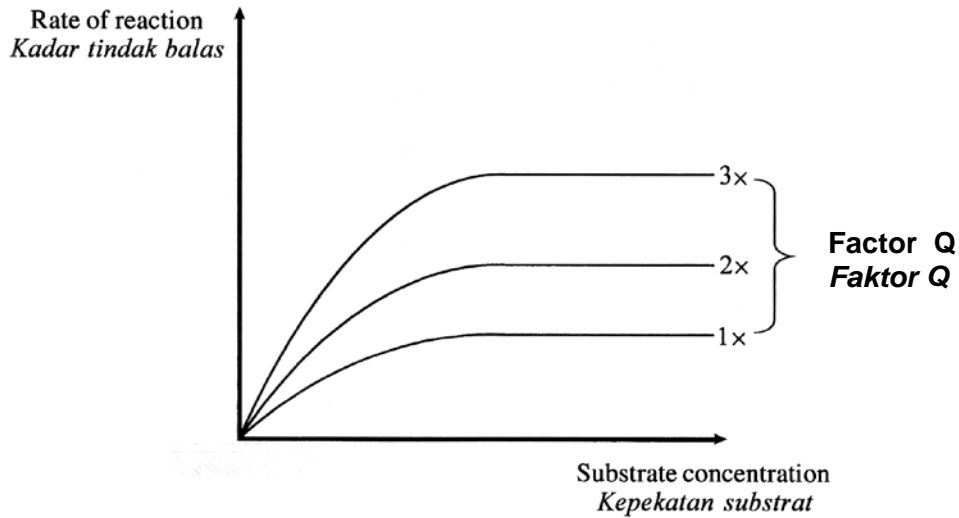
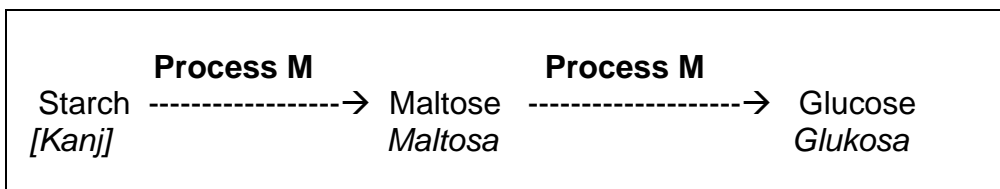


Diagram 7

What is factor Q ?
Apakah faktor Q ?

- A pH
pH
B Time
Masa
C Inhibitor
Perencat
D Enzyme concentration
Kepekatan enzim

12. The following information shows starch molecules undergoing process M.
Maklumat berikut menunjukkan molekul kanji melalui proses M.



What is process M ?
Apakah proses M ?

- A Photosynthesis
Fotosintesis
B Hydrolysis
Hidrolisis
C Condensation
Kondensas]
D Polymerisation
Pempolimeran

13. Diagram 8 shows a cell cycle of an organism.
Rajah 8 menunjukkan kitar sel bagi suatu organisma.

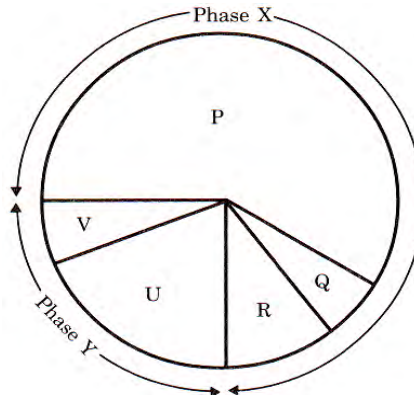


Diagram 8

Which of the following represent X and Y ?
Yang manakah di antara berikut mewakili X dan Y ?

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

14. The diploid chromosomes in a leaf cell of a maize plant is 20. If one of the homologous chromosome pair does not separate during the Meiosis 1, how many chromosomes can be found in the male nucleus of a pollen grain of maize ?
Nombor kromosom diploid dalam daun jagung ialah 20. Jika satu daripada Pasangan kromosom homolog tidak terpisah semasa Meiosis 1, berapakah bilangan kromosom yang mungkin didapati pada debunga daun jagung ?

A 9 B 10 C 20 D 18

15. Which of the following statements explain the importance of mitosis to cells?
Yang manakah di antara pernyataan berikut menerangkan kepentingan mitosis kepada sel ?

- I. To ensure the chromosomal number is constant in all somatic cells.
Untuk memastikan bilangan kromosom adalah tetap dalam semua sel somatik.
- II To ensure the daughter cells have the same number of chromosomes as the parent cell.
Untuk memastikan bilangan kromosom adalah sama dengan bilangan kromosom sel induk.
- III To ensure that the genetic material in the daughter cells is the same as in the parent cell
Untuk memastikan bahan genetik sel anak adalah sama dengan sel induk.

IV To contribute to the genetic variation in the daughter cells.

Untuk menyumbang kepada variasi genetik dalam sel anak.

A I and II only

C I, II and III only

B II and III only

D I, III and IV only

16. Diagram 9 shows the correct proportion for the various classes of food in the food pyramid.

Rajah 9 menunjukkan nisbah yang betul bagi pelbagai kelas makanan dalam piramid makanan.

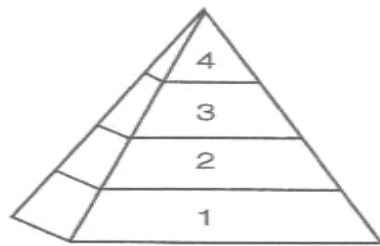


Diagram 9

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

Yang manakah di antara berikut menunjukkan kelas makanan yang betul dalam piramid makanan di atas?

	1	2	3	4
A	Fats	Proteins	Carbohydrates	Vitamins and minerals
B	Carbohydrates	Vitamins and minerals	Proteins	Fats
C	Proteins	Carbohydrates	Fats	Vitamins and minerals
D	Carbohydrates	Fats	Vitamins and minerals	Proteins

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17. Diagram 10 shows the structure of the human alimentary canal.
Rajah 10 menunjukkan struktur salur alimentari manusia.

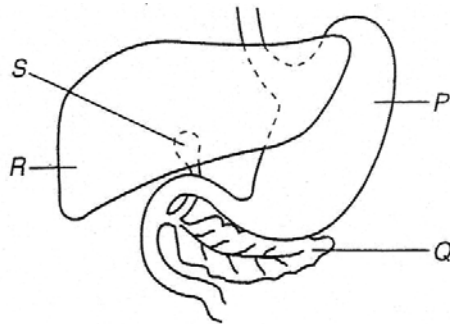


Diagram 10

- Which organ produces the enzyme responsible for the breakdown of lipids?
Organ manakah merembeskan enzim yang bertanggungjawab untuk pemecahan lipid?
- A. S only
B. P and Q
C. R and S
D. Q only

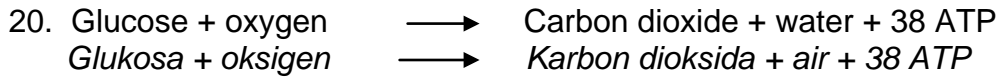
18. Which adaptations help the villi to absorb nutrients efficiently?
Yang manakah penyesuaian vilus untuk menyerap nutrien secara berkesan?

- I Abundant in number
Bilangan yang banyak
II Thin walls
Dinding nipis
III Having blood capillaries
Mempunyai kapilari darah
IV Lacteals to absorb fatty acids and glycerol
Lakteal untuk menyerap asid lemak dan gliserol

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

19. When 0.4 g of groundnut is completely burnt, the temperature of 20 ml of water rise up from 30°C to 70°C. Calculate the energy value of the groundnut.
(Specific heat capacity of water is 4.2 Jg °C)
Bila 0.4g kacang tanah terbakar dengan lengkap, suhu 20 ml air meningkat daripada 30°C kepada 70°C. Hitung nilai tenaga kacang tanah?
(Muatan haba tentu air ialah 4.2 Jg °C).

- A 1.4 kJg⁻¹
B 3.4kJg⁻¹
C 8.4 kJg⁻¹
D 76.2 kJg⁻¹



The above equation shows
Persamaan di atas menunjukkan

- A. aerobic respiration
respirasi aerobik
- B. anaerobic respiration
respirasi anaerobik
- C. condensation reaction
tindakbalas kondensasi
- D. hydrolytic reaction
tindakbalas hidrolitik
21. Which of the following organelle involves in the gaseous exchange in *Ameoba sp*?
Antara organel berikut yang manakah terlibat dalam pertukaran gas dalam Ameoba sp ?
- A Cell wall
Dinding sel
- B Nucleus
Nukleus
- C Cell membrane
Membran sel
- D Vacuole
Vakuol
22. Diagram 11 shows parts of the tracheal system of insect.
Rajah 11 menunjukkan sebahagian daripada sistem trakea pada serangga.

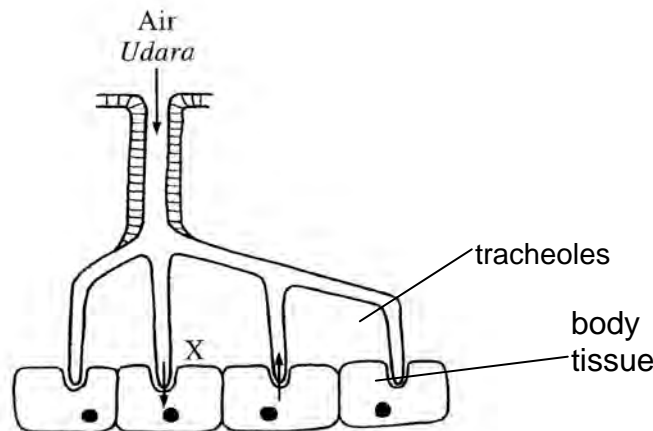


Diagram 11

What process occurs at X during the gas exchange of the insect?
Apakah proses yang berlaku di X semasa pertukaran gas bagi serangga tersebut?

- A Diffusion
Resapan
- B Osmosis
Osmosis
- C Facilitated diffusion
Resapan berbantu
- D Active transport
Pengangkutan aktif

23. Diagram 12 shows three different types of interaction between organisms.
Rajah 12 menunjukkan tiga jenis interaksi di antara organisma.

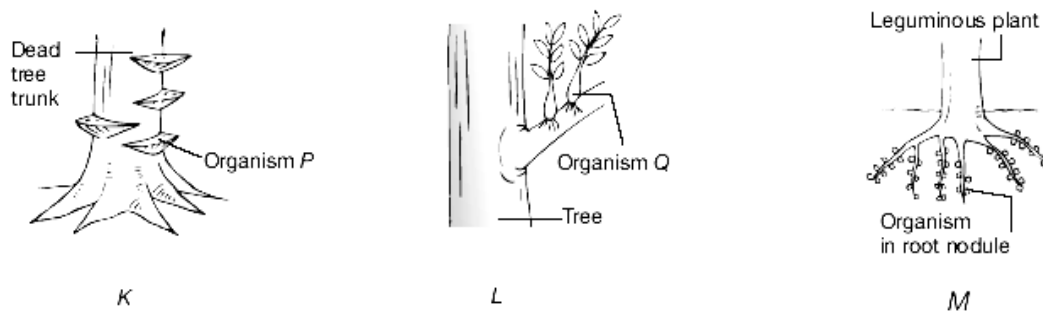


Diagram 12

Which of the following is **true** about the interactions K, L and M?
Manakah di antara berikut benar tentang interaksi K, L dan M ?

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

24. Which of the following chemical substance is used to kill or prevent the multiplication of microorganisms in the wound?
Yang manakah di antara sebatian kimia berikut, digunakan untuk membunuh atau mencegah pembiakan mikroorganisma dalam luka ?

A Antiseptic <i>Antiseptik</i>	C Vaccine <i>Vaksin</i>
B Antibiotic <i>Antibiotik</i>	D Disinfectant <i>Disinfektan</i>

25. Nitrates and phosphates from farmland that flow into a lake caused rapid growth of algae .

What is described by the above situation ?

Nitrat dan fosfat yang dialirkan dari ladang ke dalam tasik telah menyebabkan pertumbuhan alga yang mendadak.

Apakah yang diterangkan oleh situasi di atas ?

A Eutrophication <i>Eutrofikasi</i>	C Fertilizer accumulation <i>Pengumpulan baja</i>
B Pesticide pollution <i>Pencemaran pestisid</i>	D Colonisation <i>Pengkolonian</i>

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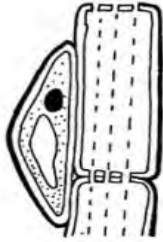
26. Diagram 13 shows plant cells.

Rajah 13 menunjukkan sel tumbuhan.

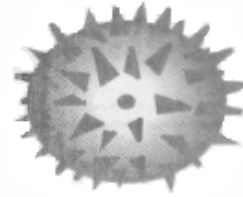
Which of the following cell is the product of meiosis?

Sel yang manakah di antara berikut adalah produk pembahagian sel meiosis?

A



B



C



D

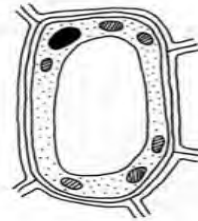


Diagram 13

27. Diagram 14 shows a part of a mangrove plant.

Rajah 14 menunjukkan satu bahagian tumbuhan paya bakau.

What is structure S?

Apakah struktur S?

- A. Succulent leaves
Daun sukulen
- B. Pneumatophores
Pneumatofor
- C. Vivipary seeds
Biji benih vivipari
- D. Prop roots
Akar jangkang

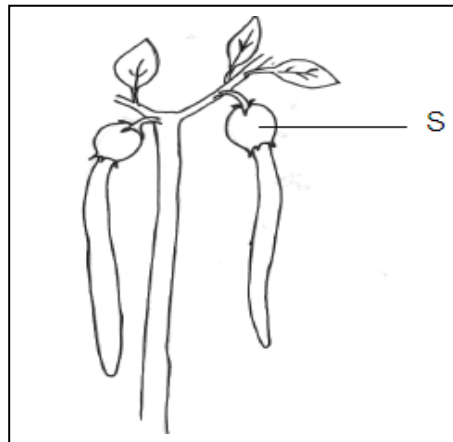
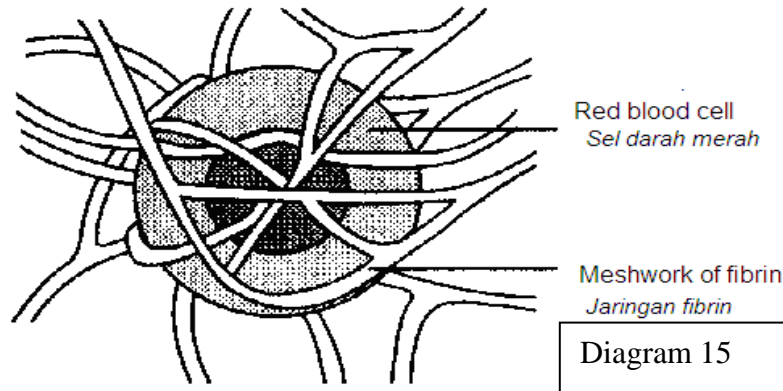


Diagram 14

28. Diagram 15 shows a stage in the blood clotting mechanism.

Rajah 15 menunjukkan satu peringkat di dalam mekanisme pembekuan darah.



Which of the following statement explains this stage?

Antara pernyataan berikut, yang manakah menerangkan peringkat ini?

- A Thromboplastin converts prothrombin to thrombin
Tromboplastin menukarkan protrombin kepada trombin
- B Thrombin converts fibrinogen to meshwork of fibrin.
Trombin menukarkan fibrinogen kepada jaringan fibrin
- C Platelets stimulate the formation of meshwork of fibrin.
Platlet meransang pembentukan jaringan fibrin.
- D Platelets release the thromboplastin to form meshwork of fibrin.
Platlet membebaskan tromboplastin untuk membentuk jaringan fibrin.

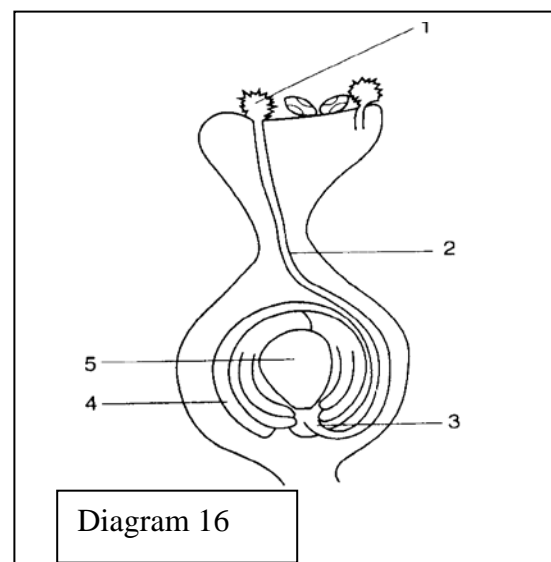
29. Diagram 16 shows a cross-section through the carpel of a flower before fertilization.

Rajah 16 menunjukkan keratan rentas melalui karpel bunga sebelum persenyawaan.

Where are the position of male and female gametes before fertilization?

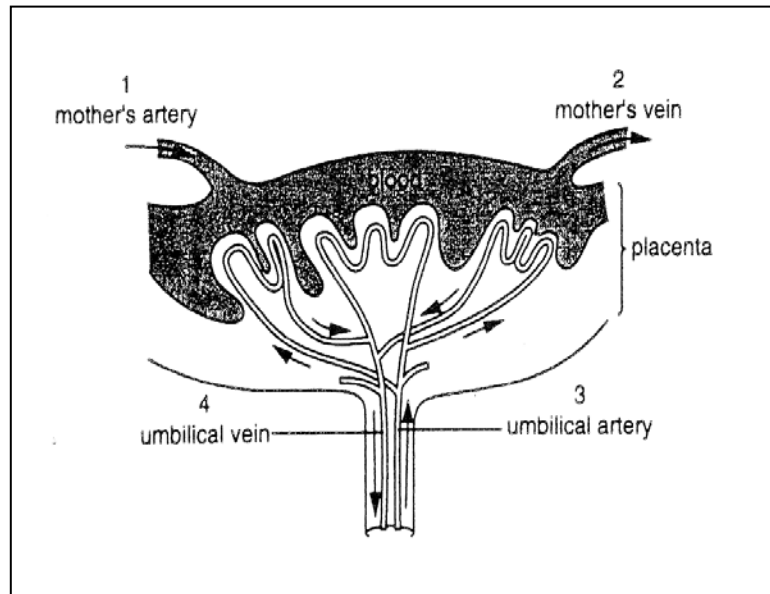
Di manakah kedudukan gamet jantan dan betina sebelum persenyawaan ?

	Male gamete	Female gamete
A	1	5
B	1	4
C	2	4
D	3	5



30. Diagram 17 shows part of the placenta.
Rajah 17 menunjukkan bahagian plasenta.

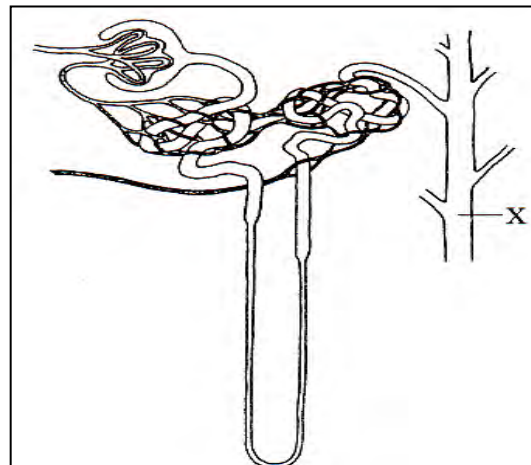
Diagram 17



In which parts do the blood contain the most oxygen and nutrients?
Di bahagian manakah darah mempunyai kandungan oksigen dan nutrien yang tinggi?

- | | |
|-----------|-----------|
| A 1 and 3 | C 2 and 3 |
| B 1 and 4 | D 2 and 4 |
31. Diagram 18 shows the structure of a nephron.
Rajah 18 menunjukkan struktur nefron.

Diagram 18



Which of the following activities cause X to be more permeable to water?
Yang manakah di antara aktiviti berikut menyebabkan X lebih telap kepada air?

P - Drinking a lot of water <i>Minum air dengan banyak</i> Q - Eating salty foods <i>Makan makanan yang banyak</i> R - Not exercising <i>Tidak melakukan senaman</i> S - Playing sports <i>Bersukan</i>
--

A P and R

C Q and R

B P and S

D Q and S

32. Diagram 19 shows the changes in the thickness of the uterus lining of a woman during her menstrual cycle. At which time is the woman most likely to be fertile?
 [Rajah 19 menunjukkan perubahan ketebalan lapisan uterus seorang wanita semasa kitar haid. Pada masa yang manakah wanita itu mengalami waktu paling subur?]

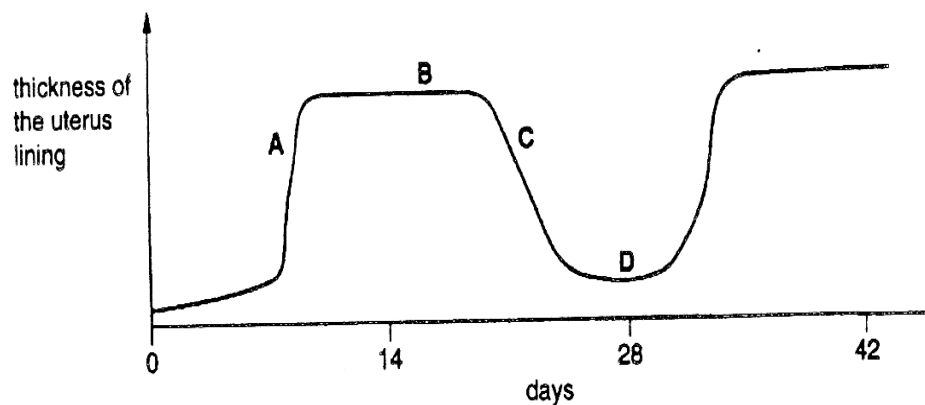


Diagram 19

33. 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 Spinach
BayamC Tomato
TomatoB Potatoes
KentangD Banana
Pisang

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34. Diagram 20 shows a part of hind limb which consists of femur, tibia and fibula .
Rajah 20 menunjukkan bahagian anggota belakang yang terdiri dari femur, tibia dan fibula.

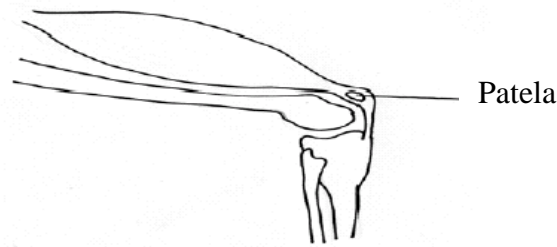
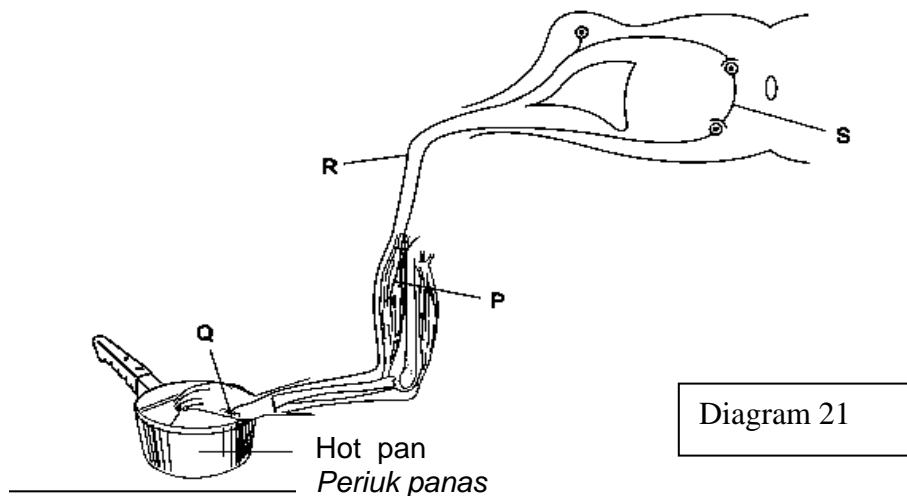


Diagram 20

Which of this action cannot be done if the patella is dislocated?
Manakah tindakan berikut tidak berlaku jika patela beralih tempat?

- | | | | |
|---|------------------------------|---|---|
| A | Sitting down
<i>Duduk</i> | C | Walking
<i>Berjalan</i> |
| B | Sleeping
<i>Tidur</i> | D | Straightening the leg
<i>Meluruskan kaki</i> |
35. Diagram 21 shows the structures involved in reflex action.
Rajah 21 menunjukkan struktur yang terlibat dalam tindakan refleks.



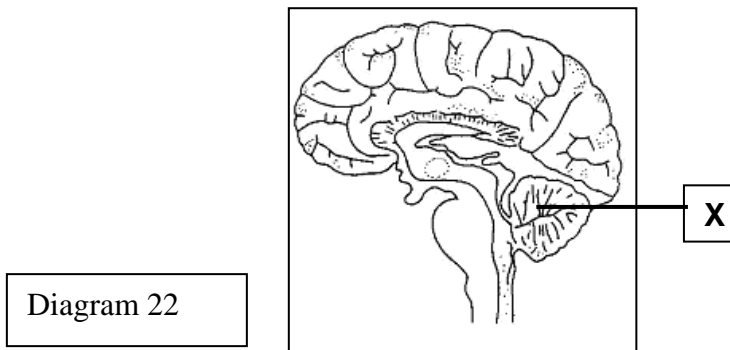
Which of the following shows the correct sequence for the above action?
Antara berikut, manakah menunjukkan urutan yang betul bagi tindakan di atas?

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

36. A farmer sprays all the mangoes in his farm with hormone X to ensure that all the mangoes ripen at the same time. What is hormone X?
Seorang petani menyembur semua buah manggadi ladang nya dengan hormon X bagi memastikan semua mangganya masak pada masa yang sama. Apakah hormon X?

- A Auxin
 B Ethylene
 C Cytokinin
 D Gibberilin

37. Diagram 22 shows the structure of human brain.
Rajah 22 menunjukkan struktur otak manusia.



What is X?
Apakah X?

- A Cerebrum
Serebrum
 B Cerebellum
Serebelum
 C Spinal cord
Saraf tunjang
 D Medula oblongata
Medula oblongata
38. The following statements is about hormone X.
Berikut adalah pernyataan tentang hormon X.

- Produced by corpus luteum and placenta
[Dihasilkan oleh korpus luteum dan placenta]
- Promotes growth of endometrium and prevents menstruation.
[Merangsang pertumbuhan endometrium dan menghalang haid]

What is hormone X?
 [Apakah hormone X?]

- A Oestrogen
Estrogen
- B Progesterone
Progesteron
- C Luteinising hormone
Hormon pelutinan
- D Follicle stimulating hormone
Hormon perangsang folikel

39. Which of the following is **true** when the osmotic pressure in the blood decreases?
 Manakah di antara berikut **benar** sekiranya tekanan osmosis darah berkurangan?

	Secretion of ADH <i>Rembesan ADH</i>	Reabsorption of water in kidney tubules <i>Penyerapan air oleh tubul ginjal</i>
A	Increase <i>Bertambah</i>	Increase <i>Bertambah</i>
B	Decrease <i>Berkurang</i>	Decrease <i>Berkurang</i>
C	Decrease <i>Berkurang</i>	Increase <i>Bertambah</i>
D	Increase <i>Bertambah</i>	Decrease <i>Berkurang</i>

40. Diagram 23 shows the stages in the development of follicle in the ovary of human.
 Rajah 23 menunjukkan peringkat perkembangan folikel dalam ovari manusia.

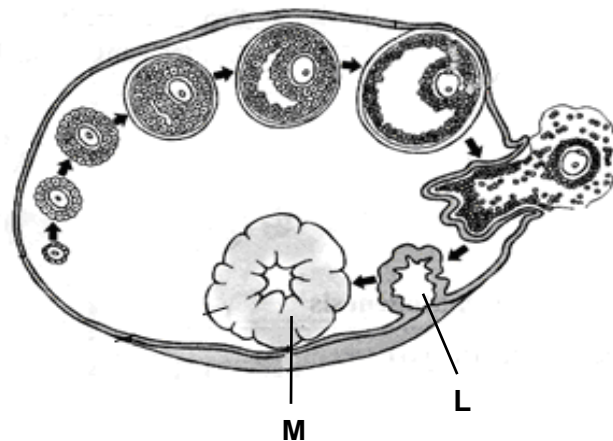


Diagram 23

What is the effect to the uterine wall when L develops into M?
 Apakah kesan kepada dinding uterus apabila L berkembang menjadi M?

- A It is repaired
la diperbaiki
- B It breaks down
la terurai
- C It thickens
la menebal
- D Its thickness maintains
Ketebalannya dikekalkan

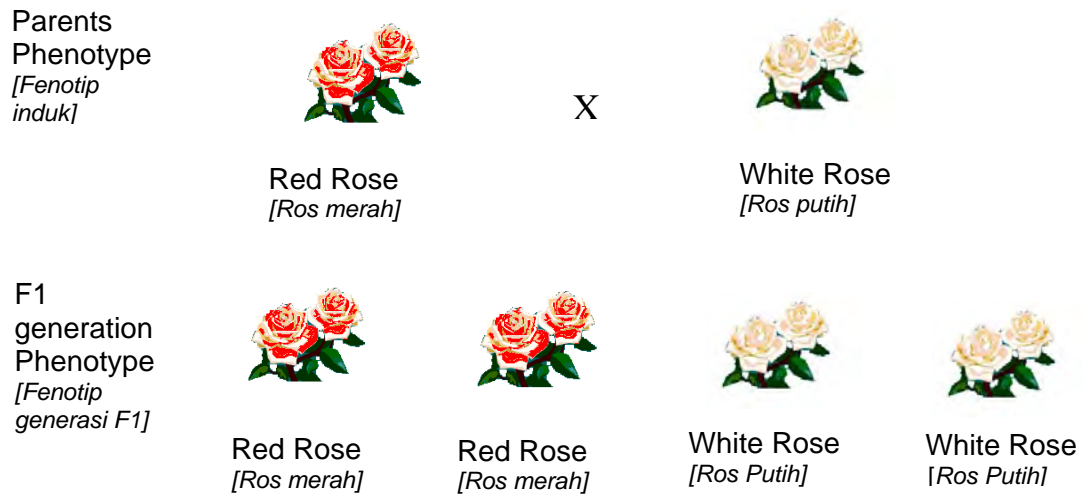


Diagram 24

What is the genotype of the parents?
Apakah genotip bagi induk?

	Red Rose	White Rose
A	RR	Rr
B	Rr	Rr
C	Rr	rr
D	RR	rr

44. Diagram 25 shows ultrafiltration that occurs in the kidney.
Rajah 25 menunjukkan ultraturasan yang berlaku dalam ginjal.

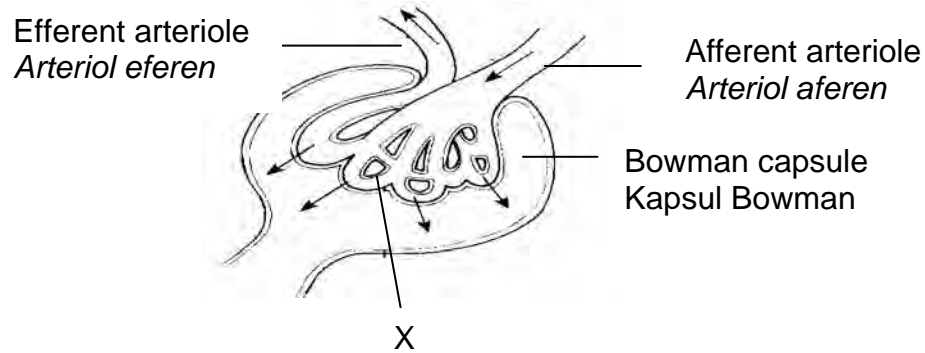


Diagram 25

What are the substances that can move across X ?
Apakah bahan yang dapat merentasi X?

- | | | | |
|---|---------------------------------|---|---------------------------------|
| A | Fibrinogen
<i>Fibrinogen</i> | C | Erythrocyte
<i>Eritrosit</i> |
| B | Leucocyte
<i>Leukosit</i> | D | Amino acid
<i>Amino asid</i> |
45. Diagram 26 shows a shirt with a blood stain before and after being washed with detergent containing enzyme.
Rajah 26 menunjukkan baju dengan kesan darah sebelum dan selepas dibasuh dengan pencuci mengandungi enzim.

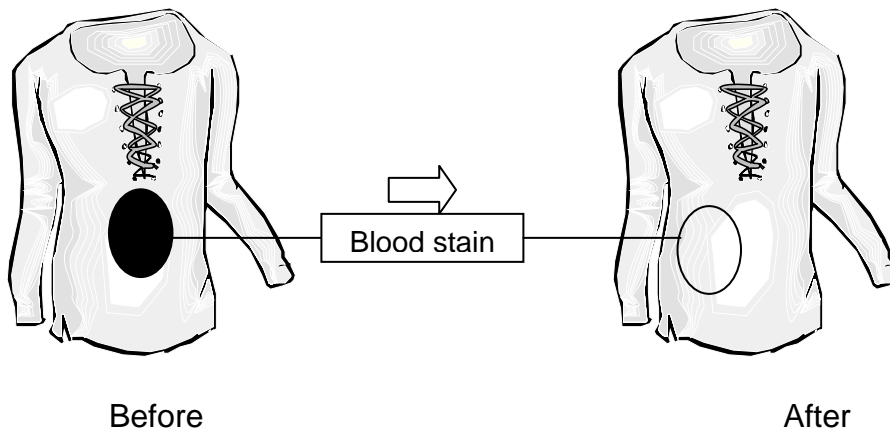


Diagram 26

Which is the most suitable enzyme and temperature to give the result shown?
 Yang manakah enzim dan suhu yang paling sesuai untuk menghasilkan keputusan seperti di atas?

	Enzyme	Temperature
A	Lipase	37°C
B	Protease	18°C
C	Lipase	18°C
D	Protease	37°C

46. Diagram 27 shows a pair of chromosomes in a cell of an organism.
 Rajah 27 menunjukkan sepasang kromosom dalam sel suatu organisma.

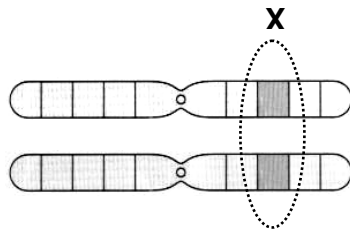


Diagram 27

What is X ?
 Apakah X ?

- A Allele
- B Gene
- C Nucleotide
- D Chromosome

47. Diagram 28 shows the regulation of human body temperature.
 Rajah 28 menunjukkan pengawalan suhu badan manusia.

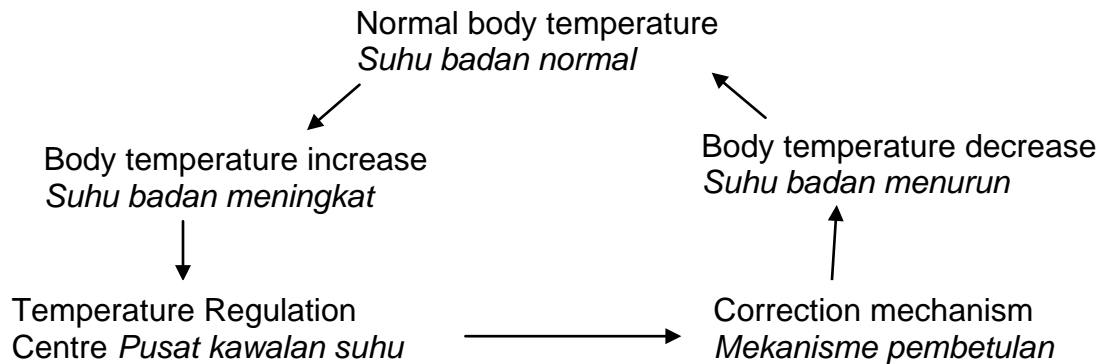


Diagram 28

Which of the following correction mechanism occur ?
 Antara berikut yang manakah mekanisme pembetulan yang berlaku?

- I. Vasodilation
Pemvasodilatan
- II. Erector muscle contract
Otot erektor mengecut]
- III Vasoconstriction
Pemvasocerutan
- IV Decrease in metabolic rate
Kadar metabolisme menurun

- A I and II
- B I, II and III
- C I and IV
- D I, II and IV

48. Diagram 29 shows the graphs of two types of variation .
 Rajah 29 menunjukkan graf untuk dua jenis variasi.

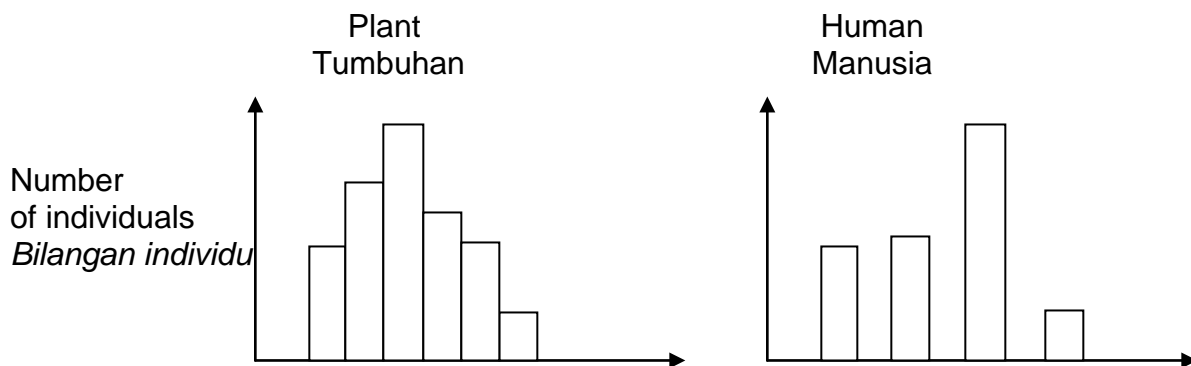


Diagram 29

What type of variation shown in each population ?
 Apakah jenis variasi ditunjukkan dalam setiap populasi ?

	Human Manusia	Plant Tumbuhan
A	Continuous	Discontinuous
B	Continuous	Continuous
C	Discontinuous	Discontinuous
D	Discontinuous	Continuous

49. The following food chain is found in a fresh water pond.
 Rantai makanan berikut terdapat dalam kolam air tawar.

Phytoplankton → water fleas → fish
Fitoplankton → kutu air → ikan

Which of the following shows the relative amount of biological mass in the food chain ?
 Manakah di antara berikut menunjukkan amaun jisim biologi relatif dalam rantai makanan ?

	Phytoplankton Fitoplankton	Water flea Kutu air	Fish Ikan
A	5g	15g	60g
B	30g	60g	15g
C	60g	5g	30g
D	60g	30g	5g

50. Diagram 30 shows a graph of the level of antibody in blood of two patients, P and Q whom have been given vaccination twice.
Rajah 30 menunjukkan graf aras antibodi dalam darah bagi dua pesakit, P dan Q yang telah diberi suntikan vaksin sebanyak dua kali.

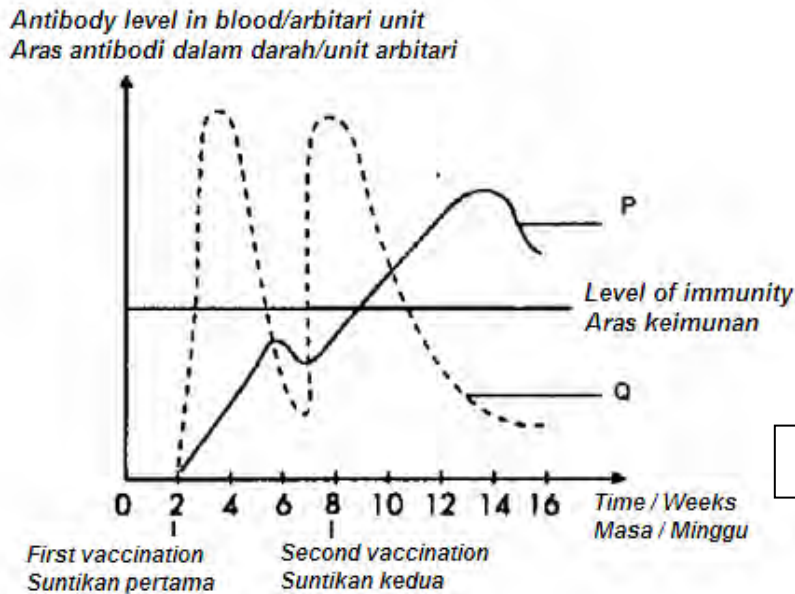


Diagram 30

Which of the following will be the type of immunisation acquired by these two patients?
Antara berikut yang manakah merupakan jenis keimunan yang diperolehi oleh kedua-dua pesakit?

	P	Q
A	Artificial acquired active immunity <i>Keimunan aktif buatan</i>	Artificial acquired passive immunity <i>Keimunan pasif buatan</i>
B	Artificial acquired passive immunity <i>Keimunan pasif buatan</i>	Artificial acquired active immunity <i>Keimunan aktif buatan</i>
C	Natural acquired passive immunity <i>Keimunan pasif semulajadi</i>	Natural acquired active immunity <i>Keimunan aktif semulajadi</i>
D	Natural acquired active immunity <i>Keimunan aktif semulajadi</i>	Natural acquired passive immunity <i>Keimunan pasif semulajadi</i>

**END OF QUESTION PAPER
 KERTAS SOALAN TAMAT.**

SULIT
4551/2
Biology
September 2009
2 ½ hours

NAMA :

ANGKA GILIRAN :

PEPERIKSAAN PERCUBAAN SPM 2009

BIOLOGY

Kertas 2

Dua jam tiga puluh minit

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.
3. Calon dibenarkan menjawab keseluruhan atau sebahagian soalan sama ada dalam bahasa Inggeris atau bahasa Melayu.
4. Calon dikehendaki membaca maklumat di halaman kertas soalan ini.

<i>Untuk Kegunaan Pemeriksa</i>			
Bahagian	Soalan	Markah Penuh	Markah diperolehi
A	1	13	
	2	12	
	3	12	
	4	12	
	5	11	
B	6	20	
	7	20	
	8	20	
	9	20	
Jumlah			

Kertas soalan ini mengandungi **22** halaman bercetak

Section A
Bahagian A

[60 marks]
[60 markah]

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

- 1 Diagram 1 shows the structure of a plasma membrane.
Rajah 1 menunjukkan struktur membran plasma.

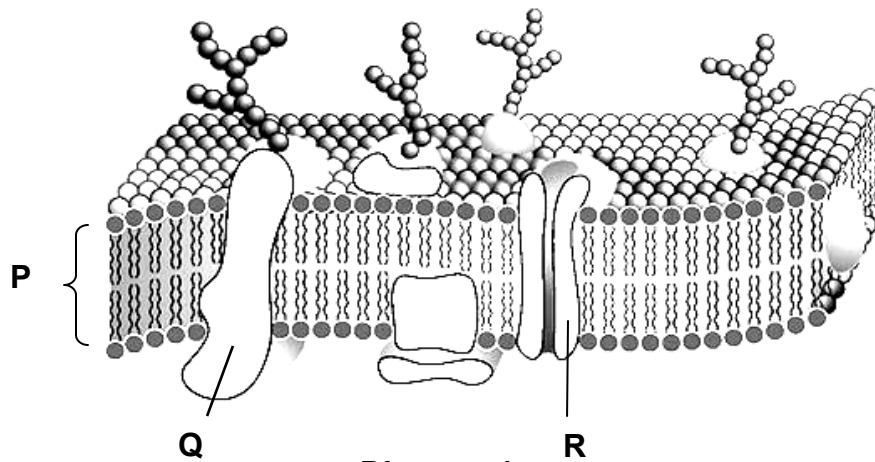


Diagram 1
Rajah 1

- (a) Name the parts labelled Q and R.
Namakan bahagian yang berlabel Q dan R.

Q : _____

R : _____

[2 marks]

1(a)

- (b)(i) State the component of structure P.
Nyatakan komponen struktur P.

[1 mark]

1(b)(i)

- (ii) Explain the main function of P.

Terangkan fungsi utama P.

[1 mark]

1(b)(ii)

(c) The plasma membrane is said to be semi-permeable.
What is the meaning of 'semi-permeable'?

*Membran plasma dikatakan bersifat separa-telap.
Apakah yang dimaksudkan dengan 'separa-telap'?*

[1 mark]

1 (c)

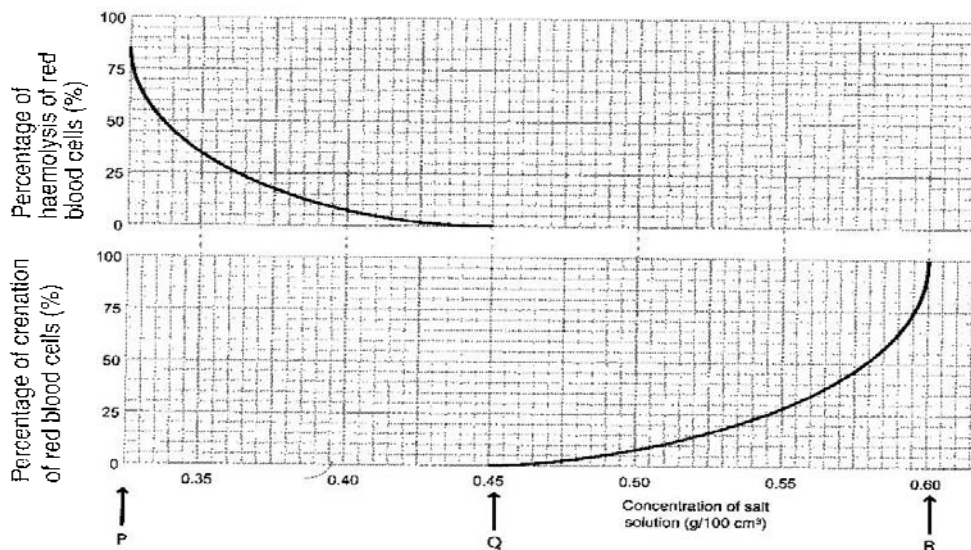


Diagram 1.2
Rajah 1.2

d) Graph in Diagram 1.2 shows the percentage of red blood cells that are burst or shrink when placed in salt solution of different concentration.

Graf dalam Rajah 1.2 menunjukkan peratus sel darah merah yang pecah atau mengecut apabila dimasukkan ke dalam larutan garam yang berbeza kepekatan.

(i) Based on the graph given, state the concentration which is isotonic to blood plasma.

Berdasarkan graf yang diberi, nyatakan kepekatan larutan yang isotonik terhadap plasma darah.

1(d)(i)

(1 mark)

(ii) Explain your answer in (b)(ii).
Terangkan jawapan anda dalam (b)(ii).

1(d)(ii)

(1 mark)

(iii) Comment on the osmotic pressure at Q.
Berikan ulasan tentang tekanan osmosis di Q.

1(d)(iii)

[2 marks]

(e) The concentration of ions inside root cells is up to 100 times greater than in the soil. Anyway, the ions are still transported into the cells by active transport.

Kepekatan ion di dalam sel akar adalah 100 kali lebih tinggi berbanding di dalam tanah. Walau bagaimanapun, ion-ion tersebut masih diangkut ke dalam sel secara pengangkutan aktif.

(i) Define active transport.
Takrifkan pengangkutan aktif.

1 (e)(i)

[1 mark]

(ii) Explain what will happen to the uptake of the ions by root cells if the roots are immersed in a solution containing metabolic poisons such

as cyanide.

Terangkan apa akan berlaku terhadap pengangkutan ion oleh sel akar jika akar tersebut direndam di dalam larutan yang mengandungi racun metabolik seperti sianida.

[3 marks]

1(e)(ii)

TOTAL

- 2 Diagram 2.1 shows the biochemical processes involve molecule K, enzyme L and molecule M occur in organ X and organ Y.
Rajah 2.1 menunjukkan proses biokimia yang melibatkan molekul K,

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examiner's
use*

enzim L dan molekul M yang berlaku di dalam organ X dan organ Y.

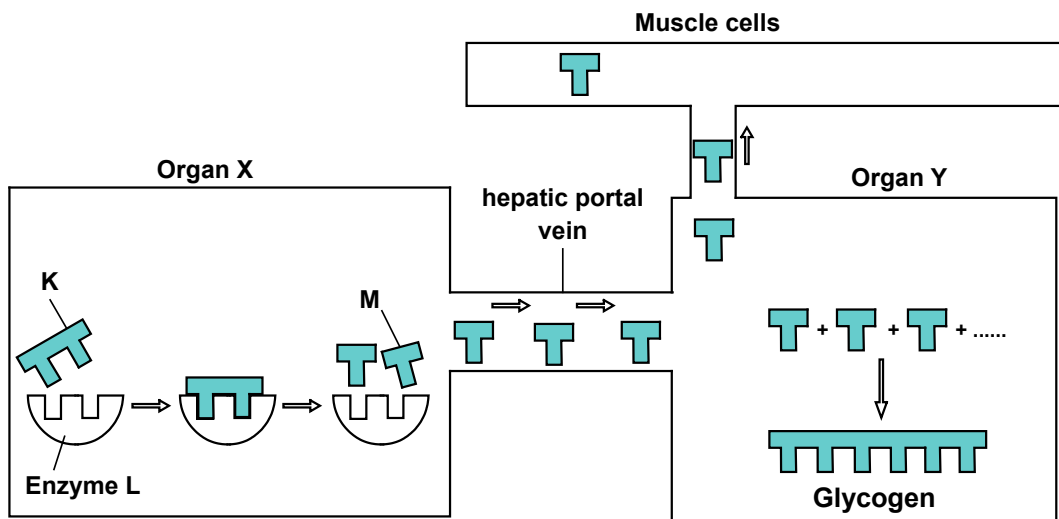


Diagram 2.1
Rajah 2.1

- (a)(i) Name organ X and organ Y.
Namakan organ X dan organ Y.

Organ X : _____

Organ Y : _____

[2 marks]

2(a)(i)

- (ii) Name molecule K, molecule M and enzyme L.
Namakan molekul K, molekul M dan Enzim L.

Molecule K / molekul K : _____

Molecule M / molekul M : _____

Enzyme L / enzim L : _____

[3 marks]

2(a)(ii)

- (b) State two characteristics of enzyme L based on Diagram 2.1.
Nyatakan dua ciri enzim L berdasarkan Rajah 2.1.

[2 marks]

2 (b)

- (c) Molecules M are transported from organ Y to muscle cells. Explain why molecule M is needed in muscle cells.



Diagram 3.1
Rajah 3.1

(a)(i) Name stages X and Y.

Namakan peringkat X dan Y.

X : _____

Y : _____

[2 marks]

3(a)(i)

(ii) State two differences between chromosomal behaviour at X and Y.

Nyatakan dua perbezaan perlakuan kromosom di X dan Y.

[2 marks]

3(a)(ii)

(b) i) State the occurrence at Z.

Nyatakan kejadian yang berlaku di Z.

[2 marks]

3(b)(i)

ii) The chromosome number in somatic cell of this organism is 12.
State the chromosome number in each of the daughter cell in Z.
Give a reason for your answer.

Bilangan kromosom dalam sel soma bagi organisma ini ialah 12.

Nyatakan bilangan kromosom dalam setiap sel anak Z.
Berikan alasan anda.

[2 marks]

3(b)(ii)

(c) Diagram 3.2 shows the process of sperm formation in the human testis.

Rajah 3.2 menunjukkan proses pembentukan sperma di dalam testis manusia.

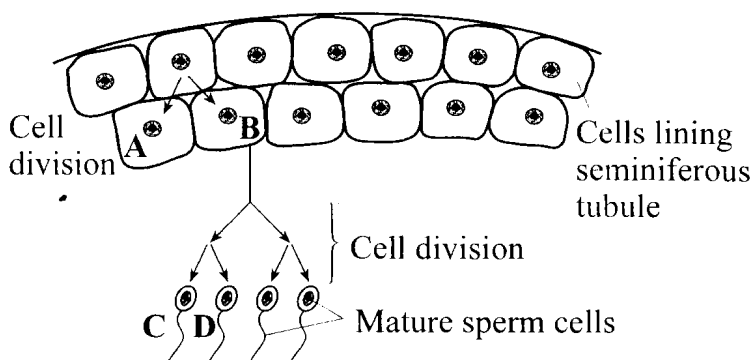


Diagram 3.2
Rajah 3.2

(i) Are cells A, cell B and cell C genetically identical? Explain.

Adakah sel A, sel B dan sel C seiras dari segi genetic? Terangkan.

[2 marks]

(ii) If Cell B undergoes an improper cell division, cell D might receive an extra chromosome. State the number of chromosomes in Cell D.

Jika Sel B melalui pembahagian sel yang tidak sempurna, sel D berkemungkinan menerima satu kromosom tambahan. Nyatakan bilangan kromosom di dalam sel D.

3(c)(i)

3(c)(ii)

[1 mark]

- (iii) If cell D fertilises with an ovum, the zygote formed might develop into an abnormal male. State the syndrome of the individual.

Jika sel D bersenyawa denngan ovum, zigot yang terbentuk akan berkembang menjadi lelaki yang abnormal. Nyatakan sindrom individu tersebut.

3(c)(iii)

[1 mark]

TOTAL

- 4 Diagram 4.1 shows the apparatus set up in an experiment to study the role of the vascular tissue in the transport of water in plants.

Rajah 4.1 menunjukkan susunan radas eksperimen untuk mengkaji peranan tisu vaskular dalam pengangkutan air di dalam tumbuhan.

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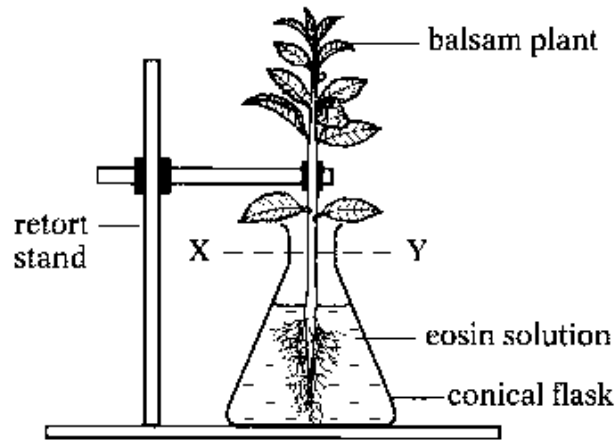


Diagram 4.1
Rajah 4.1

4(a)

- (a) State the function of the eosin solution.
Nyatakan fungsi larutan eosin.

[1 mark]

- (b) The stem of the plant is cut across at XY and viewed under a microscope. A cross section of the stem is shown in Diagram 4.2.

Akar tumbuhan tersebut dikerat secara merentas pada XY dan diperhatikan di bawah mikroskop. Keratan rentas akar ditunjukkan dalam Rajah 4.2.

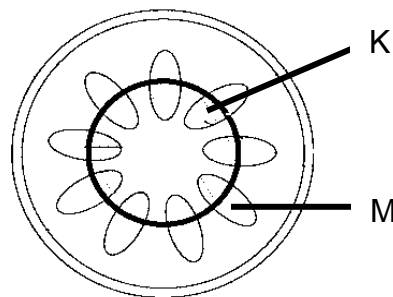


Diagram 4.2
Rajah 4.2

4(b)

Name the parts labelled K and M.
Namakan bahagian yang berlabel K dan M.

K : _____

M : _____

[2 marks]

- (c) Name the tissue which is responsible for transporting water and minerals ions from the roots to the upper parts of the plant.

Namakan tisu yang terlibat dalam pengangkutan air dan ion mineral dari akar ke bahagian atas tumbuhan.

[1 mark]

- (d) If the root of the plant is cut across, draw and label the observation made.

Jika keratan rentas dibuat ke atas akar tumbuhan, lukis dan labelkan pemerhatian anda.

[3 marks]

- (e) Diagram 4.3 shows the effect of removing tissue M from the stem.

4(c)

4(d)

*For
examiner's
use*

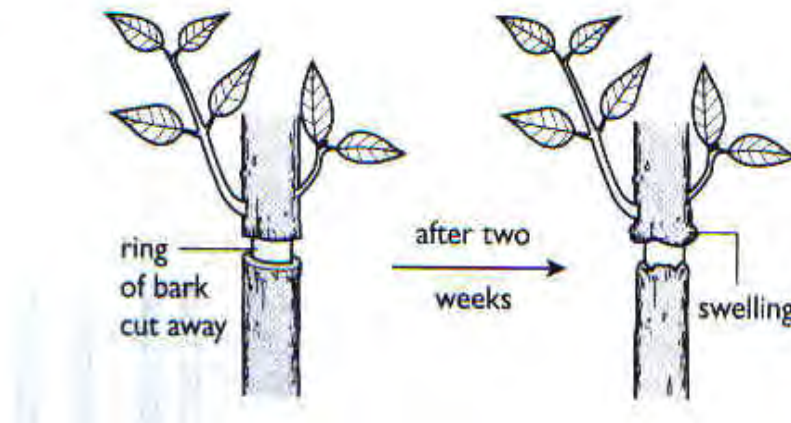


Diagram 4.3
Rajah 4.3

4(e)(i)

- (i) State the type of transport involved in Diagram 4.3.
Nyatakan jenis pengangkutan yang terlibat dalam Rajah 4.3.

_____ [1 mark]

- (ii) Explain why does the part above the ring become swollen after two weeks.
Terangkan mengapa bahagian atas gelang membengkak selepas dua minggu.

[2 marks]

- (iii) Explain why have the leaves not wilted after two weeks.
Terangkan mengapa daun-daun tidak layu selepas dua minggu.

[2 marks]

4(e)(ii)

4(e)(iii)

TOTAL

5. Figure 5 shows the reflex arc that occurs when the finger is accidentally pricked with a needle.

Rajah 5 menunjukkan suatu arka refleks yang berlaku apabila jari tangan secara tidak sengaja dicucuki oleh sebatang jarum.

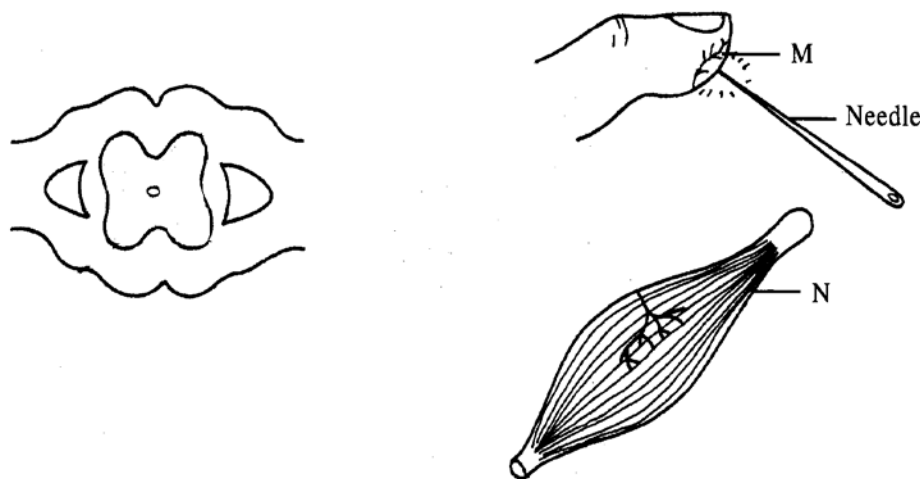


Diagram 5
Rajah 5

- (a) Complete the above figure by drawing the appropriate neurones involved in the reflex action.

Lengkapkan rajah di atas, dengan melukis neuron yang terlibat di dalam tindak balas refleks.

[2 marks]

- (b) Explain the transmission of impulse from one neurone to another neurone.

Terangkan pemindahan impuls dari satu neuron ke neuron yang berikutnya.

[4marks]

- (c) Name the structures M and N.
Namakan struktur M dan N.

5(a)

5(b)

5(c)

5(d)

M : _____

N : _____

[2 marks]

5(e)

- (d) Differentiate between the above reflex action with the voluntary action.
Bezakan di antara tindakan refleks di atas dengan tindakan terkawal.

[1 mark]

5(f)

- (e) State the importance of reflex action to us.
Nyatakan kepentingan tindakan refleks kepada kita.

[1 mark]

- (f) If efferent neurone is injured and damaged, predict what will happen to the person.
Jika neuron eferen cedera dan rosak, ramalkan apa yang akan berlaku Kepada orang tersebut.

[1 mark]

TOTAL

Section B
Bahagian B

[40 marks]

Answer any **two** questions from this section.
*Jawab mana-mana **dua** soalan daripada bahagian ini*

- 6(a) Figure 6.1 shows movement activities in a human.
Rajah 6.1 menunjukkan aktiviti pergerakan pada manusia.

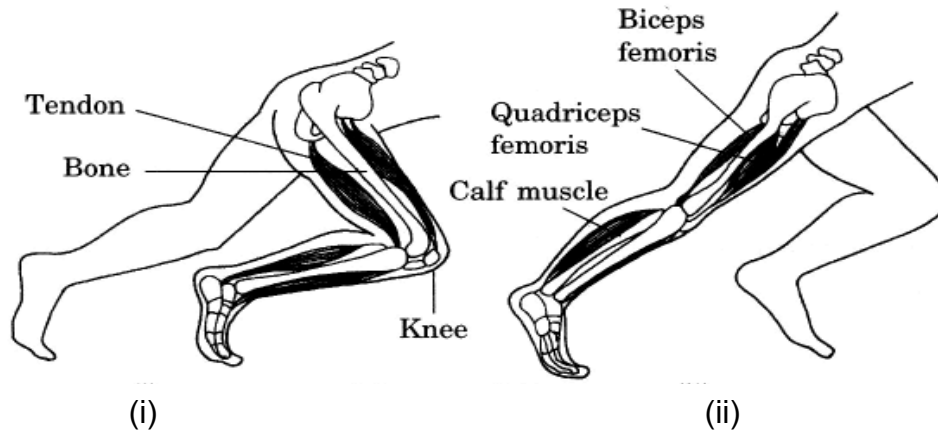


Diagram 6.1

Based on Figure 6.1(i) and Figure 6.1(ii), explain how the above movement takes place which involves muscles, tendons, bones, ligaments and joints

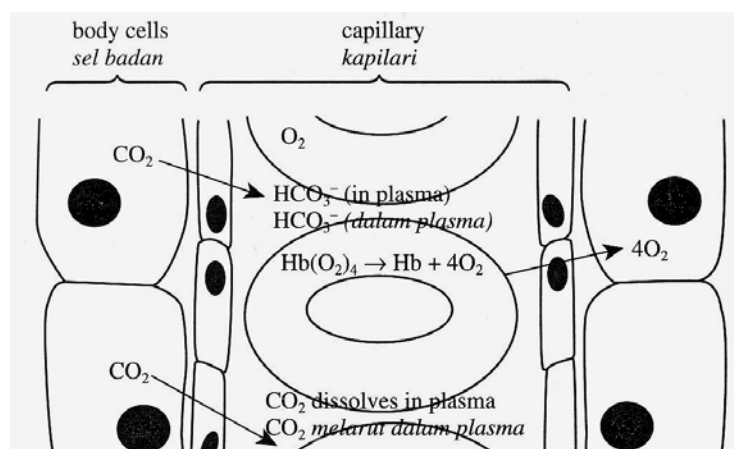
Berdasarkan Rajah 6.1(i) dan Rajah 6.1(ii), terangkan bagaimana pergerakan di atas berlaku yang melibatkan otot, tendon, tulang, ligamen dan sendi.

[10 marks]

(b)(i) By giving one example of woody plant and non-woody, explain how the support system in woody plants differs from that of non-woody plants. *Dengan menyatakan contoh, terangkan bagaimana sistem sokongan pada tumbuhan berkayu berbeza daripada tumbuhan tidak berkayu.*

[10 marks]

7(a) Diagram 7.1 shows how the respiratory gases are transported in the human body. *Rajah 7.1 menunjukkan bagaimana gas respirasi diangkut dalam badan manusia.*



lihat sebelah

Diagram 7.1

- (i) Based on Diagram 7.1, explain how the transport of oxygen and carbon dioxide takes place in the body cells
Berdasarkan Rajah 7.1, terangkan bagaimanakah pengangkutan oksigen dan karbon dioksida berlaku di dalam sel-sel badan.
[6 marks]

- (ii) Describe the adaptations of the alveolus for gaseous exchange.
Terangkan penyesuaian pada alveolus yang membolehkannya untuk melakukan proses pertukaran gas.
[4 marks]

- (b) The shaded area of the graph in Diagram 7.2 shows the intake of oxygen by an athlete before, during and after running for five minutes.
Kawasan yang berlorek pada graf dalam Rajah 7.2 menunjukkan pengambilan oksigen oleh seorang atlet sebelum, semasa dan selepas berlari selama 5 minit.

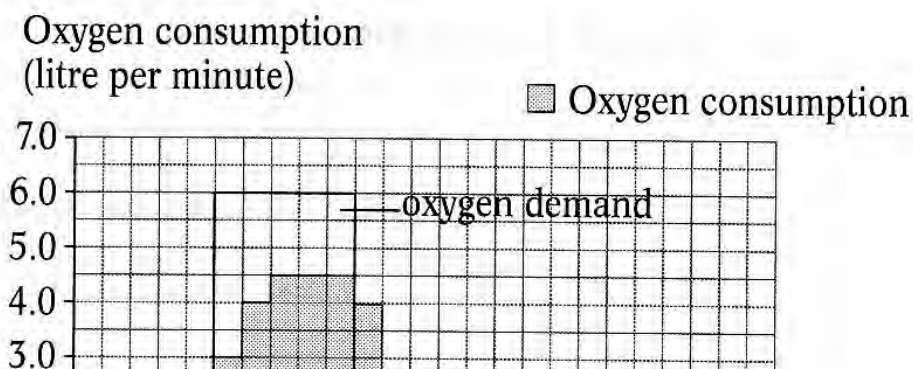


Diagram 7.2

Based on the graph, explain how an oxygen debt is built up when an athlete is running and how it is settled after he stops running.

Berdasarkan graf, terangkan bagaimana hutang oksigen terhasil semasa atlet itu berlari dan bagaimana ia diselesaikan selepas beliau berlari.

[10 marks]

- 8(a) Mr Nick has group A blood while his wife has group B blood. The group of their son is O.
Explain how this happen.

Mr Nick mempunyai kumpulan darah A manakala isterinya mempunyai kumpulan darah B. Kumpulan darah anak lelaki mereka ialah O. Terangkan bagaimana ini boleh berlaku.

[10 marks]

- (b) Nowadays, the DNA fingerprinting technique has replaced the common

fingerprinting technique in criminal investigations.

Pada masa kini, teknik cap jari DNA telah menggantikan teknik cap jari biasa dalam penyiasatan jenayah.

- (i) Explain how DNA fingerprinting is carried out.
Terangkan bagaimana cap jari DNA dilakukan

[4 marks]

- (ii) Based on the given statement, state your opinion on the advantages and disadvantages of DNA fingerprinting.

Berdasarkan pernyataan yang diberikan, nyatakan pendapat kamu tentang kebaikan dan keburukan cap jari DNA.

[6 marks]

- 9(a) Diagram 9 shows a mangrove swamp.
Rajah 9 menunjukkan kawasan paya bakau.



[Lihat sebelah

Diagram 9

- (i) Explain why most plants cannot colonise and grow in the swamps.
Terangkan mengapa kebanyakan tumbuhan tidak boleh hidup dan tumbuh di kawasan paya bakau.
- [5 marks]
- (ii) Explain how the mangrove trees adapt themselves to the harsh living conditions.
Terangkan bagaimana pokok bakau ini menyesuaikan diri dengan keadaan hidup yang sukar.
- [5 marks]
- (b) Development that is not planned and managed properly has brought negative effects to the ecosystem such as land erosion, flash flood, landslides, global warming, thinning of the ozone layer, climate change and the extinction of certain species.
Pembangunan yang tidak terancang dan terurus dengan teliti boleh membawa kesan negatif kepada ekosistem seperti hakisan tanah, banjir kilat, tanah runtuh, pemanasan global, penipisan lapisan ozon, perubahan iklim dan kepupusan spesis tertentu.
- Based on the above statement, describe the effects of unplanned development and improper management of the ecosystem.
Berdasarkan kenyataan di atas, terangkan kesan pembangunan yang tidak terancang dan terurus dengan teliti kepada ekosistem.
- [10 marks]

**END OF QUESTION PAPER
KERTAS SOALAN TAMAT**

MAKLUMAT KEPADA CALON

1. This question paper consists of **two** sections: **Section A and Section B**.
*Kertas soalan ini mengandungi dua bahagian: **Bahagian A dan Bahagian B**.*
2. Answer **all** questions in **Section A**. Write your answers for **Section A** clearly in spaces provided in the question paper.
*Jawab semua soalan dalam **Bahagian A**. Jawapan anda bagi **Bahagian A** hendaklah ditulis pada ruang yang disediakan dalam kertas soalan ini.*
3. Answer any **two** question from **Section B**. Write your answers for **Section B** on the 'helaian tambahan' provided by the invigilators. You may use equations, diagrams, tables, graphs and other suitable methods to explain your answer.

Jawab mana-mana **dua** soalan daripada **Bahagian B**. Jawapan anda bagi **Bahagian B** hendaklah ditulis dalam helaian tambahan yang dibekalkan oleh pengawas peperiksaan. Anda boleh menggunakan persamaan, rajah, jadual, graf, dan cara lain yang sesuai untuk menjelaskan jawapan anda.

4. The diagrams in the questions are not drawn to scale unless stated. *Rajah yang mengiringi soalan tidak dilukis mengikut skala kecuali dinyatakan*
5. The marks allocated for each question or sub-part of a question are shown in brackets. *Markah yang diperuntukan bagi setiap soalan atau ceraihan soalan ditunjukkan dalam kurungan.*
6. If you wish to change your answer, cross out the answer that you have done. Then write down the new answer. *Jika anda hendak menukar jawapan, batalkan jawapan yang telah dibuat. Kemudian tulis jawapan yang baru.*
7. *You may use a non-programmable scientific calculator.*
Anda dibenarkan menggunakan kalkulator saintifik yang tidak boleh diprogram.
8. You are advised to spend 90 minutes to answer question in **Section A** and 60 minutes for **Section B**.
*Anda dinasihati supaya mengambil masa 90 minit untuk menjawab soalan dalam **Bahagian A** dan 60 minit untuk **Bahagian B**.*
9. Detach **Section B** from this question paper. Tie the 'helaian tambahan' together with this question paper and hand in to the invigilator at the end of the examination.
*Ceraikan **Bahagian B** daripada kertas soalan ini. Ikat helaian tambahan bersama-sama kertas soalan ini dan serahkan kepada pengawas peperiksaan pada akhir peperiksaan.*

SULIT
4551/3
Biology
September
2009
1 ½ jam

NAMA :

ANGKA GILIRAN :

PEPERIKSAAN PERCUBAAN SPM 2009

BIOLOGY

Kertas 3

Satu jam tiga puluh minit

JANGAN BUKA KERTAS SOALAN INI SEHINGGA DIBERITAHU

1. *Tulis nama dan tingkatan pada ruangan yang disediakan*
2. *Kertas soalan ini adalah dalam dwibahasa.*
3. *Soalan dalam bahasa Inggeris mendahului soalan yang sepadan dalam bahasa Melayu.*
4. *Calon dibenarkan menjawab keseluruhan atau sebahagian soalan sama ada dalam bahasa Inggeris atau bahasa Melayu.*
5. *Calon dikehendaki membaca maklumat di halaman belakang kertas soalan ini.*

<i>Untuk Kegunaan Pemeriksa</i>		
Soalan	Markah penuh	Markah diperolehi
1	33	
2	17	
Jumlah	50	

Kertas soalan ini mengandungi 12 halaman bercetak

INFORMATION FOR CANDIDATES
MAKLUMAT UNTUK CALON

1. This question paper consists of two questions. **Question 1** and **Question 2**.
*Kertas soalan ini mengandungi dua soalan. **Soalan 1** dan **Soalan 2**.*
2. Answer **all** questions. Write your answer for **Question 1** in the spaces provided in the question paper.
*Jawab **semua** soalan. Jawapan anda bagi **Soalan 1** hendaklah ditulis pada ruangan yang disediakan dalam kertas soalan ini.*
3. Write your answers for **Question 2** on the answer sheet. You may use equations, diagrams, tables, graphs and other suitable methods to explain your answer.
*Jawapan anda bagi **Soalan 2** hendaklah ditulis dalam helaian tambahan yang dibekalkan. Anda boleh menggunakan persamaan, rajah, jadual, graf dan cara lain yang sesuai untuk menjelaskan jawapan anda.*
4. Show your working, it may help you to get marks.
Tunjukkan kerja mengira, ini membantu anda mendapatkan markah.
5. The diagrams in the questions are not drawn to scale unless stated.
Rajah yang mengiringi soalan tidak dilukis mengikut skala kecuali dinyatakan.
6. The marks allocated for each question or sub-part question are shown in brackets.
Markah yang diperuntukkan bagi setiap soalan atau ceraian soalan ditunjukkan dalam kurungan.
7. If you wish to change your answer, cross out the answer that you have done. Then write down the new answer.
Jika anda hendak menukar jawapan, batalkan jawapan yang telah dibuat. Kemudian tulis jawapan yang baru.
8. The time suggested to completed **Question 1** is 45 minutes and **Question 2** is 45 minutes.
*Anda dinasihatkan supaya mengambil masa 45 minit untuk menjawab **Soalan 1** dan 45 minit untuk **Soalan 2***
9. You may use a non-programmable scientific calculator.
Anda dibenarkan menggunakan kalkulator saintifik yang tidak boleh diprogram.
10. Hand in this question paper at the end of examination.
Serahkan soalan dan jawapan di akhir peperiksaan.

Answer **all** questions
Jawab **semua** soalan

- 1 An experiment was carried out to determine the concentration of sucrose solution which is isotonic to the cell sap of potato strips.
Satu eksperimen telah dijalankan untuk menentukan kepekatan larutan sukrosa yang isotonik kepada sap sel jalur ubi kentang.

The following steps were carried out .
Langkah-langkah berikut telah dijalankan .

Step 1 : A cork boarer is used to obtain four cylindrical potato strips and each strip was cut at 5 mm long.

Langkah 1 : Satu penebuk gabus digunakan untuk mendapatkan empat jalur ubi kentang dan setiap jalur dipotong sepanjang 5 mm.

Step 2 : The potato strip was wiped dry with tissue paper and weighed individually.

Langkah 2 : Jalur ubi kentang dilap kering dengan kertas tisu dan setiap satu ditimbang.

Step 3 : Each strip was immersed in petri dish containing different concentration of sucrose solution.

Langkah 3 : Setiap jalur direndam ke dalam piring petri yang mengandungi larutan sukrosa berbeza kepekatan.

Step 4 : After 30 minutes ,the potato strips were removed and wiped dry again.

Langkah 4 : Selepas 30 minit, jalur ubi kentang dikeluarkan dan sekali lagi dilap kering.

Step 5 : The final mass of each potato strip was weighed and then recorded.

Langkah 5: Jisim akhir setiap jalur ubi kentang diukur dan direkodkan.

Diagram 1 shows the initial mass for each potato strip.

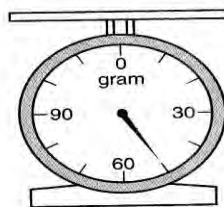


Diagram 1

Initial mass of potato strip : _____ gm
Jisim awal jalur ubi kentang

Table 1 shows the results of this experiment.
Jadual 1 menunjukkan keputusan eksperimen ini.

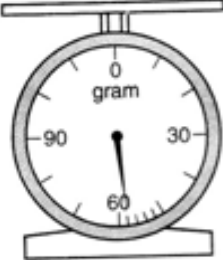
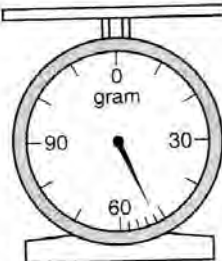

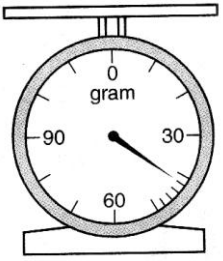
Type of solution <i>Jenis larutan</i>	Final mass of potato strip after 30 minutes / gm <i>Jisim akhir jalur ubi kentang selepas 30 minit / gm</i>
0.2 M sucrose solution <i>0.2 M</i> <i>larutan sukrosa</i>	 <input data-bbox="1166 674 1344 772" type="text"/>
0.4 M sucrose solution <i>0.4 M</i> <i>larutan sukrosa</i>	 <input data-bbox="1166 1005 1344 1104" type="text"/>
0.6M sucrose solution <i>0.6 M</i> <i>larutan sukrosa</i>	 <input data-bbox="1166 1356 1344 1455" type="text"/>
0.8M sucrose solution <i>0.8 M</i> <i>larutan sukrosa</i>	 <input data-bbox="1166 1682 1344 1780" type="text"/>

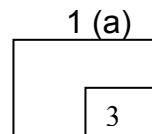
Table 1
Jadual 1

1 (a) (i) Record the initial mass of potato strip in the space provided in Diagram 1.
Rekodkan jisim awal jalur ubi kentang dalam ruangan yang disediakan pada Rajah 1

For
Examiner's
Use

(ii) Record the final mass of potato strip in the boxes provided in Table 1.
Rekodkan jisim akhir jalur ubi kentang dalam kotak yang disediakan dalam Jadual 1.

[3 marks]
[3 markah]



(b) (i) State two different observations made from Table 1.
Nyatakan dua pemerhatian yang berbeza yang dibuat daripada Jadual 1.

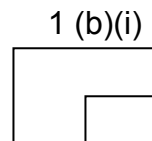
Observation 1/ *Pemerhatian 1:*

.....
.....

Observation 2 / *Pemerhatian 2 :*

.....
.....

[3 marks]
[3 markah]



(ii) State the inferences which corresponds to the observations in 1 (b)(i).
Nyatakan inferens yang sepadan dengan pemerhatian di 1 (b)(i).

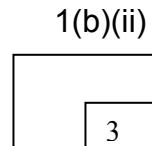
Inference from observation 1/ *Inferens daripada pemerhatian 1:*

.....
.....

Inference from observation 2 / *Inferens daripada pemerhatian 2:*

.....
.....

[3 marks]
[3 markah]



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Use

- (c) Complete Table 2 based on this experiment.
 Lengkapkan Jadual 2 berdasarkan eksperimen ini.

Variables <i>Pembolehubah</i>	Method to handle the variable <i>Cara mengendali pembolehubah</i>
Manipulated variable <i>Pembolehubah dimanipulasikan</i>
Responding variable <i>Pembolehubah bergerak balas</i>
Constant variable <i>Pembolehubah dimalarkan</i>

Table 2
 Jadual 2

[3 marks]
 [3 markah]

1(c)

3

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

.....

.....

.....

[3 marks]
 [3 markah]

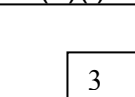
1(d)

3

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

Your table should have the following aspects :
Jadual anda hendaklah mengandungi aspek-aspek berikut :


- concentration of sucrose solutions
kepekatan larutan sukrosa
- initial mass of potato strips
jisim awal jalur ubi kentang
- final mass of potato strips
jisim akhir jalur ubi kentang
- percentage change in mass of potato strips
peratus perubahan jisim jalur ubi kentang

1 (e)(i)


[3 marks]
[3 markah]

- (ii) Use the graph paper provided to answer this question .
Using the data in 1(e)(i) , draw a graph to show the relationship between the percentage change in mass of potato strips and the the concentration of the sucrose solutions .

*Guna kertas graf yang disediakan untuk menjawab soalan ini.
Menggunakan data di 1(e)(i), lukis satu graf untuk menunjukkan hubungan antara peratus perubahan jisim jalur ubi kentang dengan kepekatan larutan sukrosa.*

1 (e)(ii)


[3 marks]
[3 markah]

- (f) Based on the graph in 1(e)(ii), state the concentration of the sucrose solution which is isotonic to the concentration of the cell sap of the potatoes. Explain your answer.

Berdasarkan graf di 1(e)(i), nyatakan kepekatan larutan sukrosa yang isotonic kepada kepekatan sap sel ubi kentang. Terangkan jawapan anda.

.....

[3 marks]
 [3 markah]

For
 Examiner's
 Use

1 (f)

3

- (g) State the operational definition for osmosis. Nyatakan definisi secara operasi bagi osmosis.

.....

[3 marks]
 [3 markah]

1 (g)

3

- (h) The potato strip from 0.6M sucrose solution was taken out and was dried with tissue paper. Then it was immersed in distilled water for 30 minutes. Based on the results of this experiment, predict what will happen to the potato strip. Explain your prediction.

Jalur ubi kentang dari 0.6M larutan sukrosa telah dikeluarkan dan dikeringkan menggunakan kertas tisu. Kemudian ia direndam dalam larutan air suling selama 30 minit. Berdasarkan keputusan eksperimen ini, ramalkan apa yang berlaku kepada jalur ubi kentang tersebut. Terangkan ramalan anda.

.....

[3 marks]
 [3 markah]

1 (h)

3

- (i) In another experiment, it was found that a mustard stem strip that was immersed in 0.8% sodium chloride solution did not undergo change in mass.

Dalam eksperimen lain didapati bahawa satu jalur batang sawi yang telah direndamkan kedalam larutan natrium klorida 0.8% tidak mengalami perubahan jisim.

The following solutions are used in this experiment.

Larutan berikut telah digunakan dalam eksperimen ini.

0.25% sodium chloride solution, 0.8% sodium chloride solution, 1.10% sodium chloride solution.

0.25% larutan natrium klorida, 0.8% larutan natrium klorida, 1.10% larutan natrium klorida.

Classify the above solutions into Table 2.

Klasifikasikan larutan di atas ke dalam Jadual 2.

Solution concentrations <i>Kepekatan larutan</i> (%)	Types of solution compared to the osmotic concentration of cell sap <i>Jenis larutan dibandingkan dengan kepekatan osmotik sap sel</i>

Table 2
Jadual 2.

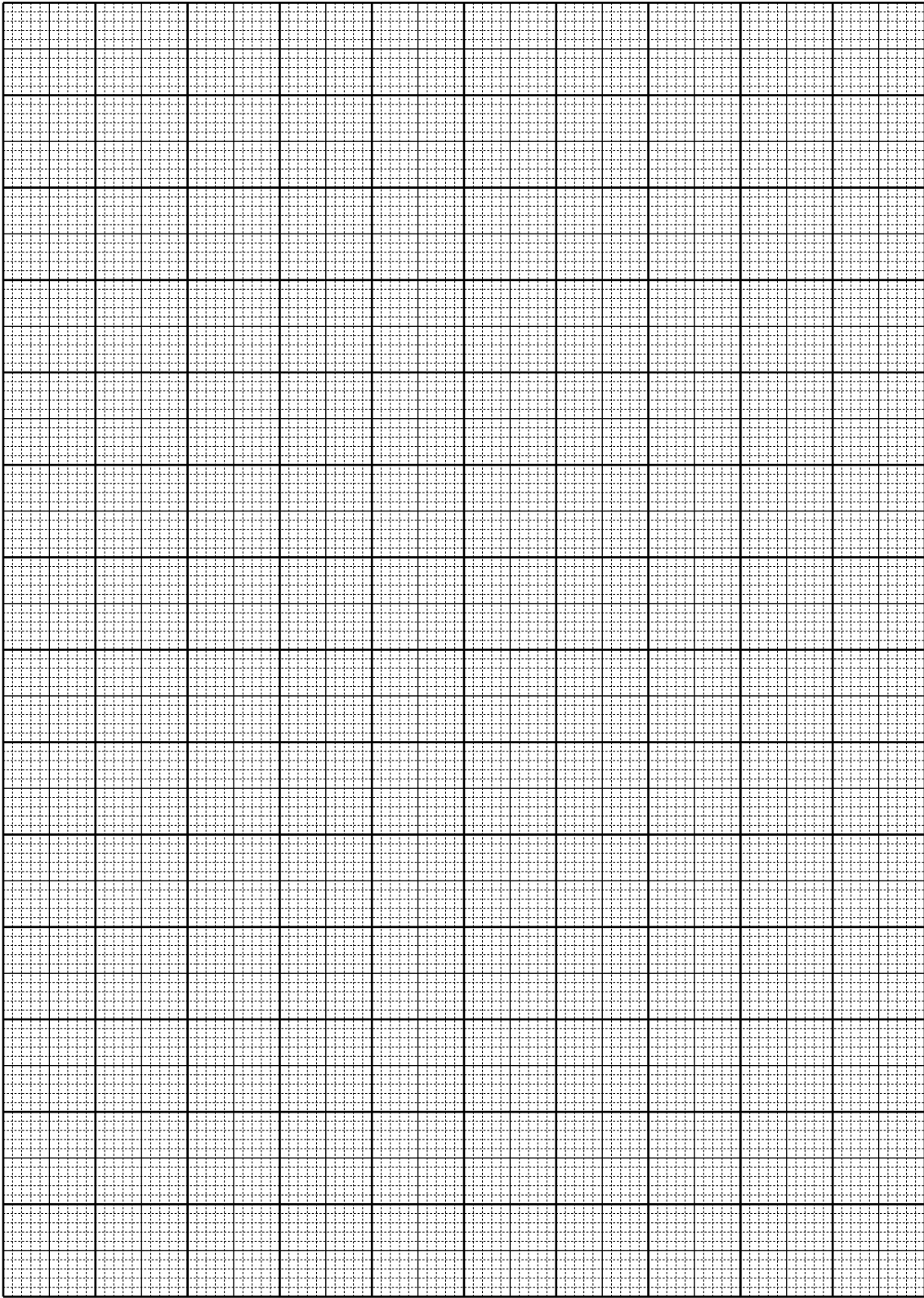
[3 marks]
[3 markah]

The percentage change in mass of potato strips and the concentration of the sucrose solutions .

Perubahan peratus jisim jalur ubi kentang dengan kepekatan larutan sukrosa

1(i)

3



2. Transpiration is the loss of water vapour through evaporation in living plants. The rate of transpiration is affected by external conditions. A group of students is given the apparatus and materials to investigate one of the external conditions.

Transpirasi ialah kehilangan wap air melalui penyejatan di dalam tumbuhan yang hidup. Kadar transpirasi dipengaruhi oleh faktor-faktor persekitaran. Sekumpulan pelajar dibekalkan dengan bahan-bahan dan peralatan untuk mengkaji salah satu daripada faktor persekitaran tersebut.

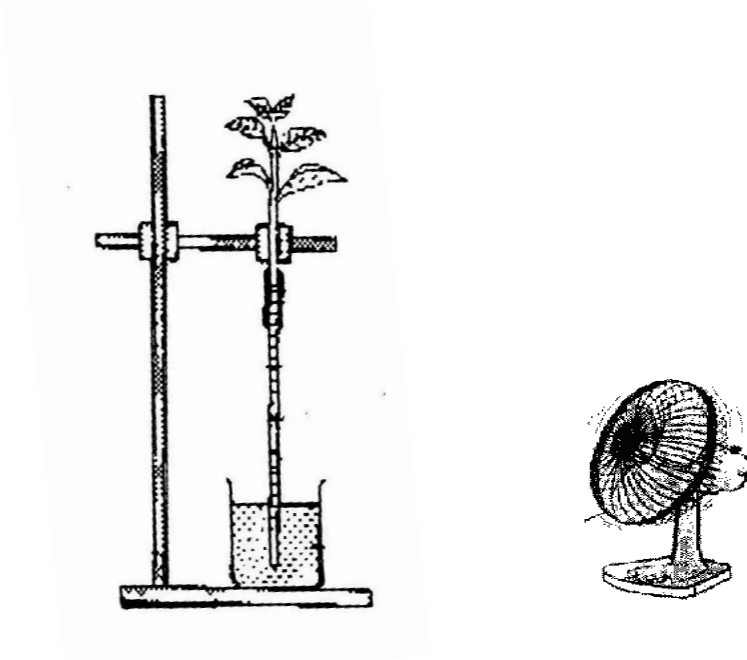


Diagram 2

Based on Diagram 2, plan a laboratory experiment to investigate the effect of air movement (wind) on the rate of transpiration.

The planning of the experiment should cover the following aspects :

Berdasarkan Rajah 2, rancangkan satu eksperimen untuk mengkaji kesan udara yang bergerak (angin) ke atas kadar transpirasi.

Perancangan eksperimen tersebut mestilah meliputi aspek-aspek yang berikut :

- Problem statement
Pernyataan masalah
- Aim of investigation
Tujuan eksperimen
- Hypothesis
Hipotesis

- Variables
Pembolehubah
- List of apparatus and materials
Senarai bahan dan peralatan
- Technique used
Teknik yang digunakan
- Experimental procedure or method
Kaedah / cara ekperimen dijalankan
- Presentation of data
Persembahan data
- Conclusion
Kesimpulan

[17 marks]

**END OF QUESTION PAPER
KERTAS SOALAN TAMAT**