

4551/1
Biologi
Kertas 1
September
2008
1 ¼ jam



JABATAN PELAJARAN MELAKA

Dengan Kerjasama

PERSIDANGAN KEBANGSAAN PENGETUA-PENGETUA
SEKOLAH MENENGAH MALAYSIA
CAWANGAN MELAKA

PEPERIKSAAN PERCUBAAN
SIJIL PELAJARAN MALAYSIA 2008

BIOLOGI

KERTAS 1

Satu jam lima belas minit

JANGAN BUKA KERTAS SOALAN INI SEHINGGA DIBERITAHU

1. *Kertas soalan ini mengandungi 50 soalan. Jawab **semua** soalan.*
2. *Jawab dengan menghitamkan **satu** ruangan sahaja bagi setiap soalan.*
3. *Kertas soalan ini adalah dalam dwibahasa. Soalan di halaman kiri adalah dalam bahasa Inggeris. Soalan di halaman kanan adalah yang sepadan dalam bahasa Melayu.*
4. *Rajah yang mengiringi soalan dimaksudkan untuk memberi maklumat yang berguna bagi menjawab soalan. Rajah tidak dilukis mengikut skala kecuali dinyatakan sebaliknya.*
5. *Penggunaan kalkulator saintifik yang tidak boleh diprogramkan adalah dibenarkan.*

Kertas soalan ini mengandungi 31 halaman bercetak termasuk kulit.

SMS MUZAFFAR SYAH MLK

<http://edu.joshuatly.com/>

- 4 Diagram 2 shows an animal cell which has been put into a particular solution.
Rajah 2 menunjukkan sel haiwan telah dimasukkan ke dalam larutan tertentu.

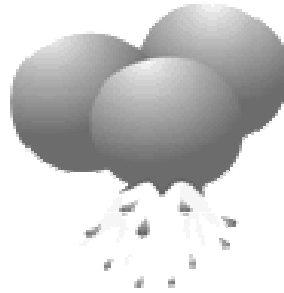


Diagram 2
Rajah 2

Which is experienced by the cell?
Apakah yang dialami oleh sel itu?

- | | | | |
|----------|--------------------------------|----------|---------------------------------------|
| A | Crenation
<i>Krenasi</i> | B | Plasmolysis
<i>Plasmolisis</i> |
| C | Haemolysis
<i>Hemolisis</i> | D | Deplasmolysis
<i>Deplasmolisis</i> |
- 5 Diagram 3 shows samples of potato strips immersed in sucrose solutions of different concentrations . Changes in length of the samples were recorded.
Rajah 3 menunjukkan sampel jalur ubi kentang direndam dalam larutan sukrosa yang berlainan kepekatan. Perubahan panjang sampel tersebut direkodkan.

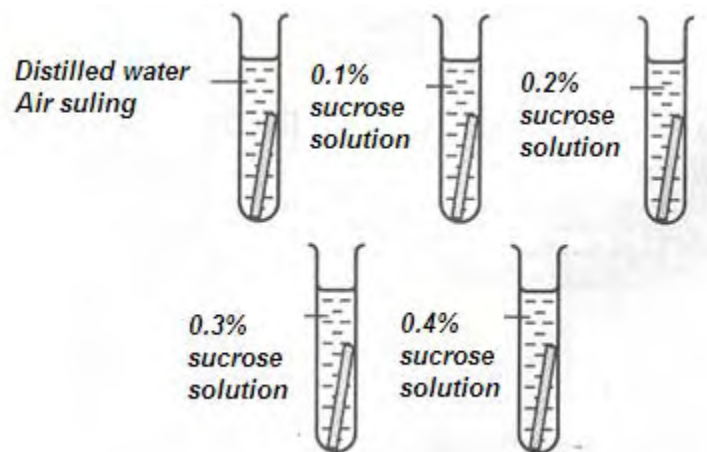
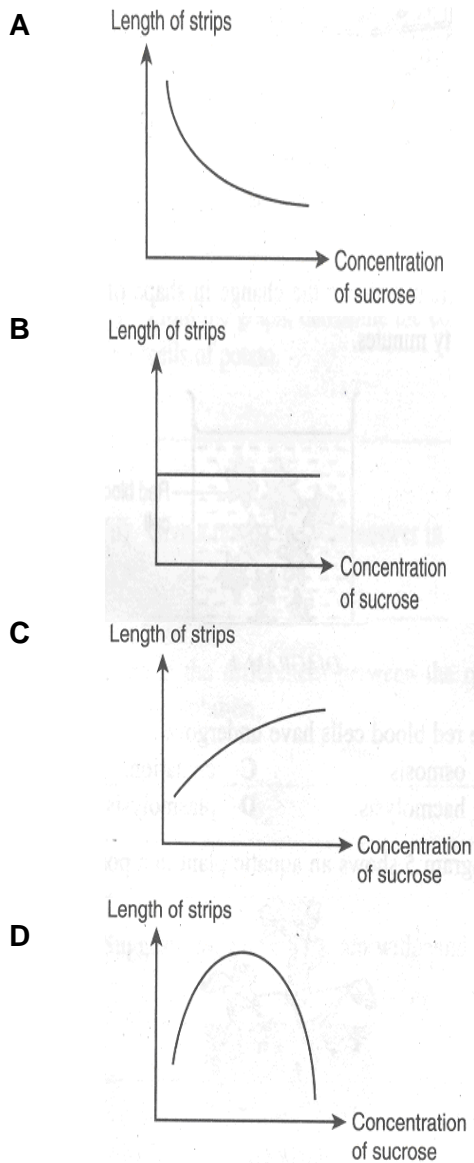


Diagram 3
Rajah 3

Which graph shows the results of the experiment?
Antara graf berikut, yang manakah menunjukkan keputusan eksperimen ini?



6 Table 1 shows the percentage of food content in four types of food **P, Q, R** and **S**.
Jadual 1 menunjukkan peratus kandungan makanan didalam empat jenis makanan P, Q, R dan S.

Types of food <i>Jenis makanan</i>	Percentange content per 100 g <i>Peratus kandungan per 100g</i>		
	Carbohydrate	Fat	Protein
P	50	5	12
Q	3	60	2
R	9	10	18
S	30	20	5

Table 1
Jadual 1

Which food supplies the most energy if they are to be taken in the same quantity?

Antara makanan berikut, yang manakah membekalkan tenaga paling banyak jika kuantiti yang diambil adalah sama?

- A P B Q
C R D S

- 7 Diagram 4 shows a mechanism of enzyme action on a substrate.
Rajah 4 menunjukkan mekanisme tindakan enzim ke atas substrat.

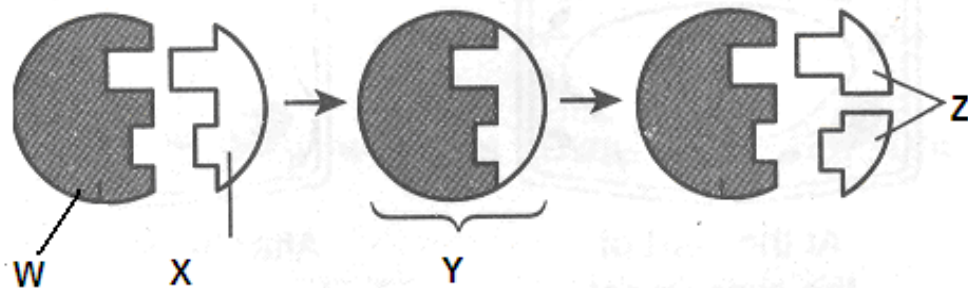


Diagram 4
Rajah 4

What are **W**, **X**, **Y** and **Z**?
Apakah **W**, **X**, **Y** dan **Z**?

	W	X	Y	Z
A	Product	Enzyme	Substrate	Complex enzyme-substrate
B	Enzyme	Substrate	Complex enzyme-substrate	Product
C	Substrate	Complex enzyme-substrate	Product	Enzyme
D	Complex enzyme-substrate	Product	Enzyme	Substrate

- 8 Diagram 5 shows the phases in a cell cycle.
Rajah 5 menunjukkan fasa-fasa dalam satu kitar sel.

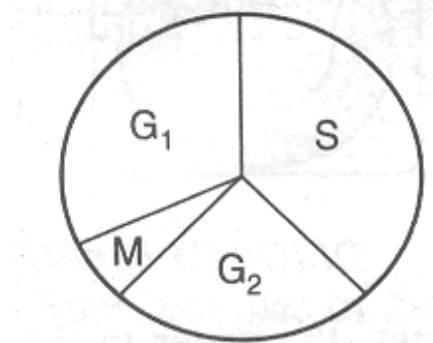


Diagram 5
Rajah 5

- Which phase do synthesis of DNA and replication occur?
Antara fasa berikut yang manakah berlakunya sintesis dan replikasi DNA?
- A G₁ B G₂
C S D M

- 9 Diagram 6 shows a somatic cell of an animal which undergo the process of meiosis 1.
Rajah 6 menunjukkan sel soma suatu haiwan sedang mengalami meiosis 1.

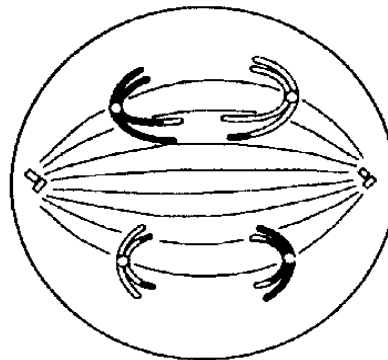


Diagram 6
Rajah 6

- What is the number of chromosomes in the gamete cells of this animal?
Apakah bilangan kromosom yang terdapat dalam sel gamet haiwan tersebut?
- A 2 B 4
C 8 D 16

- 10 Diagram 7 shows the process of cloning a sheep.
 Rajah 7 menunjukkan proses pengklonan kambing biri-biri.

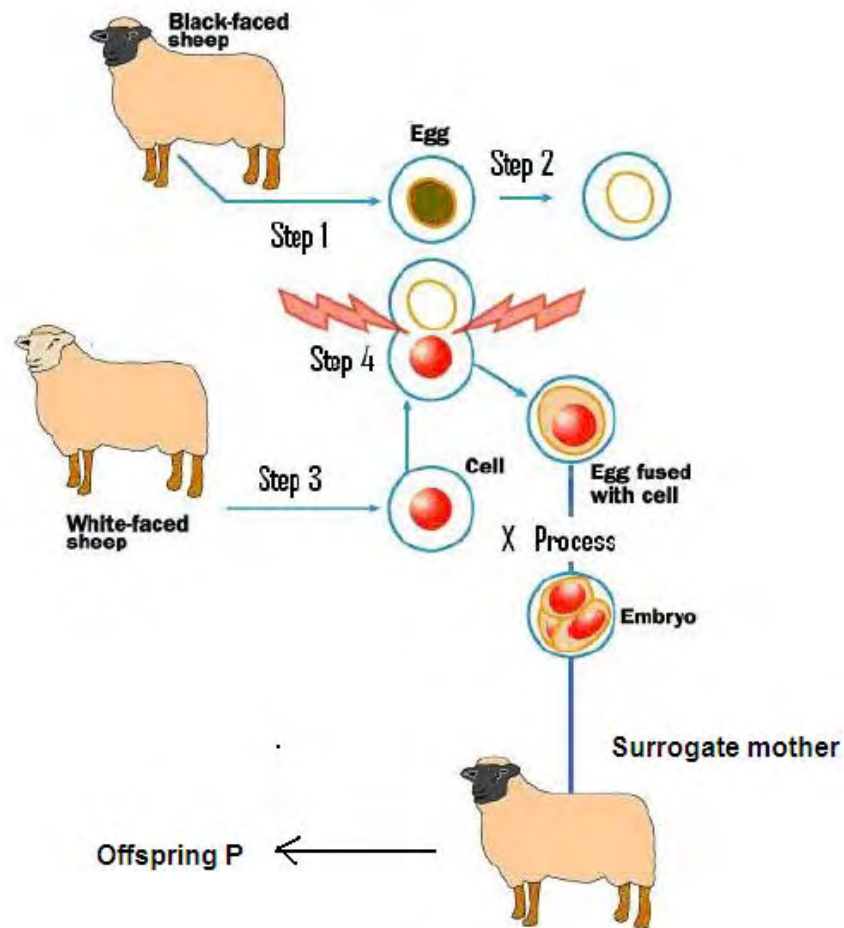
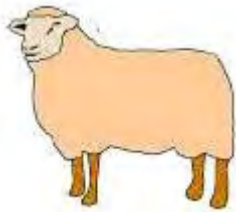
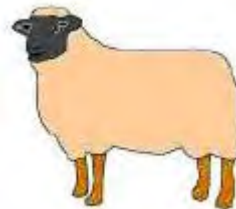


Diagram 7
 Rajah 7

A



B



C



D



- 11 Diagram 8 shows a type of fresh water unicellular organism.
Rajah 8 menunjukkan sejenis organisma unisel air tawar.

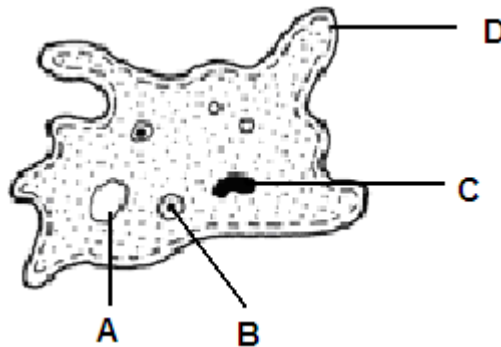


Diagram 8
Rajah 8

Which of the labelled parts **A**, **B**, **C** or **D** performs osmoregulation?
Antara bahagian berlabel **A**, **B**, **C** dan **D**, yang manakah menjalankan pengosmokawalaturan?

- 12 Table 2 shows the observations of four tests on a food sample.
Jadual 2 menunjukkan pemerhatian empat jenis ujian kelas makanan ke atas satu sampel makanan.

Test	Results
A few drops of iodine solution is added <i>Beberapa titis larutan iodin ditambah.</i>	No change <i>Tiada perubahan</i>
Sodium hydroxide solution is added, followed by a few drops of copper (II) sulphate solution <i>Larutan natrium hidroksida ditambah dan diikuti dengan penambahan larutan kuprum (II) sulfat.</i>	Blue colour solution is formed <i>Larutan berwarna biru terbentuk</i>
Benedict's solution is added and the mixture is boiled <i>Larutan Benedict ditambah dan campuran dididihkan</i>	Brick red precipitate is formed <i>Mendakan merah bata terbentuk</i>
Shaken in ethanol <i>Digoncangkan dalam etanol</i>	Emulsion is formed <i>Emulsi terbentuk</i>

Table 2
Jadual 2

What type of nutrients are found in the food sample?
Apakah jenis nutrien yang terdapat dalam sampel makanan itu?

- A** Lipids and starch
Lipid dan kanji
- B** Proteins and starch
Protein dan kanji
- C** Lipids and reducing sugar
Lipid dan gula penurunan
- D** Proteins and reducing sugar
Protein dan gula penurunan

- 13 Diagram 9 shows the structure of a chloroplast.
Rajah 9 menunjukkan struktur kloroplas.

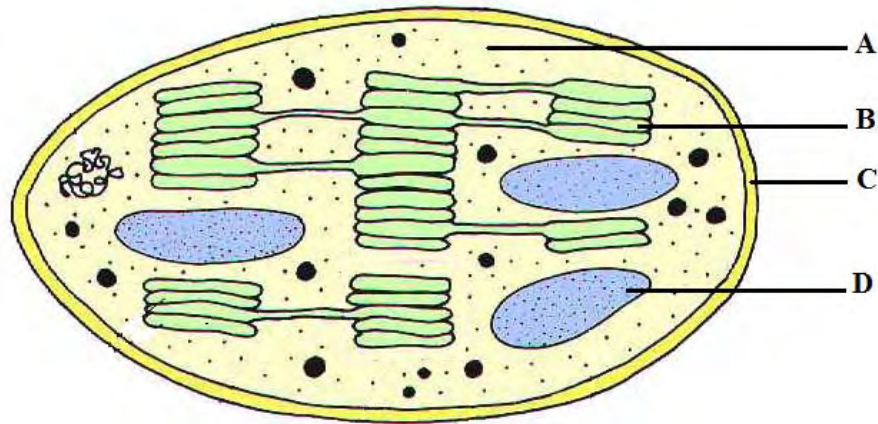


Diagram 9
Rajah 9

Which part of the chloroplast labelled **A**, **B**, **C** and **D** does the fixation of carbon dioxide occur?

Antara bahagian kloroplas berlabel **A**, **B**, **C** dan **D**, di manakah pengikatan karbon dioksida berlaku ?

- 14 Diagram 10 is a graph which shows the changes in mass of three water convolvulus cuttings which has been immersed for 20 minutes in three sucrose solutions with different concentrations.

Rajah 10 ialah graf yang menunjukkan perubahan jisim tiga keratin kangkung yang telah direndam dalam tiga larutan sukrosa yang berbeza kepekatan.

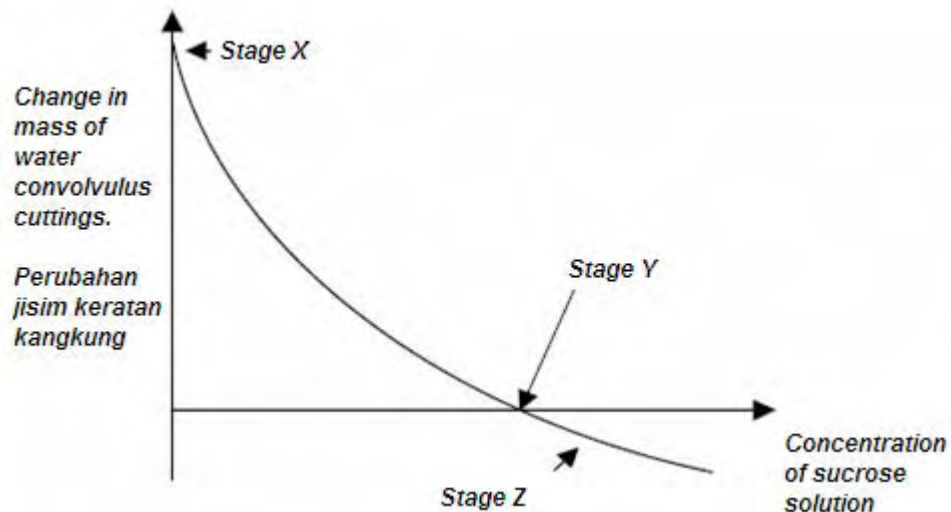
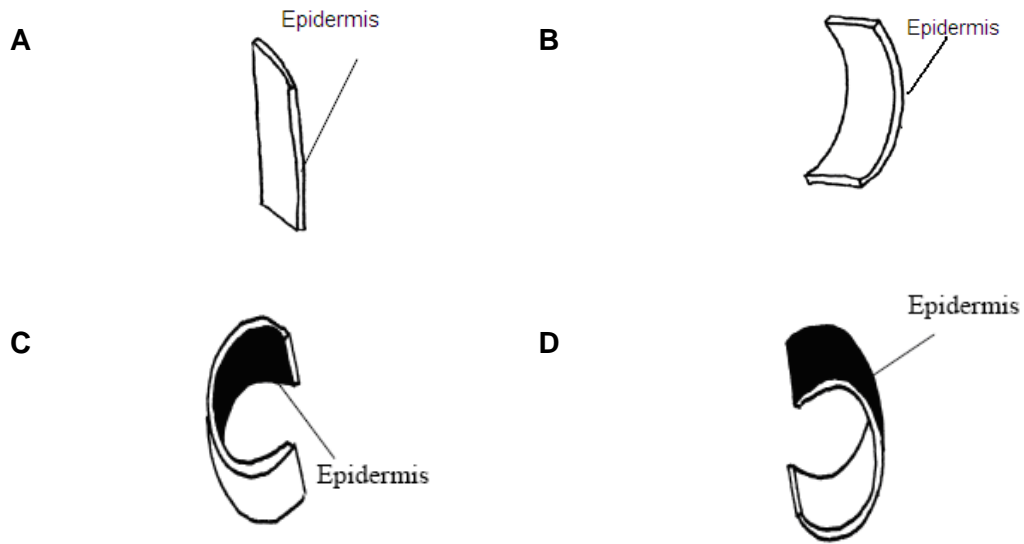


Diagram 10
Rajah 10

Which of the following structures represent the water convolvulus cutting at stage Y.



- 15 Diagram 11 shows exchange of respiratory gases in the lungs and at body cells.
Rajah 11 menunjukkan pertukaran gas respirasi di dalam paru-paru dan sel-sel badan.

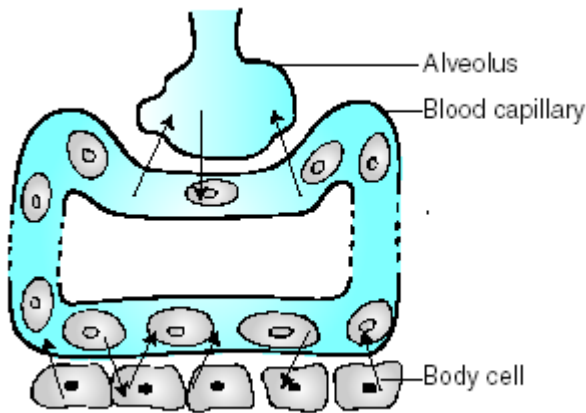


Diagram 11
Rajah 11

Which of the following is correct?
Antara berikut, yang manakah benar?

	In alveolus		In body cells	
	Partial pressure oxygen	Partial pressure carbon dioxide	Partial pressure oxygen	Partial pressure carbon dioxide
A	High	Low	High	Low
B	Low	High	Low	High
C	High	Low	Low	High
D	Low	High	High	Low

- 16 Diagram 12 shows a simple model of the ribs to illustrate the breathing mechanism in humans.

Rajah 12 menunjukkan satu model ringkas tulang rusuk untuk menggambarkan mekanisme pernafasan dalam manusia.

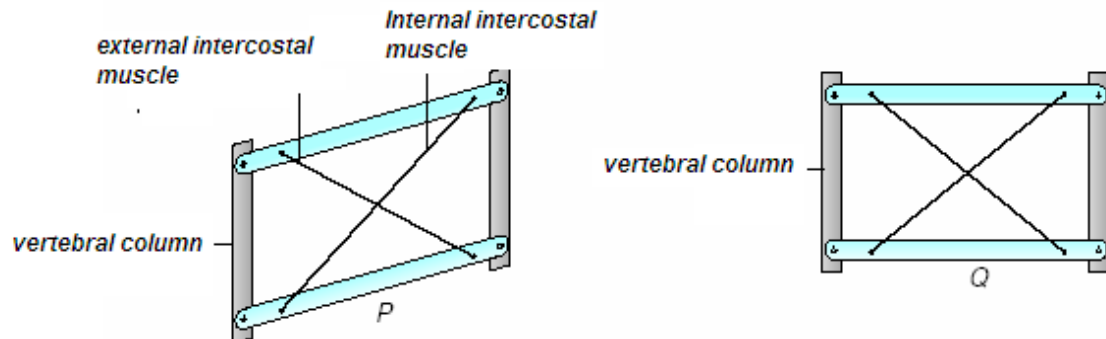


Diagram 12
Rajah 12

What processes occur to change P to Q?

Apakah proses yang berlaku untuk berubah dari P ke Q?

- I External intercostal muscle contracts
Otot interkosta luar mengecut
- II Internal intercostal muscles relax
Otot interkosta mengendur
- III Rib cage is pushed downwards and inwards
Sangkar rusuk ditarik ke bawah dan ke dalam
- IV Exhalation occurs
Hembus nafas berlaku

- A I and II
 - B III and IV
 - C I, II and III
 - D I, II, III and IV
- 17 Which of the following diseases are caused by deficiency of vitamin A?
Antara penyakit berikut, yang manakah disebabkan oleh kekurangan vitamin A?
- A Night blindness
Rabun malam
 - B Xerophthalmia
Xerophthalmia
 - C Scaling skin
Kulit bersisik
 - D Osteomalacia
Osteomalacia

- 18 Diagram 13 shows an experiment to determine the energy value of a cashew nut.
Rajah 13 menunjukkan satu eksperimen untuk menentukan nilai tenaga kacang gajus.

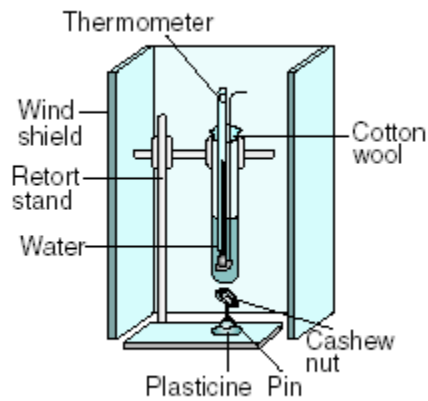


Diagram 13
Rajah 13

Volume of water = 20 cm³

Isipadu air

Initial water temperature = 26°C

Suhu awal air

Final temperature water = 78°C

Suhu akhir air

Mass of cashew nut = 0.9g

Jisim kacang gajus

Specific latent heat of water = 4.2 J g⁻¹°C⁻¹

Haba pendam air

What is the energy value of the cashew nut per gram?

Apakah nilai tenaga satu gram kacang gajus?

A 1.45 kJ

B 2.23 kJ

C 4.85 kJ

D 9.83 kJ

- 19 Diagram 14 shows the structure of alveoli of human.
Rajah 14 menunjukkan struktur alveolus manusia.

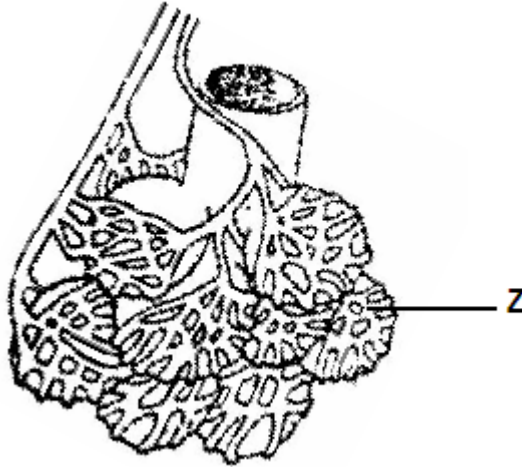
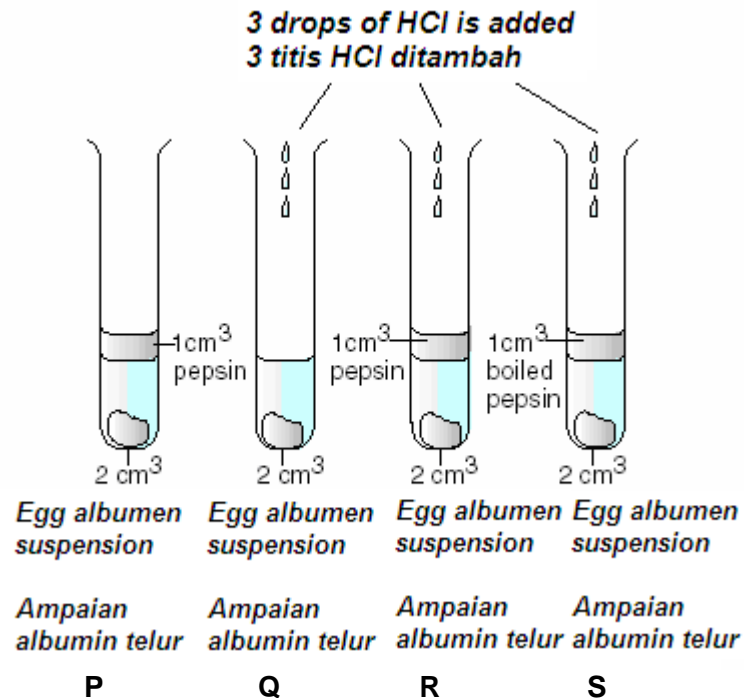


Diagram 14
Rajah 14

What process occurs at Z during the gas exchange in human?
Apakah proses yang berlaku di Z semasa pertukaran gas bagi manusia ?

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

- 20 Diagram 15 shows action of a pepsin on egg albumen.
Rajah 15 menunjukkan tindakan enzim pepsin ke atas albumin telur.

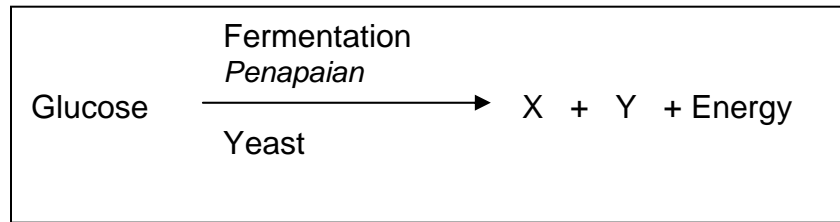


The tubes are immersed in a water bath at 37°C.
Tabung uji direndamkan dalam kukus air pada suhu 37°C.

What are the observations after 30 minutes?
Apakah pemerhatian selepas 30 minit?

	P	Q	R	S
A	Clear <i>Jernih</i>	Cloudy <i>Keruh</i>	Cloudy <i>Keruh</i>	Cloudy <i>Keruh</i>
B	Cloudy <i>Keruh</i>	Cloudy <i>Keruh</i>	Clear <i>Jernih</i>	Cloudy <i>Keruh</i>
C	Clear <i>Jernih</i>	Cloudy <i>Keruh</i>	Clear <i>Jernih</i>	Cloudy <i>Keruh</i>
D	Clear <i>Jernih</i>	Cloudy <i>Keruh</i>	Clear <i>Jernih</i>	Clear <i>Jernih</i>

21 The following equation shows the process that takes place in yeast.



What is X and Y?

Apakah X dan Y?

- A Lactic acid and carbon dioxide
Asid laktik dan karbon dioksida
- B Ethanol and carbon dioxide
Etanol dan karbon dioksida
- C Ethanol and lactic acid
Etanol dan asid laktik
- D Lactic acid and oxygen
Asid laktik dan oksigen

22 Diagram 16 shows three different types of interactions between organisms.

Rajah 16 menunjukkan tiga jenis interaksi yang berbeza antara organisma.

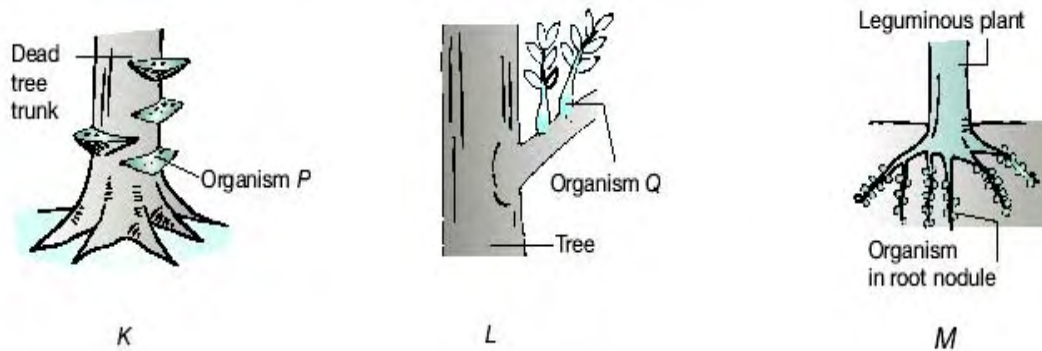


Diagram 16
Rajah 16

Which interactions are correct of **K**, **L** and **M** ?

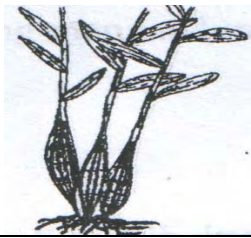
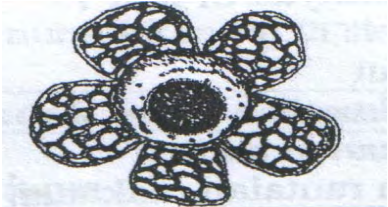

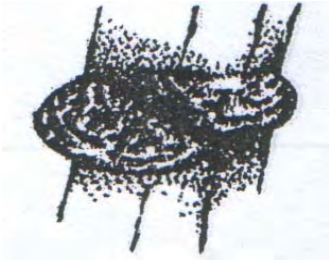
Antara interaksi berikut, yang manakah benar tentang **K**, **L** dan **M**?

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

23 The following are the characteristics that enable organisms to live in their habitat.
Ciri-ciri penyesuaian berikut membolehkan organisma hidup di habitatnya

- I has modified parts to store water.
mempunyai bahagian yang diubahsuai untuk menyimpan air
- II produce spores
menghasilkan spora
- III has hypha to absorb nutrients
mempunyai hifa untuk menyerap nutrien
- IV has nodules
mempunyai nodul

Which of the following pairs is correct?
Antara berikut, pasangan manakah yang betul?

	ORGANISMS	CHARACTERISTICS
A		I, II and III
B		II, III and IV
C		III and IV
D		II and III

- 24 Diagram 17 shows a part of a plant of mangrove swamp.
Rajah 17 menunjukkan satu bahagian tumbuhan paya bakau.

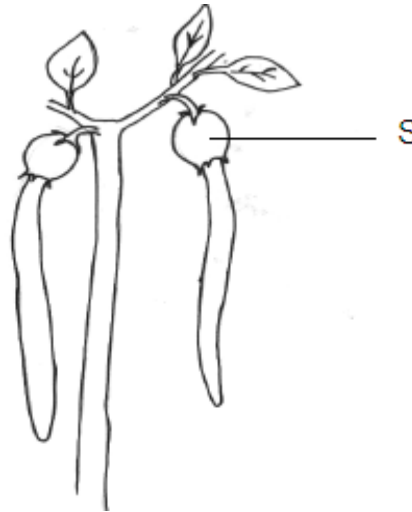


Diagram 17
Rajah 17

What is structure S?
Apakah struktur S?

- A Succulent leaves
Daun sukulen
 - B Pneumatophores
Pneumatofor
 - C Vivipary seeds
Biji benih viviparity
 - D Prop roots
Akar jangkang
- 25 Which of the following describes a niche?
Antara yang berikut, yang manakah menerangkan tentang nic?
- A The function of an organism in an ecosystem.
Peranan suatu organisma dalam suatu ekosistem.
 - B The natural surroundings where organisms live.
Persekitaran semulajadi di mana organisma hidup.
 - C Different spesies which live together in an ecosystem.
Spesies berlainan yang tinggal bersama dalam ekosistem.
 - D Several spesies of organisms which live together.
Beberapa spesies organisma yang tinggal bersama di tempat yang sama.

- 26 Diagram 18 shows an environment phenomenon.
Rajah 18 menunjukkan fenomena alam sekitar.

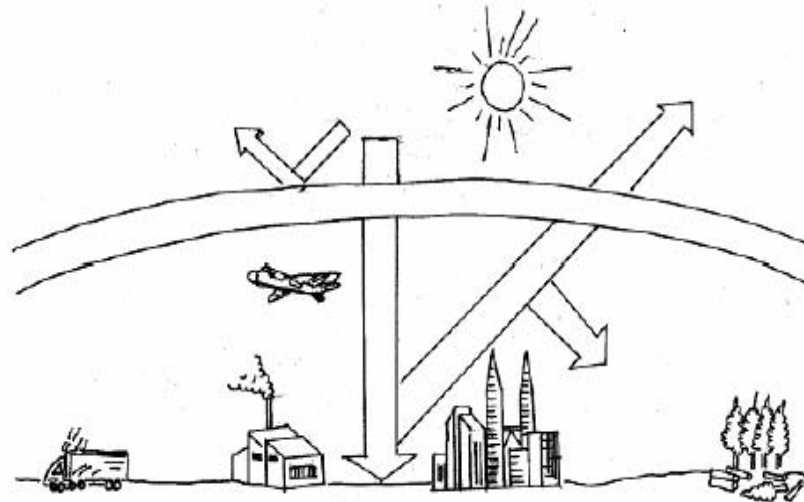


Diagram 18
Rajah 18

Which of the gases is the main cause of this phenomenon?
Antara gas berikut, yang manakah penyebab utama fenomena ini?

- A Carbon monoxide
Karbon monoksida
- B Sulphur dioxide
Sulfur dioksida
- C Carbon dioxide
Karbon dioksida
- D Methane
Metana
- 27 Which of the following happens during metaphase?
Antara berikut yang manakah berlaku semasa metafasa?
- A Chromosomes are arranged at the equator
Kromosom tersusun di satah khatulistiwa
- B Chromatid thickened and shortened
Kromatid menebal dan memendek
- C Chromatid separate and move to the opposite poles
Kromatid berpisah dan bergerak ke kutub yang bertentangan
- D Chromosomes straightened and formed thread like structure.
Kromosom melurus dan berbentuk bebenang

- 28 Diagram 19 shows a stage in the blood clotting mechanism.
Rajah 19 menunjukkan satu peringkat di dalam mekanisme pembekuan darah.

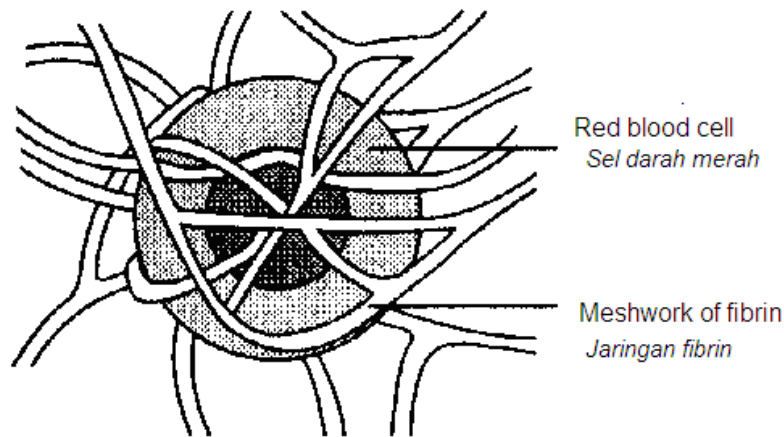


Diagram 19
Rajah 19

Which of the statements explains this stage?

Antara pernyataan berikut, yang manakah menerangkan peringkat ini?

- A Thromboplastin converts prothrombin to thrombin.
Tromboplastin menukarkan protrombin kepada trombin.
- B Platelets stimulate the formation of meshwork of fibrin.
Platlet merangsang pembentukan jaringan fibrin.
- C Thrombin converts fibrinogen to meshwork of fibrin.
Trombin menukarkan fibrinogen kepada jaringan fibrin.
- D Platelets release the thromboplastin to form meshwork of fibrin.
Platlet membebaskan tromboplastin untuk membentuk jaringan fibrin.
- 29 Diagram 20 shows three types of vertebrae K, L and M found in human backbone.
Rajah 20 menunjukkan tiga jenis vertebra K, L dan M pada tulang belakang manusia.

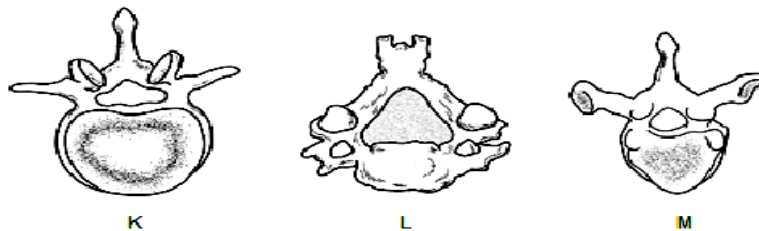


Diagram 20
Rajah 20

Which sequence is correct?

Antara berikut yang manakah susunan vertebra yang betul?

- | | | | |
|----------|------------|----------|------------|
| A | K, L and M | B | M, L and K |
| C | L, M and K | D | L, K and M |

- 30** Diagram 21 shows the main parts of a brain.
Rajah 21 menunjukkan bahagian utama otak.

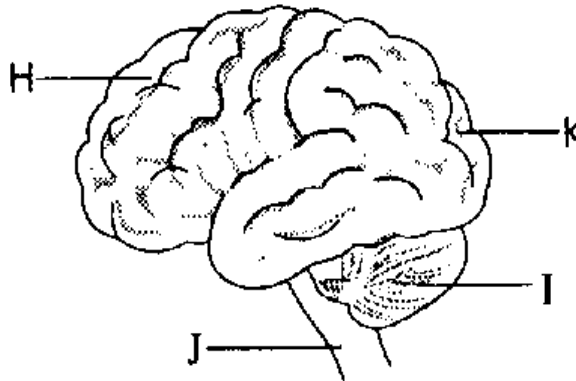


Diagram 21
Rajah 21

Which part controls the equilibrium of the body?
Antara bahagian berikut, yang manakah berfungsi mengawal keseimbangan badan?

- | | | | |
|----------|---|----------|---|
| A | H | B | I |
| C | J | D | K |
- 31** Diagram 22 shows a longitudinal section of the human heart.
Rajah 22 menunjukkan suatu keratan membujur jantung manusia.

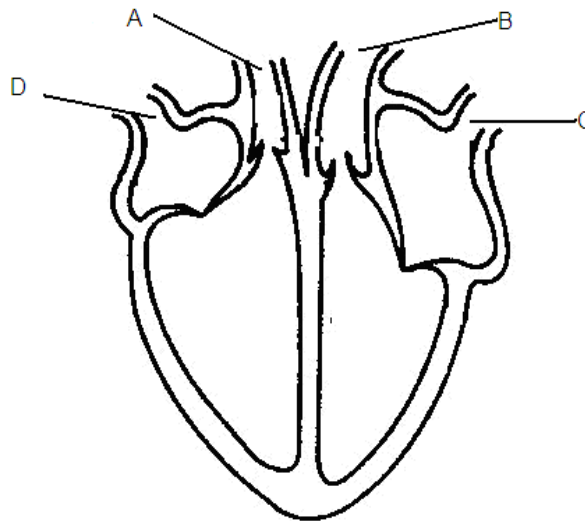


Diagram 22
Rajah 22

Which of the labelled parts **A**, **B**, **C** and **D**, has the highest blood pressure?
 Antara bahagian berlabel A, B, C dan D, mempunyai tekanan yang paling tinggi?

32 Diagram 23 shows a human nephron.
 Rajah 23 menunjukkan nefron manusia.

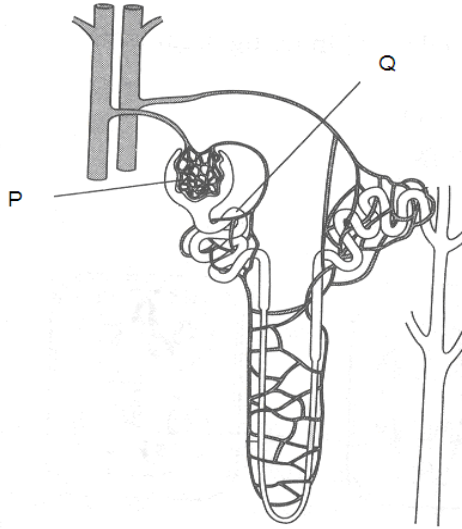


Diagram 23
 Rajah 23

What happens to the blood at P and to the amino acids at Q?
 Apakah yang terjadi kepada darah di P dan asid amino di Q?

	P	Q
A	Reabsorption <i>Serapan semula</i>	Active transport <i>Pengangkutan aktif</i>
B	Secretion <i>Rembesan</i>	Ultrafiltration <i>Ultraturasan</i>
C	Ultrafiltration <i>Ultraturasan</i>	Reabsorption <i>Serapan semula</i>
D	Ultrafiltration <i>Ultraturasan</i>	Active transport <i>Pengangkutan aktif</i>

33 Table 3 shows the result of an experiment to study the population of woodlice.
 Jadual 3 menunjukkan keputusan kajian ke atas populasi kutu kayu.

Capture <i>Tangkapan</i>	Number of kutu kayu <i>Bilangan siput</i>	
First <i>Kali pertama</i>	36 were marked <i>36 bertanda</i>	
Second <i>Kali kedua</i>	08 marked <i>08 bertanda</i>	20 unmarked <i>20 tidak bertanda</i>

Table 3
 Jadual 3

What is the approximate population of the woodlice?
 Apakah anggaran saiz populasi kutu kayu ?

- | | | | |
|----------|----|----------|-----|
| A | 90 | B | 4.5 |
| C | 15 | D | 126 |

- 34** Diagram 24 shows ultrafiltration that occur in kidney.
Rajah 24 menunjukkan ultraturasan yang berlaku dalam ginjal.

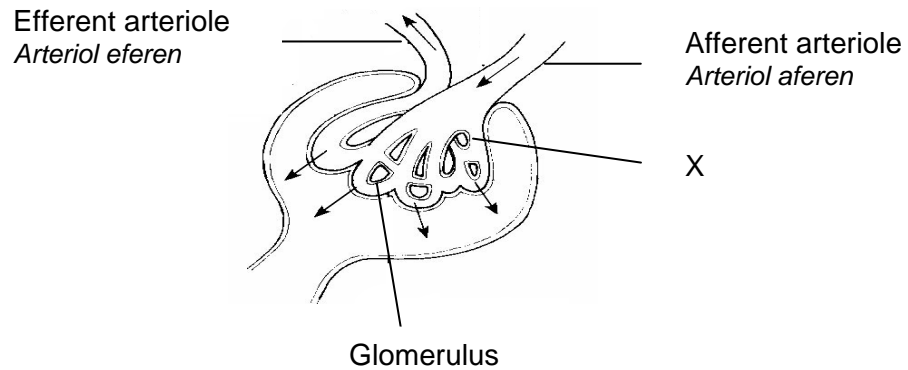


Diagram 34
Rajah 34

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

- | | | | |
|----------|---------------------------------|----------|---------------------------------|
| A | Fibrinogen
<i>Fibrinogen</i> | B | Erythrocyte
<i>Eritrosit</i> |
| C | Leucocyte
<i>Leukosit</i> | D | Amino acid
<i>Amino asid</i> |
- 35** Diagram 35 shows chromosome mutation process.
Rajah 35 menunjukkan satu proses mutasi kromosom.

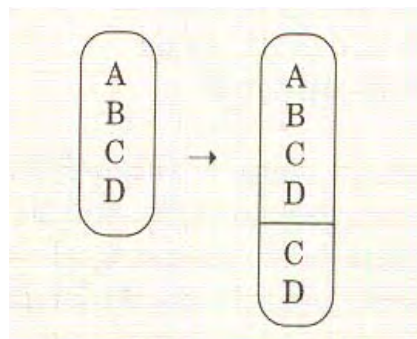


Diagram 35
Rajah 35

What type of chromosomal mutation shown?
Apakah jenis mutasi kromosom yang ditunjukkan?

- | | | | |
|----------|-----------------------------------|----------|-------------------------------------|
| A | Inversion
<i>Penyongsangan</i> | B | Duplication
<i>Penggandaan</i> |
| C | Deletion
<i>Pelenyapan</i> | D | Translocation
<i>Translokasi</i> |

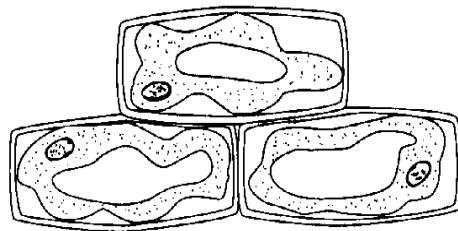
- 36 A patient had undergone an operation to discard his gall bladder.
Seorang pesakit telah menjalani pembedahan untuk membuang pundi hempedunya.

Which statement is correct about the patient?

Antara pernyataan berikut yang manakah benar tentang pesakit tersebut?

- A Liver cannot produce bile.
Hati pesakit tidak lagi menghasilkan jus hempedu
- B Protein digestion in the duodenum is interrupted
Pencernaan protein dalam duodenum terganggu
- C Need to undergo chemotherapy treatment life time.
Pesakit harus menjalani kimoterapi sepanjang hayatnya.
- D Less intake of fatty food.
Pesakit itu harus mengurangkan pengambilan makanan yang berlemak
- 37 Diagram 36 shows the changes in plant cells structure before and after immersed in solution X.
Rajah 36 menunjukkan perubahan struktur sel tumbuhan sebelum dan selepas direndam dalam larutan X.

Before immersed in solution X
Sebelum direndam dalam larutan X



After immersed in solution X
Selepas direndam dalam larutan X

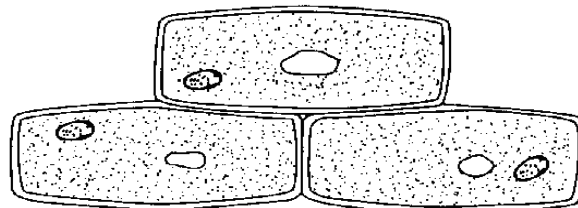


Diagram 36
Rajah 36

Which possible solution X and process that occurs in the plant cell?

Antara berikut yang manakah mungkin larutan X dan proses yang berlaku dalam sel tumbuhan itu ?

	Solution X	Process
A	Sucrose solution 50% <i>Larutan sukrosa 50%</i>	Plasmolysis <i>Plasmolisis</i>
B	Glucose solution 1% <i>Larutan glukosa 1%</i>	Osmosis <i>Osmosis</i>
C	Saline solution 10% <i>Larutan garam 10%</i>	Hemolysis <i>Haemolysis</i>
D	Glucose solution 10% <i>Larutan glukosa 10%</i>	Krenasi <i>Crenation</i>

38 Diagram 37 is a graph showing the level of antibody in blood of two patients P and Q whom have been given vaccination twice.

Rajah 37 ialah graf yang menunjukkan aras antibodi dalam darah bagi dua pesakit, P dan Q yang telah diberi suntikan vaksin sebanyak dua kali.

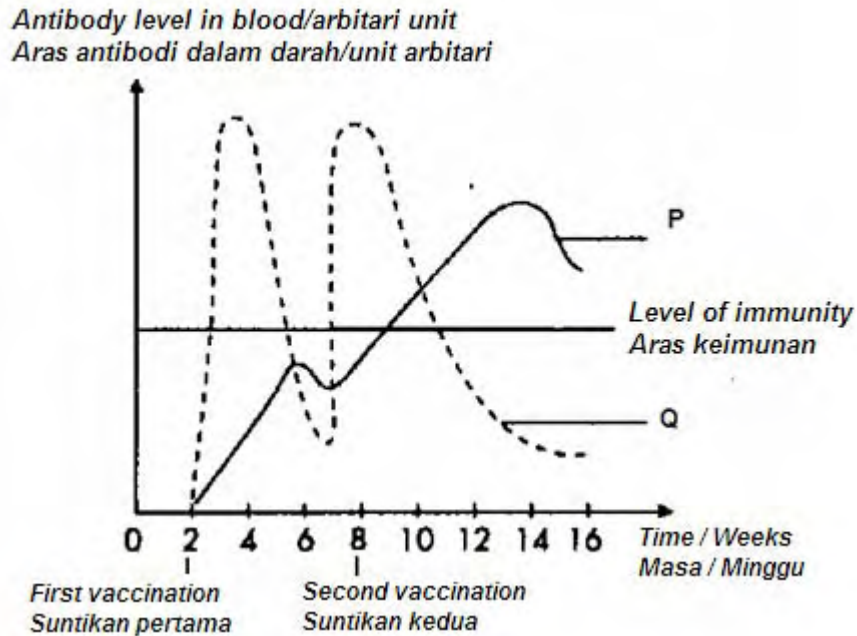


Diagram 37
Rajah 37

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 aktif semulajadi</i>

- 39 Diagram 38 shows the structure of a synapse.
 Rajah 38 menunjukkan struktur sinaps.

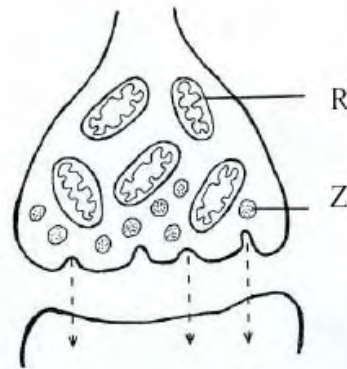


Diagram 38
 Rajah 38

What are the roles played by the parts labelled **R** and **Z**?
 Apakah peranan bahagian yang berlabel **R** dan **Z**?

	R	Z
A	Release neurotransmitter <i>Membebaskan neurotransmitter</i>	Transmit impulse across the synapse <i>Memindahkan impuls merentas sinaps</i>
B	Release neurotransmitter <i>Membebaskan neurotransmitter</i>	Release energy to transmit impulse <i>Membebaskan tenaga untuk memindahkan impuls</i>
C	Release energy to transmit impulse <i>Membebaskan tenaga untuk memindahkan impuls</i>	Release neurotransmitter <i>Membebaskan neurotransmitter</i>
D	Transmit impulse across the synapse <i>Memindahkan impuls merentas sinaps</i>	Release neurotransmitter <i>Membebaskan neurotransmitter</i>

- 40 Diagram 39 shows dihybrid inheritance between two pea plants.
 Rajah 39 menunjukkan pewarisan dihibrid antara dua pokok kacang pea.

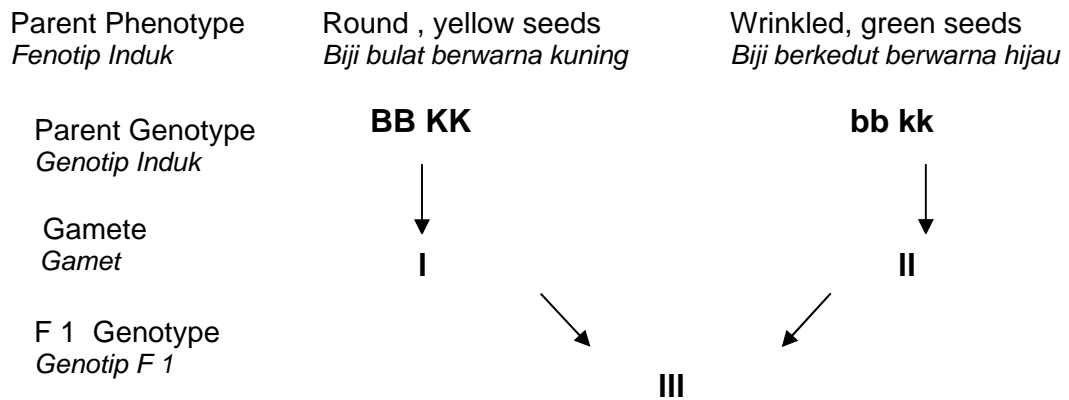


Diagram 39
 Rajah 39

Which of the following represents genotype I, II and III?
 Antara berikut yang manakah mewakili genotip I, II dan III?

	I	II	III
A	BB	kk	BBkk
B	BK	bk	BbKk
C	BK	bk	BBkk
D	KK	kk	bbKK

- 41 Diagram 40 shows the human endocrine system.
 Rajah 40 menunjukkan sistem endokrin manusia.

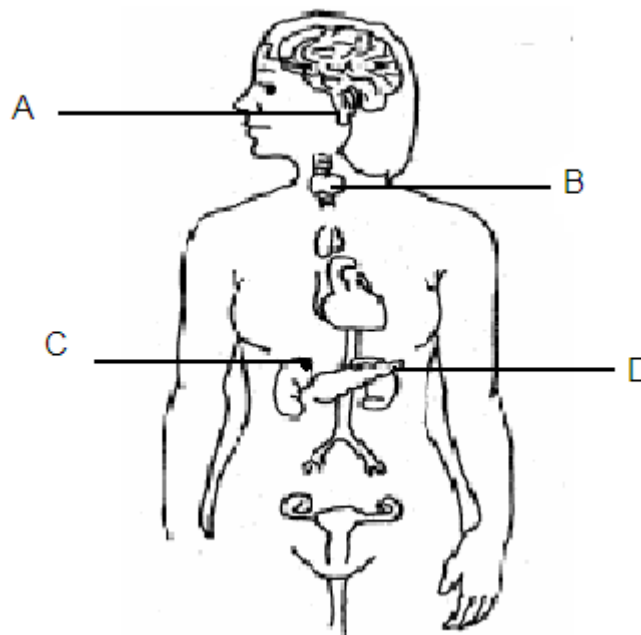


Diagram 40
 Rajah 40

Which of the glands **A**, **B**, **C** or **D**, is involved when an individual is in stressful situation?
 Antara kelenjar **A**, **B**, **C** atau **D**, yang manakah terlibat semasa seseorang dalam keadaan yang tertekan?

- 42 Diagram 41 shows a germinated pollen.
Rajah 41 menunjukkan satu debunga yang telah bercambah.

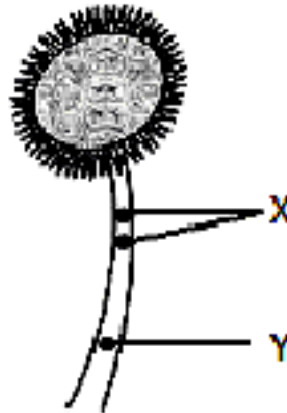


Diagram 41
Rajah 41

What are X and Y?
Apakah X dan Y?

	X	Y
A	Polar nuclei <i>Nukleus polar</i>	Female nucleus <i>Nukleus betina</i>
B	Polar nuclei <i>Nukleus polar</i>	Male nucleus <i>Nukleus jantan</i>
C	Female nuclei <i>Nukleus betina</i>	Tube nucleus <i>Nukleus tiub</i>
D	Male nuclei <i>Nukleus jantan</i>	Tube nucleus <i>Nukleus tiub</i>

- 43 Diagram 42 shows the process of oogenesis.
Rajah 42 menunjukkan proses oogenesis.

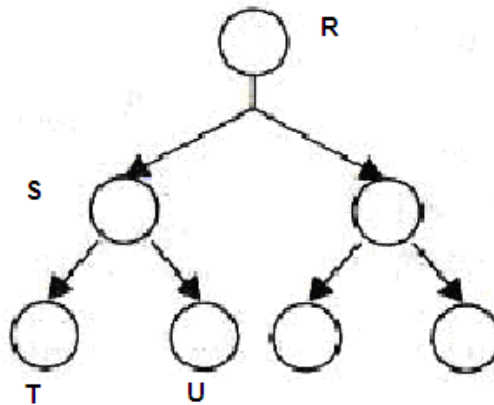


Diagram 42
Rajah 42

What are represented by **R, S, T** and **U**?
 Apakah yang diwakili oleh **R, S, T** and **U**?

	R	S	T	U
A	Primary oocyte <i>Oosit primer</i>	Secondary oocyte <i>Oosit sekunder</i>	Ovum	Polar body <i>Jasad khutub</i>
B	Oogonium <i>Oogonium</i>	Polar body <i>Jasad khutub</i>	Ovum	Secondary oocyte <i>Oosit sekunder</i>
C	Primary oocyte <i>Oosit primer</i>	Oogonium	Secondary oocyte <i>Oosit sekunder</i>	Ovum
D	Oogonium	Polar body <i>Jasad khutub</i>	Secondary oocyte <i>Oosit sekunder</i>	Ovum

44 Diagram 43 shows the stages of follicle development in an ovary.
 Rajah 43 menunjukkan peringkat-peringkat perkembangan folikel di dalam ovari

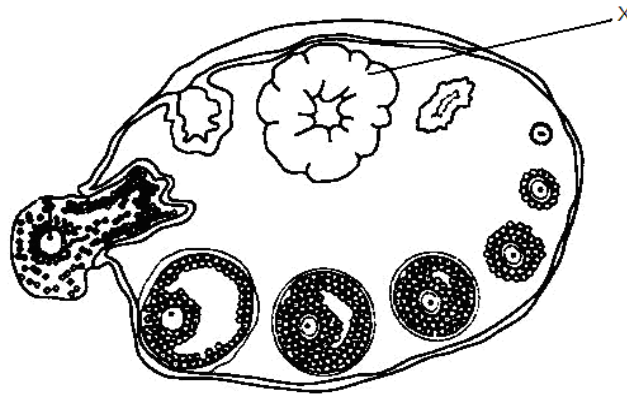


Diagram 43
 Rajah 43

What hormone is being secreted at X?
 Apakah hormon yang dirembeskan oleh X?

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

- 45 Diagram 44 shows a pair of chromosomes in a cell of an organism.

Rajah 44 menunjukkan sepasang kromosom dalam sel suatu organisma.

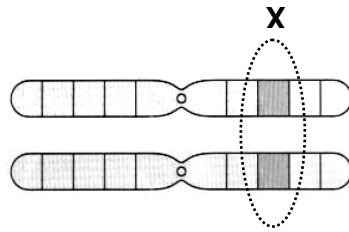


Diagram 44
Rajah 44

What is X ?

Apakah X ?

- A Gene
B Allele
C Nucleotide
D Chromosome
- 46 Diagram 45 shows the regulation of human body temperature.
Rajah 45 menunjukkan pengawalan suhu badan manusia.

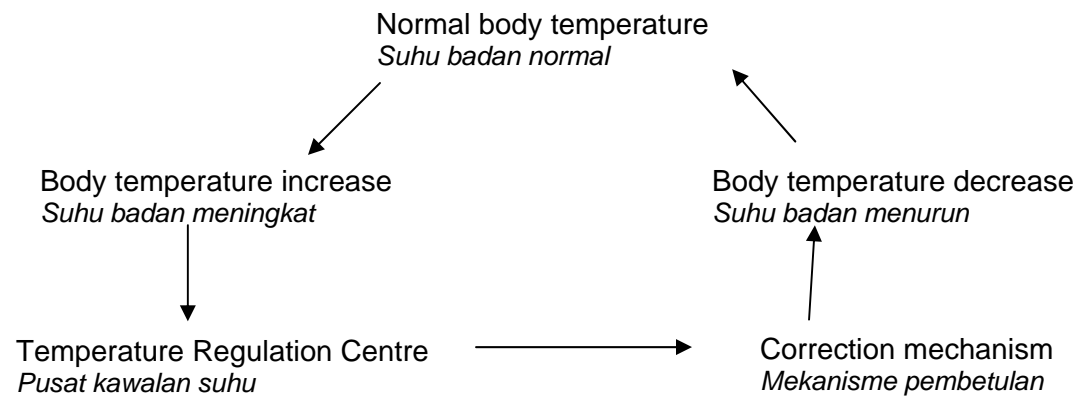


Diagram 45
Rajah 45

Which of the following correction mechanisms 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 and IV
- C** I, II and III
- D** I, II and IV

47 A mother has a second child who suffers from erythroblastosis fetalis during the fetal stage.
Seorang ibu mendapat anak kedua yang mengidap penyakit 'eritroblastosis fatalis' semasa peringkat fetus.

What are the possible genotypes of the parents? (Rh = allele for Rhesus factors)
Apakah genotip yang mungkin terdapat pada kedua-dua ibu dan bapa kepada anak itu?

	Genotype of mother	Genotype of father
A	Rh–Rh–	Rh+Rh+
B	Rh+Rh–	Rh+Rh–
C	Rh–Rh–	Rh–Rh–
D	Rh+Rh+	Rh+Rh+

48 Diagram 46 shows the karyotype of an individual.
Rajah 46 menunjukkan kariotip seseorang individu.

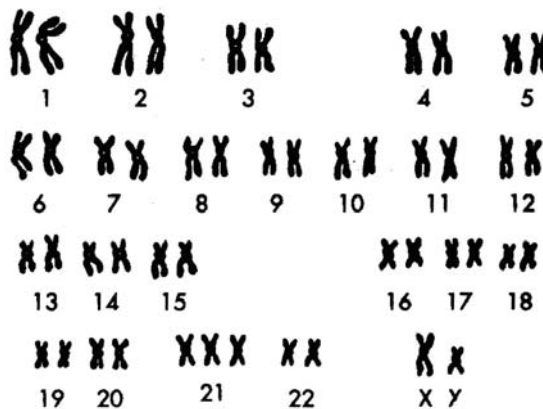


Diagram 46
Rajah 46

Which of the following has the karyotype shown?

Antara berikut yang manakah mempunyai kariotip seperti yang ditunjukkan?

- A** A male with Down's syndrome
Seorang lelaki sindrom Down
- B** A female with Down's syndrome
Seorang perempuan sindrom Down
- C** A normal male
Lelaki yang normal
- D** A normal female
Perempuan yang normal

- 49** Sara is a carrier of haemophilia with X^HX^h , where h is the recessive gene that caused haemophiliac.
Sara merupakan seorang pembawa hemofilia dengan genotip X^HX^h , di mana h adalah gen resesif penyebab hemofilia.

What is the percentage of her daughter to suffer from haemophilia if Sara is married to a normal man?

Apakah peratus anak perempuan beliau berpenyakit hemofilia jika Sara berkahwin dengan seorang lelaki normal?

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

- 50** Diagram 47 is a histogram which shows the distribution of a particular trait in human.
Rajah 47 ialah histogram yang menunjukkan taburan untuk trait tertentu dalam manusia.

*numbers of individu
bilangan individu*

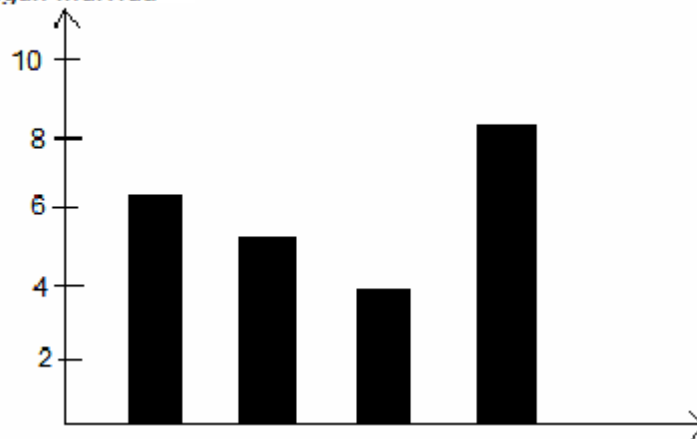


Diagram 47
Rajah 47

Which of the following traits is represented by the histogram?
Antara trait berikut, yang manakah diwakili oleh graf it

- A Height
Ketinggian
- B Weight
Berat badan
- C Blood group
Kumpulan darah
- D Ability to roll tongue
Kebolehan menggulung lidah.

END OF QUESTION PAPER
KERTAS SOALAN TAMAT

**MARK SCHEME PAPER 1 TRIAL SPM
NEGERI MELAKA 2008**

1	B	2	D	3	A/D	4	C	5	A
6	D	7	B	8	C	9	A	10	A
11	A	12	C	13	A	14	A	15	C
16	B	17	A	18	C	19	C	20	B
21	B	22	C	23	C	24	C	25	A
26	C	27	A	28	C	29	C	30	B
31	B	32	D	33	D	34	D	35	B
36	C	37	B	38	A	39	C	40	B
41	C	42	D	43	A	44	C	45	A
46	B	47	A	48	A	49	A	50	C

SULIT
4551/2
Biologi
Kertas 2
September
2 ½ jam

Nama Tingkatan 

JABATAN PELAJARAN MELAKA



Dengan Kerjasama

**PERSIDANGAN KEBANGSAAN PENGETUA-PENGETUA
 SEKOLAH MENENGAH MALAYSIA (PKPSM)
 CAWANGAN MELAKA**

**PEPERIKSAAN PERCUBAAN
 SIJIL PELAJARAN MALAYSIA 2008**

BIOLOGI**Kertas 2**

Dua jam tiga puluh minit

JANGAN BUKA KERTAS SOALAN INI SEHINGGA DIBERITAHU

1. Kertas soalan ini mengandungi tiga bahagian **Bahagian A**, **Bahagian B** dan **Bahagian C**. Jawab semua soalan dalam **Bahagian A**, satu soalan daripada **Bahagian B** dan satu soalan daripada **Bahagian C**.
2. Jawapan kepada **Bahagian A** hendaklah ditulis dalam ruang jawapan yang disediakan dalam kertas soalan. Langkah penting dalam kerja mengira hendaklah ditunjukkan.
3. Jawapan kepada **Bahagian B** dan **Bahagian C** hendaklah ditulis dalam kertas jawapan yang disediakan. Anda diminta menjawab dengan lebih panjang tetapi jawapan mestilah jelas dan logik. Dalam jawapan anda, persamaan, gambar rajah, jadual, graf dan cara lain yang sesuai untuk menjelaskan jawapan anda boleh digunakan.
4. Jawapan kepada ketiga-tiga bahagian ini hendaklah diserahkan bersama-sama. Anda hendaklah menyerahkan kertas tulis dan kertas graf tambahan, jika digunakan, bersama-sama dengan kertas soalan.
5. Rajah yang mengiringi soalan dimaksudkan untuk memberi maklumat yang berguna bagi menjawab soalan. Rajah tidak dilukiskan mengikut skala kecuali dinyatakan sebaliknya.
6. Penggunaan kalkulator saintifik yang **tidak** boleh diprogramkan adalah dibenarkan.
7. Masa yang dicadangkan untuk menjawab **Bahagian A** ialah 90 minit, **Bahagian B** 30 minit dan **Bahagian C** 30 minit.

Untuk kegunaan pemeriksa		
Bahagian	No.	Markah
A	1	
	2	
	3	
	4	
	5	
Jumlah		
B	6	
	7	
	8	
	9	
Jumlah		
Jumlah Besar		

For
Examiner's
Use

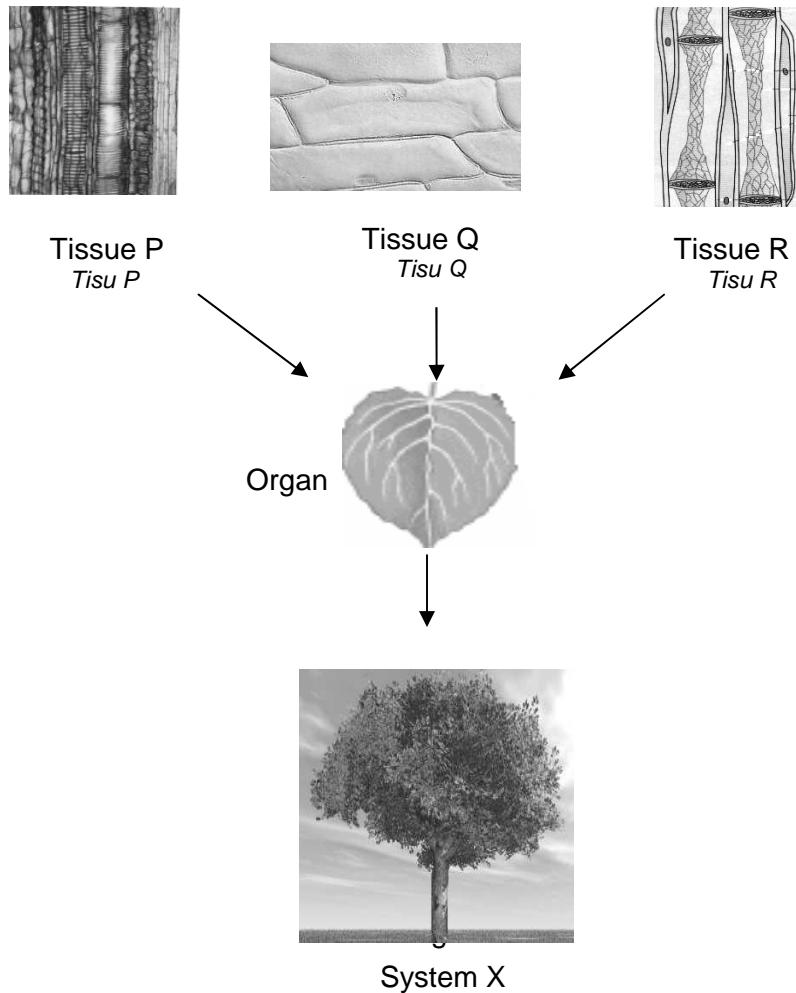
SECTION A

[60 marks]

Answer **all** questions

The time suggested to complete this section is 90 minutes.

1. Diagram 1 shows a cell organization of a plant.
Rajah 1 menunjukkan organisasi sel satu tumbuhan



- (a) (i) Name tissues P, Q and R
Namakan tisu P, Q, dan R

P :

Q :

R :

[3 marks].

1(a)(i)
□

For
Examiner's
Use

1(a)(ii)

(ii) State **one** function of tissues P and R
*Nyatakan **satu** fungsi tisu P dan R.*

P :

.....

R:

.....

[2 marks]

(iii) State a structural feature of tissue P and R which enable them to function
efficiently

*Nyatakan satu struktur pada tisu P dan R yang membolehkan tisu-tisu ini berfungsi
dengan lebih efisien.*

.....

.....

.....

[2 marks]

1(a)(iii)

(b) State two other organs which form system X
Nyatakan dua lagi organ yang membentuk system X

.....

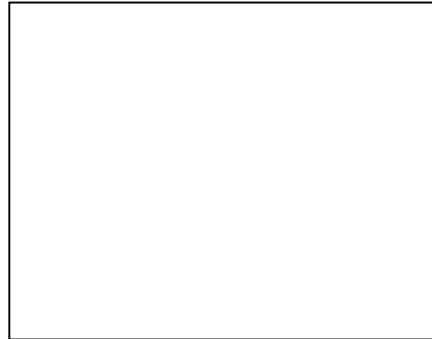
[2 marks]

1(b)

(c) Some of the Q cells carry out cell specialization to produce cell Y.
Terdapat beberapa cell Q yang menjalani pembezaan sel untuk menghasilkan sel Y.

(i) In the box provided, draw cell Y.
Di dalam kotak yang disediakan, lakarkan sel Y.

*For
Examiner's
Use*



[1 mark]

1(c)(i)

(ii) Explain the role of cell Y in increasing the rate of photosynthesis.
Terangkan peranan sel Y di dalam meningkatkan kadar fotosintesis.

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

[2 marks]

1(c)(ii)

TOTAL

For
Examiner's
Use

2. Diagram 2.1 shows two different structures of compound X.
Rajah 2.1 menunjukkan dua struktur yang berlainan bagi sebatian X.

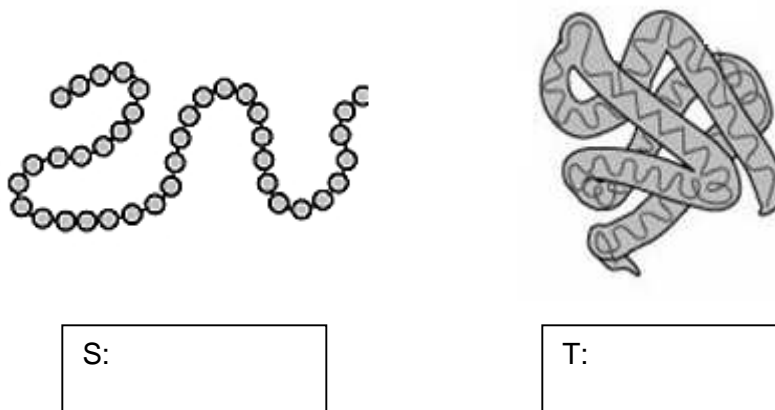


Diagram 2.1
Rajah 2.1

- (a) (i) Label structure S and T
Label struktur S dan T

[1 mark]

- (ii) State what compound X is .
Nyatakan apakah sebatian X.

.....
[1 mark]

- (iii) State the monomer of the structures shown in diagram 2.1.
Nyatakan monomer bagi struktur di dalam Rajah 2.1

.....
[1 mark]

2(a)(i)

2(a)(ii)

2(a)(iii)

For
Examiner's
Use

- (b) A patient's pancreatic cells have been found to be unable to produce a compound X that has structure T. Explain the effect of this to his digestive system.
Sel pankreas seorang pesakit didapati gagal untuk menghasilkan sebatian X yang mempunyai struktur S. Terangkan kesannya kepada system penghadaman pesakit ini.

.....

.....

.....

[3 marks]

2(b)

- (c) Diagram 2.2 shows how the amounts of an enzyme's substrate and product change during seed germination.
Rajah 2.2 menunjukkan perubahan kandungan substrat and hasilnya sewaktu percambahan biji benih.

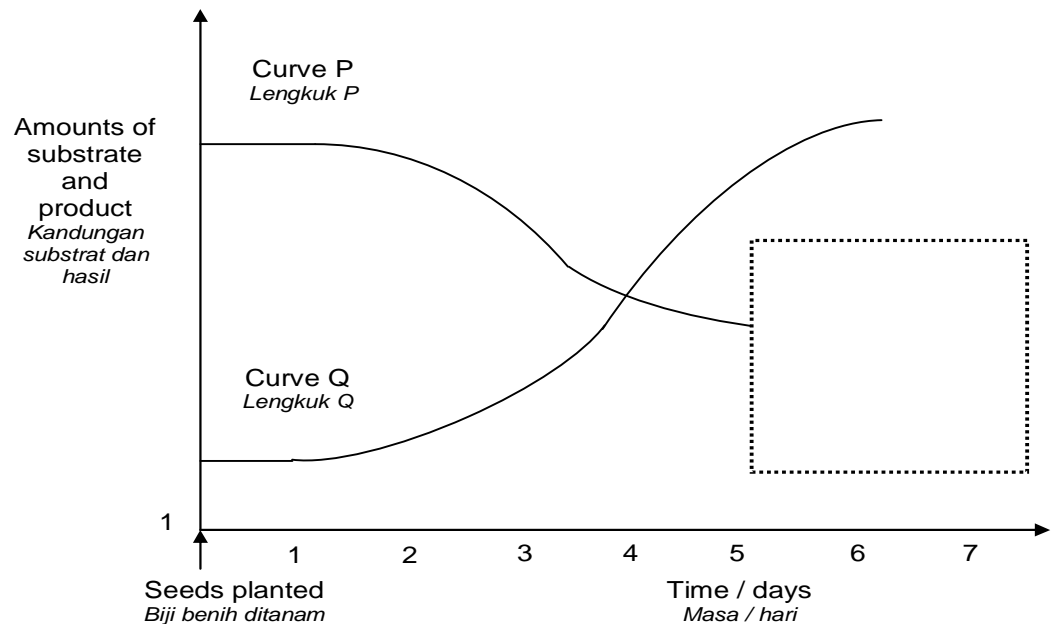


Diagram 2.2
Rajah 2.2

- (i) State which curve represents the amount of substrate.
Nyatakan lengkuk yang diwakili oleh kandungan substrat.

.....

[1 mark]

2(c)(i)

For
Examiner's
Use

2(c)(ii)

(ii) Explain you answer in (c) (i)
Jelaskan jawapan anda di (c) (i)

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

[2 marks]

2(c)(iii)

(iii) If the enzyme involved in the reaction is amylase, continue curve P in the box in diagram 2.2 to show what would happen when photosynthesis begins.

Jika enzim yang terlibat di dalam tindakbalas ini ialah amylase, sambungkan lengkung P pada rajah 2.2 untuk menunjukkan apa yang akan berlaku apabila fotosintesis bermula

[1 mark]

2(c)(iv)

(iv) Explain the shape of the curve that you have drawn.
Terangkan bentuk lengkung yang telah anda lukiskan.

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

[2 marks]

TOTAL

For
Examiner's
Use

3. Diagram 3.1 shows cell P and cell Q undergoes one of the stages for two types of cell division.
Rajah 3.1 menunjukkan sel P dan Q yang sedang menjalani salah satu peringkat di dalam dua pembahagian sel yang berbeza.

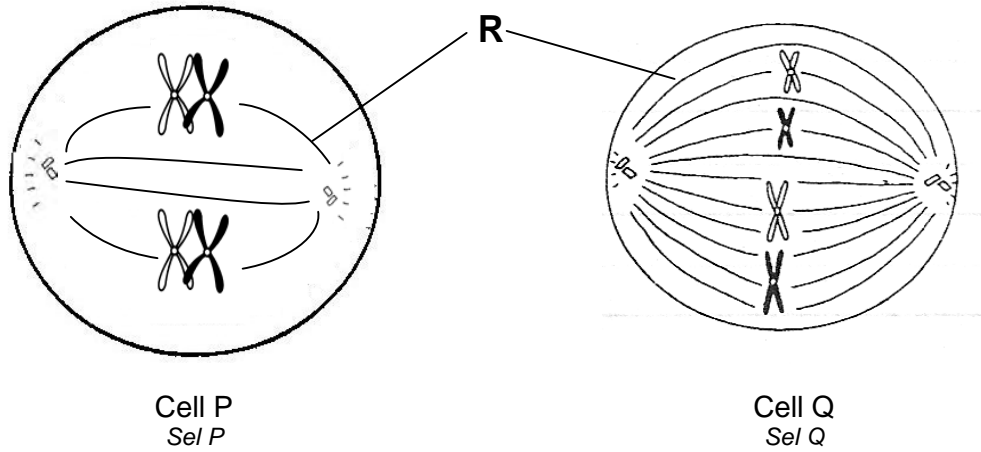


Diagram 3.1
Diagram 3.1

- (a) (i) State the type of cell division shown in diagram 3.1
Namakan jenis pembahagian sel seperti yang ditunjukkan dalam rajah 3.1

P :

Q :

[2 marks]

- (ii) State a function of the two cell divisions mentioned in (a)(i).
Nyatakan satu fungsi bagi setiap pembahagian sel yang dinyatakan di (a)(i)

P :

Q :

[2 marks]

3(a)(i)

3(a)(ii)

For
Examiner's
Use

- b. Diagram 3.2 shows a cell cycle. On the cell cycle, label the stage shown by cell Q with a letter Y
Rajah 3.2 menunjukkan satu kitar sel. Pada kitar sel tersebut, labelkan peringkat yang ditunjukkan oleh sel P dengan menggunakan huruf Y.

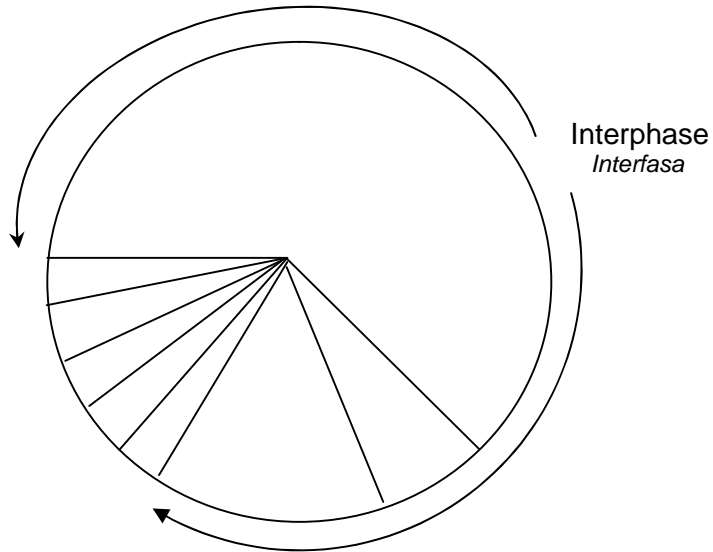


Diagram 3.2
Rajah 3.2

3(b)

[1 mark]

- c. Draw a daughter cell of cell P and Q after both cells have completed the cell division. in the boxes provided below.
Lakarkan sel anak bagi sel P dan Q selepas kedua-dua sel selesai menjalani proses pembahagian sel di dalam kotak yang telah disediakan.



Cell P
Sel P



Cell Q
Sel Q

3(c)

[4 marks]

*For
Examiner's
Use*

- d. Ahmad has been exposed to gamma rays which results in the failure of structure R to be formed.
Explain the effects of this to the formation of the daughter cells of cell P.
*Ahmad telah terdedah kepada sinaran gamma yang menyebabkan struktur R gagal dihasilkan.
Terangkan kesannya keatas penghasilan sel-sel anak bagi sel P*

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

[3 marks]

3(d)

TOTAL

For
Examiner's
Use

4. Diagram 4.1 shows the endocrine system in the body of a human.
Rajah 4.1 menunjukkan sistem endokrin manusia

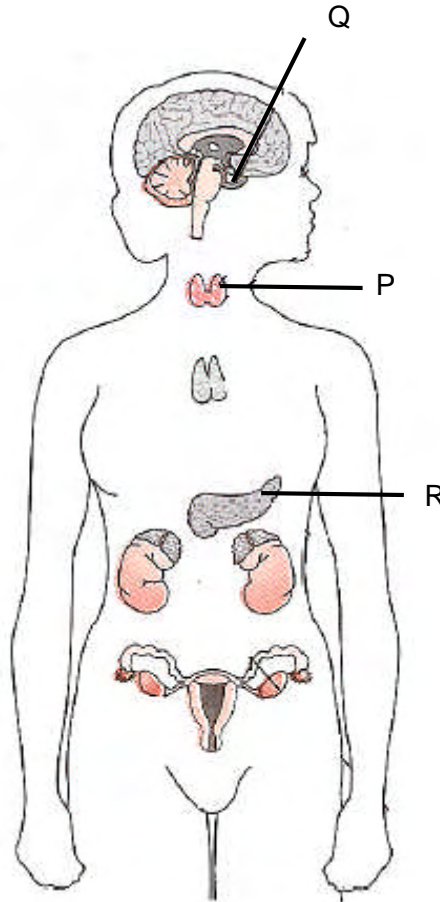


Diagram 4.1
Rajah 4.1

- (a) (i) Name the hormones secreted by gland P and Q
Namakan hormone yang dirembeskan oleh kelenjar P dan Q

4(a)(i)

P :

Q :

[2 marks]

4(a)(ii)

- (ii) In diagram 4.1, label the adrenal gland with letter S
Di dalam rajah 4.1, labelkan kelenjar pituitary dengan huruf S

[1 mark]

For
Examiner's
Use

4(b)(i)

4(b)(ii)

(a) Some people have their gland P grows two or three times its size.
Terdapat manusia yang mempunyai kelenjar P yang membesar sehingga dua atau tiga kali saiz sebenar.

(i) Name the condition mentioned above
Namakan keadaan yang dinyatakan di atas.

..... [1 mark]

(ii) Suggest how to overcome the above problem.
Cadangkan bagaimana untuk mengatasi masalah diatas

..... [1 mark]

(c) In a study carried out, an individual X drinks a glass of glucose solution. Table 4.2 shows the changes in the concentration of blood glucose in individual X .
Di dalam satu kajian yang dijalankan, seorang individu telah meminum segelas larutan glukosa. Jadual 4.2 menunjukkan perubahan didalam kepekatan kandungan gula di dalam darah individu tersebut.

Time / min <i>Masa / min</i>	The concentration of blood glucose / g dm^{-3} <i>Kepekatan gula dalam darah</i>
0	90
30	130
60	162
90	90
120	84
150	74
180	88

Table 4.2
Jadual 4.2

Based on table 4.2 , explain the role of gland R in regulating the person blood glucose concentration from 0 minute to 90 minutes.

Berdasarkan jadual 4.2, jelaskan tugas kelenjar R di dalam mengawalatur kepekatan gula dalam darah dari minit 0 hingga minit ke 90

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

[3 marks]

4(c)

For
Examiner's
Use

- (d) Diagram 4.3 shows a person who is sweating under a hot sun
Rajah 4.3 menunjukkan seorang lelaki yang sedang berpeluh ketika berada di bawah panas matahari



Diagram 4.3
Rajah 4.3

- (i) State what will happen to his blood osmotic pressure in the person's body.
Nyatakan apakah yang akan berlaku kepada tekanan osmosis darah lelaki tersebut.

4(d)(i)

.....
[1 mark]

- (ii) Explain how gland Q involves in returning the osmotic pressure of the blood to normal levels.
Terangkan bagaimana kelenjar Q terlibat didalam mengembalikan tekanan osmosis darah kepada normal.

4(d)(ii)

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

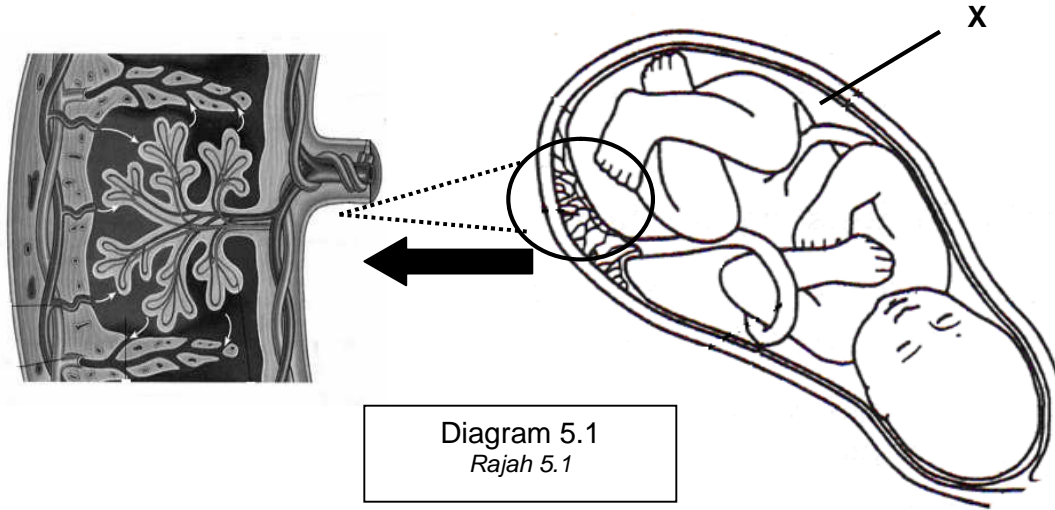
[3 marks]

TOTAL

For
Examiner's
Use

5. Diagram 5.1 shows a structure of a human placenta and its connection to the fetus.

Rajah 5.1 menunjukkan struktur plasenta manusia dan hubungannya dengan fetus.



5(a)(i)

(a) (i) Name X.
Namakan X

X :

[1 mark]

5(a)(ii)

(ii) State two importance of X
Nyatakan dua kepentingan X

.....

.....

[2 marks]

For
Examiner's
Use

5(b)

- (b) State two substances which are carried by the blood in Y, in the direction of the arrow.
Nyatakan dua bahan yang diangkut oleh darah di dalam Y mengikut arah anak panah.

..... [2 marks]

- (c)

A pregnant woman of blood group A is having a foetus of blood group B.
Seorang perempuan hamil yang mempunyai darah kumpulan A mempunyai fetus yang berdarah dari kumpulan B.

Based on diagram 5.1 and the statement above , state whether agglutination will occur in the foetal blood or not. Explain your answer.
Berdasarkan rajah 5.1 dan pernyataan di atas, nyatakan samada penggumpalan akan berlaku atau tidak. Jelaskan jawapan anda.

5(c)

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

[2 marks]

- (d) Diagram 5.2 shows a negative habit of a pregnant mother. .
Rajah 5.2 menunjukkan perlakuan t negatif seorang ibu yang sedang mengandung



Diagram 5.2
Rajah 5.2

Explain the effect of this habit to the foetus
Terangkan kesan perlakuan ini keatas fetus beliau

.....

.....

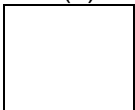
.....

.....

.....

[3 marks]

5(d)



For
Examiner's
Use

- (e) Diagram 5.3 shows the level of hormone progesterone and the thickness of the uterus lining.
Rajah 5.3 menunjukkan perubahan keatas aras hormon progesterone dan ketebalan dinding uterus.

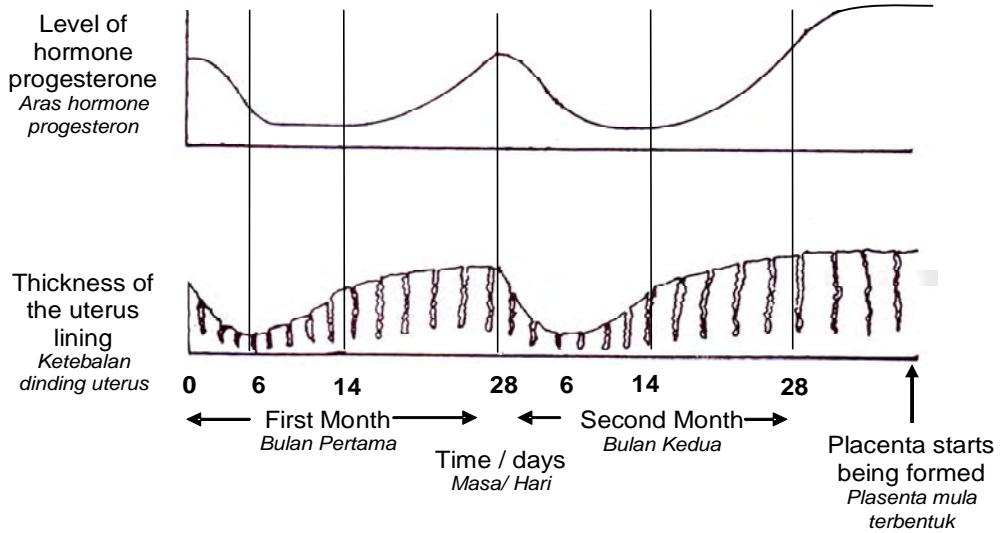


Diagram 5.3
Rajah 5.3

Based on diagram 5.3, explain the role of placenta as an endocrine gland.
Berdasarkan rajah 5.3, jelaskan peranan plasenta sebagai kelenjar endokrin

.....

.....

.....

.....

[3 marks]

5(e)

TOTAL

SECTION B
[40 marks]

Answer only **two** question from this section

6. (a) Diagram 6 shows movement of molecule P through a plasma membrane.
Rajah 6 menunjukkan pergerakan molekul P melalui membran plasma.

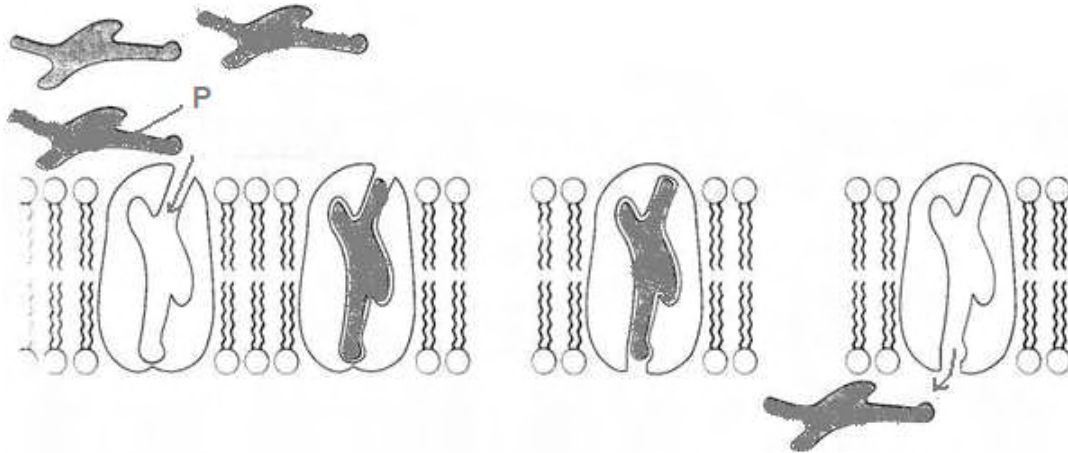


Diagram 6.1

Explain the movement of molecule P through the plasma membrane.
Terangkan pergerakan molekul P melalui membran plasma.

[4 marks]

- (b) Diagram 6.2 shows a bottle of food which has been preserved.
Rajah 6.2 menunjukkan sebotol makanan yang telah diawet.



Diagram 6.2

Explain the concepts applied in the preservation of the food.
Terangkan konsep yang digunakan dalam pengawetan makanan itu.

[6 marks]

- (c) Small molecules such as carbon dioxide and oxygen can pass through the cell membrane easily.

Molekul kecil seperti karbon dioksida dan oksigen boleh melalui membran sel dengan mudah.

Based on the statement explain how gaseous exchange occurs in the alveoli and blood capillaries?

Berdasarkan pernyataan di atas terangkan bagaimana pertukaran gas berlaku di alveolus dan di kapilari darah.

[10 marks]

7. (a) Diagram 7.1 shows the diverse sources of food.



Diagram 7.1
Rajah 7.1

Explain how to achieve a balanced diet by consuming food from diverse source.
Terangkan bagaimana makanan yang seimbang boleh dicapai dengan mengambil makanan dari pelbagai sumber.

[4 marks]

- (b) Diagram 7.1 shows a method in vegetable cultivation which does not involve the use of soil.

Rajah 7.1 menunjukkan kaedah penanam sayuran tanpa menggunakan tanah.



Diagram 7.1

Explain the technique .

Terangkan teknik itu

[6 marks]

- (c) Diagram 7.2 shows the various processed food found on the market shelf.

Rajah 7.2 menunjukkan pelbagai jenis makanan yang telah diproses terdapat di pasaraya



Diagram 7.2

Explain the food processing methods which are related to the factors that cause food spoilage.

Terangkan kaedah pemprosesan makanan yang berkaitan dengan faktor yang menyebabkan makanan menjadi rosak.

[10 marks]

8. (a)(i) Diagram 8.1 shows how the required gene can be removed from a chromosome of a donor DNA and cloned in a bacterium using a genetic engineering technique.

Rajah 8.1 menunjukkan bagaimana gen yang dikehendaki di keluarkan dari DNA kromosom penderma dan diklonkan ke dalam bakteria menggunakan teknik kejuruteraan genetik.

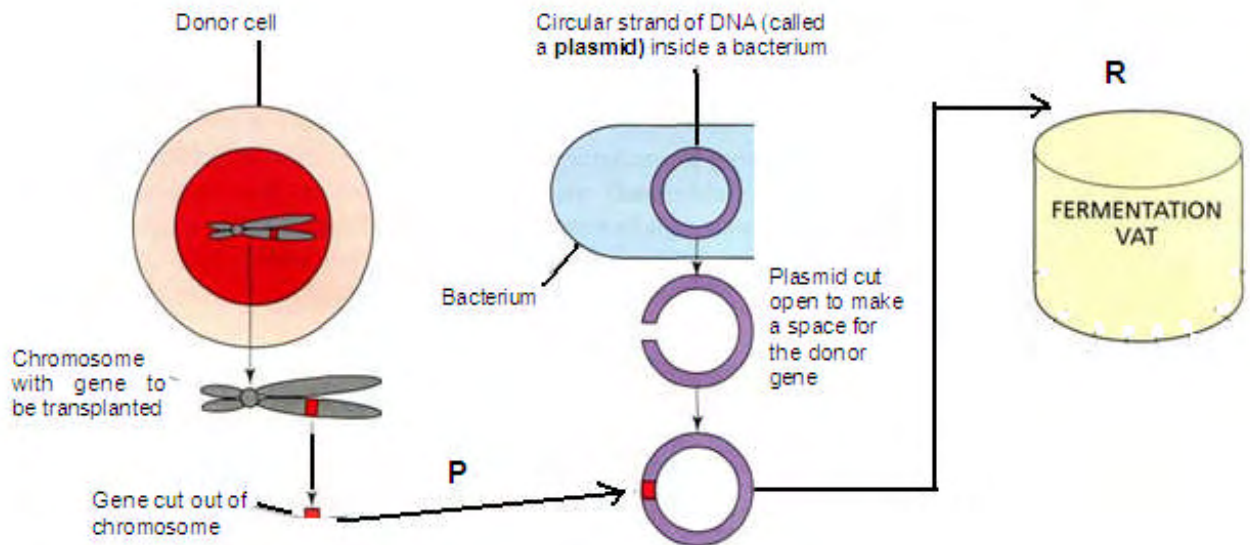


Diagram 8.1

Based on Diagram 8.1, define the concept of genetic engineering.

Berdasarkan Rajah 8.1 definisikan konsep kejuruteraan genetik

[4marks]

- (ii) Diagram 8.2 shows two tomato plants which have been exposed to caterpillars. The normal plant has been completely eaten while the genetically engineered plant shows practically no signs of damage.

Rajah 8.2 menunjukkan dua pokok tomato yang telah didedahkan kepada beluncas. Pokok biasa telah dimakan habis oleh beluncas manakala pokok yang telah mengalami pengubahsuaian kandungan genetikanya tidak dimakan oleh beluncas.

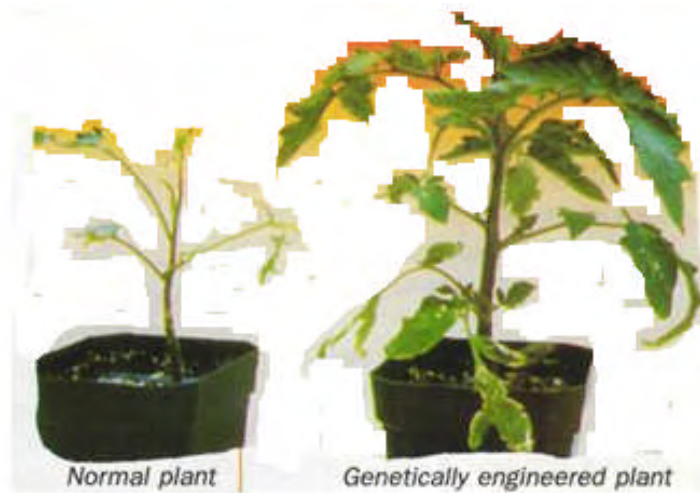


Diagram 8.2

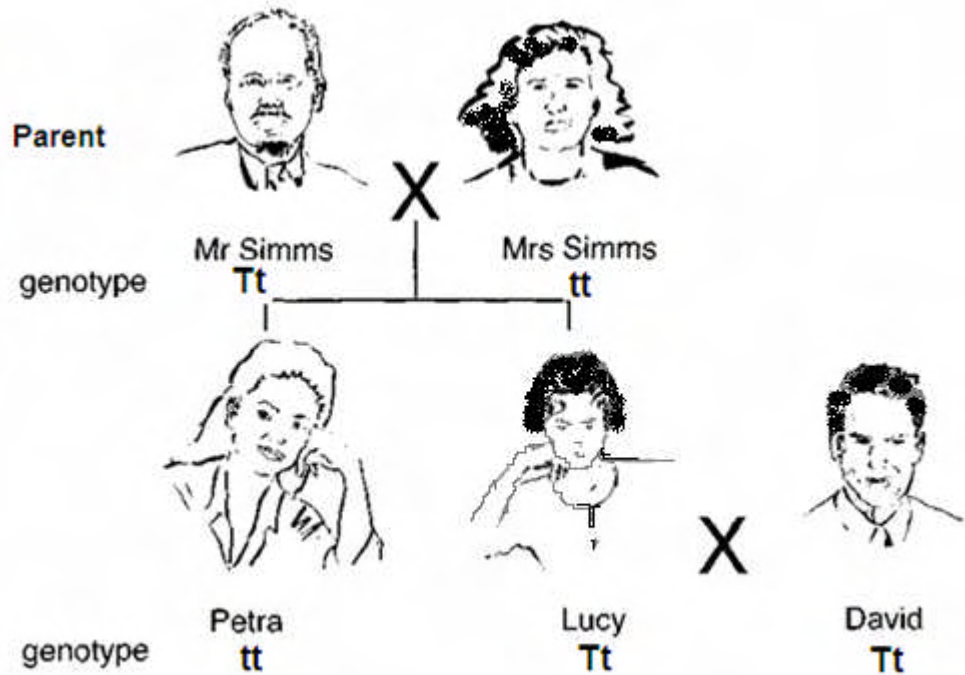
Discuss the benefits and the risks of using the genetically engineered organisms in agriculture and food production .

Bincangkan faedah dan risiko menggunakan organisma yang terubahsuai kandungan genetikanya dalam pertanian dan penghasilan makanan.

[10 marks]

- (b) Thalassaemia is a disease passed on genetically by a recessive allele.
 The allele for the normal condition is T.
 The allele for thalassaemia is t

*Thalassaemia ialah sejenis penyakit yang diturunkan secara genetik oleh alel resesif.
 Alel untuk keadaan normal ialah T
 Alel untuk thalassaemia ialah t*



Explain what thalassaemia is .
 Draw the schematic diagram to show the possible genotype of the offsprings if Lucy and David have children.

*Terangkan apakah thalassaemia .
 Lukiskan rajah skema untuk menunjukkan genotip yang mungkin jika Lucy dan David mempunyai anak.*

[6 marks]

9. (a)

When blood flows through a vessel, it exerts pressure against the walls of the blood vessel. This pressure is called blood pressure.

Apabila darah mengalir dalam salur darah , tekanan dihasilkan terhadap dinding salur darah itu. Tekanan itu dipanggil sebagai tekanan darah.

Explain how blood pressure is maintain at normal level.

Terangkan bagaimana tekanan darah ditetapkan pada aras normal.

[10 marks]

(b) Explain how a healthy lifestyle leads to a healthy cardiovascular system

Terangkan bagaimana cara hidup yang sihat membawa kepada sistem kardiovaskular yang sihat.

[10 marks]

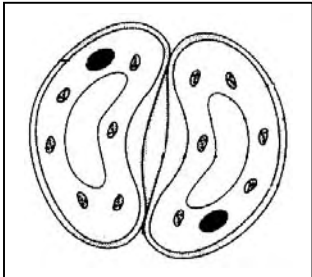
END OF QUESTION PAPER

JABATAN PELAJARAN NEGERI MELAKA
MARKING SCHEME
BIOLOGY PAPER 2
TRIAL EXAMINATION SPM 2008

SECTION A

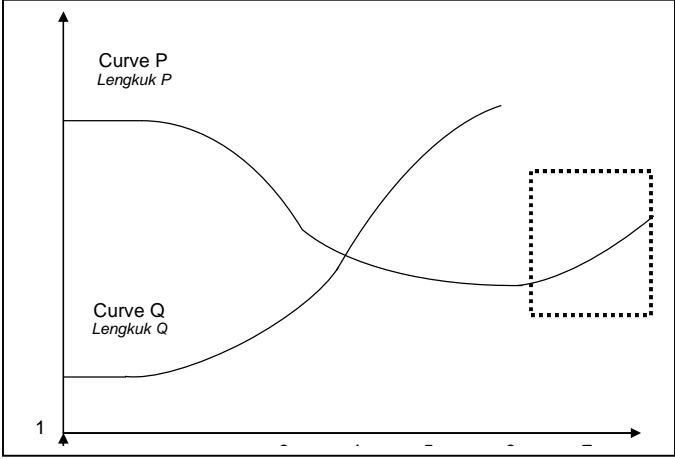
QUESTION 1

Question	Marking criteria	Marks	
1(a)(i)	Able to name tissues P,Q and R correctly <u>Answer</u> P: Xylem tissue Q: Epidermal tissue R: Phloem tissue	1 1 1	3
(ii)	Able to state the function of P and R correctly <u>Sample answer</u> P : To transport water and dissolved minerals from the roots to other parts of a plant /the leaf // To provide mechanical support R : To transport organic compounds from the leaf to other parts of the plant.	1 1	2
(iii)	Able to state a structural feature of tissue P and R to enable them to function efficiently. <u>Sample answer:</u> P : 1. P consists of xylem vessels joined together end to end 2. Cell P does not have any cytoplasm 3. The cell walls are thickened with lignin R : 1. P consists of sieve tubes arranged end to end 2. Sieve tubes have sieve plates to allow continuous flow of organic compound.	1 1 1 1 1	1 1
	NOTE: CHOOSE ANY ONE STRUCTURAL FEATURE OF P AND Q.		

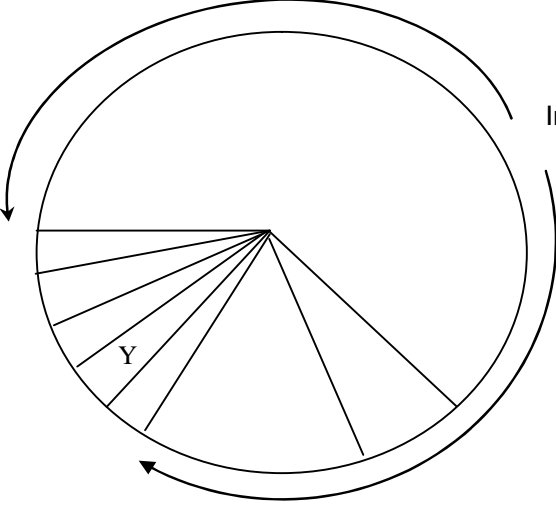
			2
1 (b)	<p>Able to state another one organ which forms system X</p> <p><u>Suggested answers:</u></p> <ol style="list-style-type: none"> 1. Stems 2. Buds 3. Flowers 4. Fruits <p>NOTE : CHOOSE ANY TWO ORGANS</p>	<p>1</p> <p>1</p> <p>1</p> <p>1</p>	2
(c)(i)	<p>Able to draw cell Y</p> 	<p>1</p>	1
(c)(ii)	<p>Able to role of cell Y in increasing the rate of photosynthesis</p> <p><u>Sample answer.</u></p> <p>P1 : When the light intensity is high, the guard cells bend outwards</p> <p>P2 : This causes the stomata to open and allow more carbon dioxide to enter the leaf</p>	<p>1</p> <p>1</p>	2
	TOTAL MARKS		12

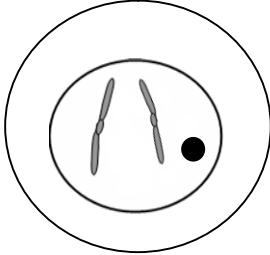
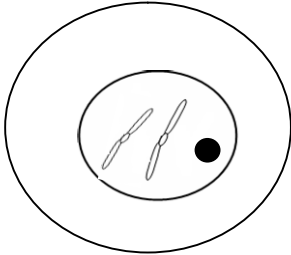
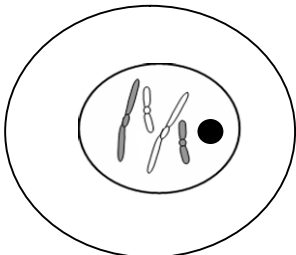
QUESTION 2

Question	Marking criteria	Marks	
2(a)(i)	Able to label S and T correctly <u>Answers</u> S : Primary structure T : Tertiary structure	1 1	Max 1
(ii)	Able to state compound X correctly <u>Answer</u> Protein	1	1
(iii)	Able to state the monomer of the structures in diagram 2.1 correctly <u>Answer</u> Amino acid	1	1
(b)	Able to explain the effect on the digestive system <u>Sample answer:</u> F1 : The compound X is the pancreatic juices // enzymes // lipase // tripsin // protease // pancreatic amylase P2 : Lipids cannot be digested completely P3 : Starch cannot be digested completely P4 : Polypeptides cannot be digested Completely Note : F1 + any 2 Ps	1 1 1 1	1 Max 2 3

(c) (i)	<p>Able to state the curve which represents the amount of substrate</p> <p><u>Answer</u></p> <p>Curve P</p>	1	1
(ii)	<p>Able to explain why curve P is taken to represent the amount of substrate</p> <p><u>Sample answer</u></p> <p>P.1 Curve P is plotted downwards</p> <p>P2. This shows the amount of substrate is decreasing</p> <p>P3. This is due to the substrate being hydrolyzed by the enzyme.</p>	1 1 1	Max 2
(iii)	<p>Able to plot curve P correctly</p> 	1	1
(iv)	<p>Able to explain the shape of curve P in (c)(iii)</p> <p><u>Sample answer</u></p> <p>P.1 When photosynthesis occurs, shoots will start to produce sugars which is later stored as starch</p> <p>P2. This causes an increase in the amount of substrate</p>	1 1	2
TOTAL MARKS			12

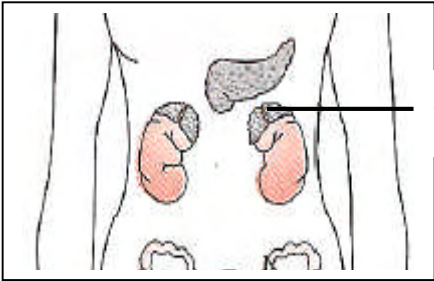
QUESTION 3

Question	Marking criteria	Marks	
3 (a)(i)	<p>Able to state the type of cell division correctly</p> <p><u>Answer</u></p> <p>P : Meiosis</p> <p>Q : Mitosis</p>	1 1	2
(ii)	<p>Able to state one functional difference between the two cell divisions mentioned in (a)(i)</p> <p><u>Sample answer</u></p> <p>P : Meiosis is important in producing gametes</p> <p>Q : Mitosis is important in replacing dead // damaged cells // asexual reproduction // increasing the number of cells (growth)</p>	1 1	2
(b)	<p>Able to label the stage shown by cell Q with a letter Y</p> <p><u>Answer</u></p> 	1	1

<p>(c)</p>	<p>Able to draw a daughter cell of P and Q correctly</p> <p><u>Answer</u></p>  <p>Or</p>  <p>Cell P</p> <p>NOTE : Number of chromosome ,n = 2.</p> <p>The type (colour) of chromosomes</p>  <p>Cell Q</p> <p>NOTE : Number of chromosome ,2n = 4.</p> <p>The type (colour) of chromosomes</p>	<p>1</p> <p>1</p> <p>1</p> <p>1</p>	<p>2</p> <p>2</p>
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(d)	Able to explain the effect if structure X fails to be formed		
	F1 : Structure X is the spindle fibre	1	
	P2 : If structure X fails to be formed, chromosomes cannot be pulled to the opposite poles.	1	
	P3 : This causes the reproductive cells to have either extra or less number of chromosomes.	1	3
TOTAL MARKS			12

QUESTION 4

4 (a) (i)	Able to name the hormone secreted by gland P <u>Answer</u> P : Thyroxine Q : ADH // FSH // LH	1 1	2
(a) (ii)	Able to state the condition caused by the growth of gland P <u>Answer</u> Goiter	1	1
(a) (iii)	Able to suggest how to overcome the problem in (a)(ii) Taking enough iodine in our diet	1	1
(b)	Able to label adrenal gland with letter S correctly. <u>Answer</u> 	1	1

(c)	<p>Able to explain the role of gland R in regulating the person blood glucose concentration from 0 minute to 90 minutes</p> <p><u>Sample Answer</u></p> <p>P1 : From 0 to 60 minutes, the blood glucose level increases more than the normal level</p> <p>P2 : Islet cells in gland R is stimulated to secrete insulin</p> <p>P3 : Insulin stimulates the conversion of excess glucose to glycogen (in the liver)</p> <p>P4 : This cause the glucose level to return to the normal level at the 90th minute</p>	<p>1</p> <p>1</p> <p>1</p> <p>1</p>	<p>Max</p> <p>3</p>
(d) (i)	<p>Able to state the person's blood osmotic pressure based on the situation given</p> <p><u>Answer</u></p> <p>The blood osmotic pressure increases</p>	<p>1</p>	<p>1</p>
(d) (ii)	<p>Able to explain how gland Q involves in returning the osmotic pressure of the blood to normal levels.</p> <p><u>Sample answer</u></p> <p>P1 : The osmoreceptor detects the increase in the osmotic blood pressure</p> <p>P2 : Gland P is stimulated to release more ADH</p> <p>P3: ADH is transported by blood to the kidneys</p> <p>P4 : ADH increases the permeability of the wall of distal convoluted tubule and collecting ducts</p> <p>P5 : More water is reabsorbed from the filtrate into the blood</p>	<p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p>	<p>Max</p> <p>3</p>
	TOTAL MARKS		<p>12</p>

QUESTION 5

5 (a) (i)	Able to label X correctly <u>Answer</u> Amniotic fluid	1	1
(a)(ii)	Able to state two importance of X <u>Answer</u> 1. To protect the fetus by absorbing shock 2. To cushion the fetus from physical damage	1 1	2
(b)	Able to state two substances which are carried by the blood in Y, in the direction of the arrow. <u>Answer</u> 1. Carbon dioxide 2. Nitrogenous waste products	1 1	2
(c)	Able to state whether agglutination will occur in the foetal blood or not <u>Answer</u> No Able to explain the answer given <u>Sample answer</u> The foetal circulatory system and the maternal circulatory system are separated // not directly connected (due to the presence of the placenta)	1 1	2
(d)	Able to explain the effect of smoking to the foetus <u>Sample answer:</u> P1 : Cigarette contain nicotine / DDT / lead particles.	1	

	<p>P2 : Nicotine are small in sizes so it can diffuse from maternal blood capillaries to foetal blood capillaries through the placenta</p> <p>P3 : The substances are carried by umbilical vein to the foetus.</p> <p>P4 : The substances can cause miscarriage // birth defect // illness in the resulting baby</p>	1	
		1	
		1	
		Max	3
(e)	<p>Able explain the role of placenta as an endocrine gland.</p> <p><u>Sample answer</u></p> <p>P1 : After the placenta is formed, it secretes progesterone</p> <p>P2 : The level of progesterone continues to increase</p> <p>P3: The hormone maintains the thickness of the uterus lining</p>	1	
		1	
		1	3
	TOTAL MARKS		12

QUESTION 6

6.	<p>Able to explain the movement of molecule P through the plasma membrane.</p> <p><u>Sample Answer</u></p> <p>F: Facilitated diffusion</p> <p>P1: P molecule binds to the active site of the carrier protein</p> <p>P2: then changes it shape</p> <p>P3: to allows the molecule to pass through the other side of the plasma membrane</p> <p>P4: down the concentration gradient</p> <p style="text-align: right;">Any four</p>	1	
		1	
		1	
		1	
		1	4

(b)	<p>Able to explain the concepts applied in the preservation of food.</p> <p><u>Sample Answer</u></p> <p>P1: excess sugar make the solution outside the mango cells / tissues more <u>hypertonic</u> compare to the mango cells</p> <p>P2: causes <u>water molecules</u> to diffuse out of the cell through <u>plasma membrane</u></p> <p>P3: by osmosis</p> <p>P4: the mango cells become <u>dehydrated</u></p> <p>P5: (at the same time) microorganisms <u>lose water by osmosis</u></p> <p>P6: the acid (vinegar) <u>lower the pH medium</u></p> <p>P7: which is <u>unfavourable for growth</u> of microorganisms (and eventually die)</p> <p style="text-align: right;">Any six</p>	<p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p>	<p>6</p>
(c)	<p>Able to explain explain how gaseous exchange occurs in the alveoli and blood capillaries</p> <p><u>Sample answer:</u></p> <p>P1: Gas exchange is driven by diffusion // Diffusion of a gas depends on differences in partial pressure between the two regions</p> <p>P2: thus does not require energy (for exchange).</p> <p>P3: The molecules move down a concentration gradient.</p> <p>P4: Oxygen moves from the alveoli which is high oxygen concentration</p> <p>P5: to the blood which has lower oxygen concentration</p> <p>P6: due to the continuous consumption of oxygen in the body.</p> <p>P7: Conversely, carbon dioxide is produced by metabolism</p> <p>P8: has a higher concentration in the blood than in the air of alveoli</p> <p>P9: carbon dioxide diffuses out of the blood capillaries into the alveoli</p> <p>P10: Oxygen in the lungs first diffuses through the alveolar wall and dissolves in the blood plasma.</p> <p>P11: then diffuse into red blood cells</p> <p>P12 (Oxygen) bind to hemoglobin.</p> <p>P13: allows a greater amount of oxygen to be transported in the blood</p>		

	Any ten points		10
	TOTAL MARKS		20

QUESTION 7

7.(a)	<p>Able to explain how to achieved a balanced diet by consuming food from diverse source.</p> <p><u>Sample Answer</u></p> <p>P1: Ulam type of salad include fresh leaves/fruits/other plant parts which are eaten raw</p> <p>P2: rich in mineral ions, vitamins and fibre</p> <p>P3: other sources of protein rabbit meat/quail meat/ostrich meat/freshwater fish / prawn</p> <p>P4: rabbit meat is rich in protein but low in fat and cholesterol / the meat has soft texture // ostrich meat is nutritious // fresh water fish low in cholesterol, the protein is easily digestible</p> <p>P5: mushrooms have high nutrient content</p> <p style="text-align: right;">Any four</p>	1 1 1 1 1	4
(b)	<p>Able to explain the technique use to cultivate vegetable</p> <p><u>Sample Answer</u></p> <p>F: Hydroponic (Name of the technique)</p> <p>P1: grow plants in culture solutions</p> <p>P2: the root of the plants are immersed in solution</p> <p>P3: which contains all the macronutrient</p> <p>P4 and micronutrient in the correct proportion</p> <p>P5: the culture solution is aerated</p> <p>P6: to provide sufficient oxygen for respiration</p> <p style="text-align: right;">Any six</p>	1 1 1 1 1 1	6

(c)	<p>Able to explain the food processing methods which is related to the factors that cause food spoilage. <u>Sample answer:</u></p> <p>Concept : Food can be preserved by destroying the microorganism present in the food // by stopping the activities of the microorganism</p> <p>F1: Cooking-.high temperature kill the microorganisms 1 P1: denature the enzyme that cause the breakdown of food 1</p> <p>F2: Treating food with sugar/salt 1 P2: causes the microorganism to lose water due to osmosis 1</p> <p>F3: Adding vinegar will reduced the pH 1 P3 that prevent microorganism from growing 1</p> <p>F4: Fermentation of fruit juices and other food by adding yeast 1 P4: high concentration of alcohol prevent the microorganism from growing 1</p> <p>F5: Dry under hot sun (meat/fish/fruits) 1 P5: removes water from food – dehydrated 1</p> <p>F6: Ultravoilets rays 1 P6: kills microorganism 1</p> <p>F7: Pasteurisation – destroy bacteria which cause tuberculosis and typhoid 1 P7: (technique) -Food is heated to 63⁰C for 30 minutes / 72⁰C for 15 seconds followed by rapid cooling to -10⁰C 1 P7.1: (Pasteurisation) retains the natural flavour and nutrients 1</p> <p>F8: Canning – uses heat sterilization to kill microorganisms and their spores 1 P8 (technique) -.Food is packed in cans, steamed at high temperature and pressure to drive out air 1 P8.1: the vaccum created within the cans prevent growth of microorganism 1</p> <p>F9: Refrigeration 1 P9: food stored at temperature below 0⁰C prevent growth/germination of microorganism 1 P9.1: food remain fresh for a long period of time 1</p> <p>Any ten : F + P correctly</p>		
	TOTAL MARKS		20

QUESTION 8

8. (a) (i)	<p>Able to explain the concept of genetic engineering</p> <p><u>Sample Answer</u></p> <p>P1: the technique used to extract, P2: to separate P3: to transfer / insert P4: gene from other organism / donor P5: to another organism</p> <p style="text-align: right;">Any four</p>	<p>1 1 1 1 1 1</p>	<p>4</p>
(b)	<p>Able to discuss the benefits and the risks of using the genetically engineered organisms in agriculture and food production</p> <p><u>Sample Answer</u></p> <p><u>The benefits</u></p> <p>F1: Genetic engineering used to produce disease resistant/ pest resistant plants e.g legumes, peas , maize and beans P1.1: Less pesticides are used P1.2: less pollution to the environment // better health for consumers.</p> <p>F2: Increase yield of crops / profitability P2.1: better livelihood for farmers. P2.2: help to solve problems of insufficient food</p> <p>F3: Increase resistance to herbicide eg. soya bean P3: which allows weeds to be killed without affecting the crop plant</p> <p>F4: Able to survive on poorer quality grassland P4: can resist drought //climatic changes</p> <p>F5 : create crops with better nutrition value e.g tomatoes P5.1: with higher vitamin A content P5.2: help to solve problems of malnutrition.</p> <p>F6: create crops with longer shelf lives e.g tomato P6: less food wastage</p>	<p>1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1</p>	

	<p>F7 : genetically modified livestock e. g cows P7: produce meat with less fat / more milk.</p> <p style="text-align: right;">Any six points (F/ P)</p> <p><u>The risks</u></p> <p>F8: Pest resistant genes may be transferred to weeds P8: may be difficult to control growth of weeds.</p> <p>F9: Some transgenic crops may have animal genes P9 : this may not be acceptable to certain groups for religious reasons.</p> <p>F10: Genetically modified foods may be harmful to health P10: may activate human genes to cause cancer.</p> <p>F11: Transgenic organisms may affect the survival of other organisms in the ecosystem. P11: may cause the imbalance of nature / ecosystem</p> <p style="text-align: right;">Any four points (F/P)</p>	<p>1 1</p> <p>6</p> <p>1 1</p> <p>1 1</p> <p>1 1</p> <p>1 1</p> <p>1 1</p> <p>4</p>	<p>10</p>
(c)	<p>Able to explain what thalassaemia is .</p> <p><u>Suggested Answer</u></p> <p>P1: Thalassaemia is an inherited blood disorder that causes the body to produce less <u>hemoglobin</u>.</p> <p>P2: <u>Hemoglobin</u> helps red blood cells spread oxygen all through the body.</p> <p>P3: Low levels of hemoglobin may cause anemia, / feel weak and tired. / may damage organs and result in death.</p> <p style="text-align: right;">Any two</p>	<p>1 1 1</p>	<p>2</p>

	<p>Able to draw the schematic diagram to show the possible genotype of the offspring if Lucy and David have children.</p> <p><u>Sample answer:</u></p> <p>Parent Lucy X David</p> <p>Possible gametes T t T t</p> <p>Possible Genotypes of offspring TT Tt Tt tt</p> <p>Ratio : 3 normal : 1 thalassemia</p> <p>Any four</p>	<p>6</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>4</p>	
	<p>TOTAL MARKS</p>		<p>20</p>

QUESTION 9

9.(a)	<p>Able to explain how blood pressure is maintained at normal level.</p> <p>Criteria:</p> <p>C1: Definition of blood pressure C2: Name of the mechanism C3: Cardiovascular centre C4: The responses - if increases / decreases</p> <p><u>Sample Answer</u></p> <p>F1: Blood pressure is the force that drives blood through arteries and capillaries P1.1: higher pressure in the systole / contraction stage P1.2: lower pressure in diastole / relaxation stage</p> <p>F2: Regulated by negative feedback mechanism. P2.1: Baroreceptors or pressure receptors located in the arch of aorta and arteries P2.2: carotid arteries, detect blood pressure flowing through them P2.3: to the cardiovascular centre in the medulla oblongata</p> <p>F3: If blood pressure increases P3.1: baroreceptors send impulses to the cardiovascular centre at a faster rate P3.2 sends nerve impulses to the heart P3.3 results in a weaker cardiac muscle contraction P3.4 the smooth muscles of the arteries will relax P3.5 this decreases the resistance of blood flow in the blood vessels P3.6 by widening of blood vessels / vasodilation P3.7 lower the blood pressure / back to the normal value.</p> <p>F4: If blood pressure falls /decreases P4.1 baroreceptors are less stimulated P4.2 send nerve impulses at a slower rate to the cardiovascular centre P4.3 cardiovascular centre sends nerve impulses to the heart P4.4 that results in a stronger cardiac muscle contraction. P4.5 The smooth muscles of the arteries contract</p>		
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	<p>P4.6 increases the resistance of blood flow in the blood vessels</p> <p>P4.7 narrowing of blood vessels / vasoconstriction</p> <p>P4.8 increase the blood pressure / back to the normal value</p> <p style="text-align: right;">Any ten points</p>		10
(b)	<p>Able to explain how a healthy lifestyle leads to a healthy cardiovascular system.</p> <p>Criteria:</p> <p>C1 What are cardiovascular diseases</p> <p>C2 Factors contribute to cardiovascular disease</p> <p>C2 Ways to ensure a healthy cardiovascular system</p> <p><u>Sample answer:</u></p> <p><u>(F1: What are cardiovascular diseases)</u></p> <p>P1.1 Cardiovascular diseases are disorders of the heart / the blood circulatory system</p> <p>P1.2: Examples - coronary thrombosis/atherosclerosis / heart attack/hypertension/embolism / angina</p> <p><u>(F2: Factors – due to)</u></p> <p>P2: genetic / family history /age</p> <p>P2.1: the type of food we eat / bad eating habits</p> <p>P2.2: diet high in fats/ cholesterol and low in fibre</p> <p>P2.3: deficiencies in antioxidant vitamins and minerals</p> <p>P2.4: sedentary lifestyle / lack of exercise</p> <p>P2.5: stress / cigarette smoking</p> <p>P2.6: obesity / diabetes</p> <p><u>(F3: Ways to ensure a healthy cardiovascular system)</u></p> <p>P3.1: A healthy lifestyle - regular exercise and a proper balanced diet</p> <p>P3.2: Avoid / minimize-excess sugar - high in calories</p> <p>P3.3 Avoid / minimize processed foods - harmful artificial substances</p> <p>P3.4: Avoid /r minimize foods that contain hydrogenated or</p>	<p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p>	

	partially hydrogenated fats and trans fatty acids		
	P3.5: Consumption of such foods will cause cardiovascular diseases	1	
	P3.6: Do not cook meat or fat at high temperatures	1	
	P3.7: (Such practice will) avoid fat and cholesterol oxidation	1	
	P3.8 (responsible for) build up of arterial plaque / injury to arterial cells	1	
	P3.9: Eat less - only when hungry / do not overeat		
	P3.10: Adequate fiber intake help prevent cardiovascular diseases (heart and stroke)	1	
	Any ten points	1	
			10
	TOTAL MARKS		20



JABATAN PELAJARAN MELAKA

Dengan Kerjasama

**PERSIDANGAN KEBANGSAAN PENGETUA-PENGETUA
SEKOLAH MENENGAH MALAYSIA
CAWANGAN NEGERI MELAKA**

PEPERIKSAAN PERCUBAAN SPM 2008

BIOLOGY

Kertas 3

Satu jam tiga puluh minit

JANGAN BUKA KERTAS SOALAN INI SEHINGGA DIBERITAHU

1. *Tuliskan **Nama dan Tingkatan** anda dalam ruangan yang disediakan*
2. *Calon dikehendaki menjawab **semua** soalan.*
3. *Calon dikehendaki membaca maklumat yang terdapat dalam halaman 2*

<i>Untuk kegunaan Pemeriksa</i>		
Soalan	Markah Penuh	Markah Diperoleh
1	33	
2	17	
Jumlah		

Kertas soalan ini mengandungi **12** halaman bercetak

**INFORMATION FOR CANDIDATES
MAKLUMAT UNTUK CALON**

1. This question consists of two question: **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 space provided in the question paper.
*Jawab **semua** soalan. Jawapan anda bagi **Soalan 1** hendaklah ditulis pada ruang yang disediakan dalam kertas soalan ini.*
3. Write your answers for **Question 2** on the “helaian tambahan” provided by the invigilators. You may use equations, diagrams, graph and other suitable methods to explain your answer.
*Jawab anda bagi soalan **Soalan 2** 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. Show your working, it may help you to get marks.
Tunjukkan kerja pengiraan, ini boleh membantu anda mendapat 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 of a questions are shown in brackets.
Markah yang diperuntukkan bagi setiap soalan atau ceraiian 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. You may use a non-programmable scientific calculator.
Anda dibenarkan menggunakan kalkulator saintifik yang tidak boleh deprogram.
9. You are advised to spend 45 minutes to answer question in **Question 1** and 45 minutes for **Question 2**.
*Anda dinasihatkan supaya mengambil masa 45 minit untuk menjawab soalan dalam **Soalan 1** dan 45 minit untuk soalan **Soalan 2**.*
10. 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. Ikatkan helaian tambahan bersama-sama kertas soalan ini dan serahkan kepada pengawas peperiksaan pada akhir peperiksaan.*

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

A group of students carried out an experiment to investigate the effect of running at a different distance on the content of carbon dioxide in the exhaled air. A boy was asked to run at different distances at a time which are 100 meters, 400 meters and 800 meters. Immediately after running for a specific distance, the boy was asked to exhale into a test tube as shown in Diagram 1.1. The air is analysed immediately for the amount of carbon dioxide produced with a J-tube as shown in Diagram 1.2. The boy was allowed to rest for 30 minutes before he started running for another distance.

Sekumpulan pelajar telah menjalankan satu eksperimen untuk mengkaji kesan larian pada jarak yang berbeza terhadap kandungan karbon dioksida di dalam udara hembusan. Seorang pelajar lelaki telah diminta untuk berlari pada jarak yang berbeza iaitu 100 meter, 400 meter dan 800 meter. Sebaik sahaja beliau selesai berlari pada jarak tertentu, beliau telah diminta untuk menghembus nafas kedalam sebuah tabung uji seperti yang ditunjukkan pada rajah 1.1. Udara hembusan itu kemudiannya dianalisis untuk mendapatkan jumlah karbon dioksida yang dihasilkan dengan menggunakan tiub J seperti pada rajah 1.2. Pelajar lelaki itu dibenarkan untuk berehat selama 30 minit sebelum memulakan larian pada jarak seterusnya.

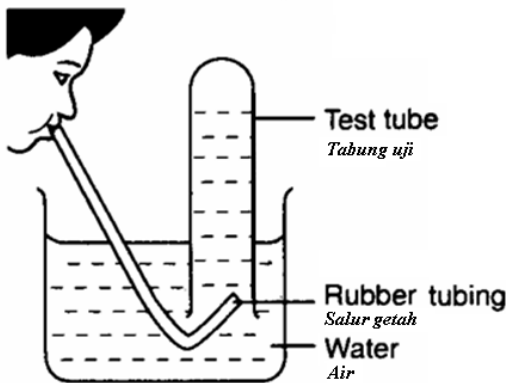


DIAGRAM 1.1
 RAJAH 1.1

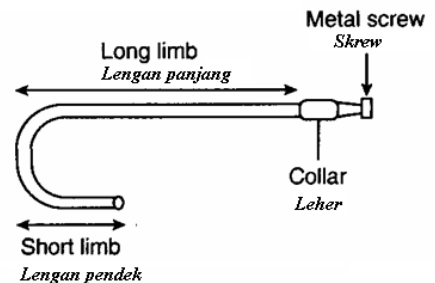


DIAGRAM 1.2
 RAJAH 1.2

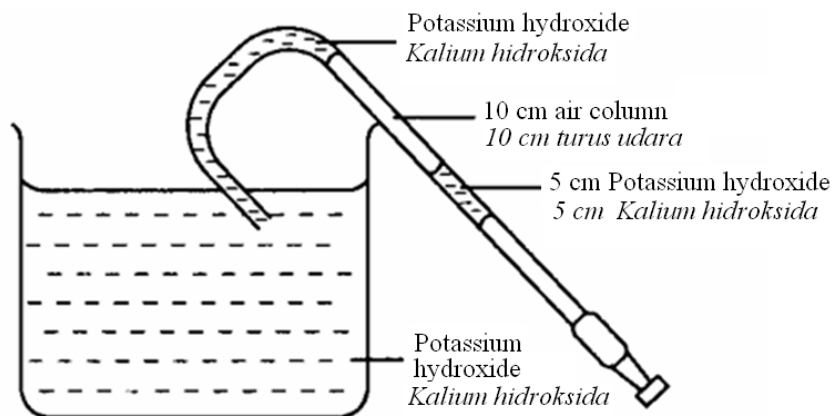


DIAGRAM 1.3

The following steps were carried out for each activity.

Langkah-langkah berikut telah dijalankan untuk setiap aktiviti.

- Step 1 : The short limb of J-tube is dipped into potassium hydroxide solution as shown in Diagram 1.3.
- Langkah 1 : Lengan pendek tiub-J ditenggelamkan ke dalam larutan kalium hidroksida sebagaimana Rajah 1.3.*
- Step 2 : The screw is rotated to withdraw potassium hydroxide to a level close to the short limb of the J-tube.
- Langkah 2 : Skrew dilaraskan untuk mendapatkan aras larutan kalium hidrosida supaya memenuhi lengan pendek tiub-J.*
- Step 3 : Then, immediately the J-tube is dipped into the exhale air in the test tube and the screw is rotated to withdraw 10 cm of air from the test tube into the J-tube.
- Langkah 3 : Tiub-J dengan pantas dimasukkan ke dalam tabung uji udara hembusan dan skrew di laraskan untuk mendapatkan 10 cm udara daripada tabung uji ke dalam tiub-J.*
- Step 4 : Then step 2 is repeated until the level of potassium hydroxide reaches the collar of the J-tube as shown in Diagrams 1.4.
- Langkah 4 : Langkah 2 diulang sehingga aras larutan kalium hidrosida menghampiri leher tiub-J sepertimana Diagram 1.4.*
- Step 5 : The potassium hydroxide is moved back and forth to maximise the reaction of air inside the air column with the reagent for five minute and the length of air column is measured and recorded.
- Langkah 5 : Lautan kalium hidrosida digerak ke depan dan ke belakang untuk tindakbalas maksima udara dalam turus udara dengan reagen selama lima minit dan aras kolum turus kemudiaannya di ukur dan direkod.*

Diagram 1.4 shows the length of air column in the J-tube before treatment using 0.1% potassium hydroxide solution.

Rajah 1.4 menunjukkan panjang turus udara di dalam Tiub-J sebelum diuji dengan menggunakan 0.1 % larutan kalium hidroksida.

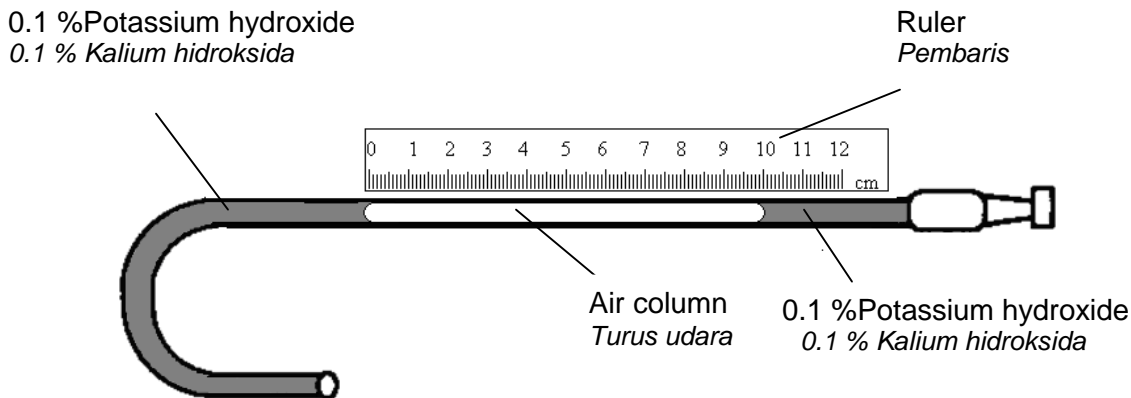


DIAGRAM 1.4
RAJAH 1.4

(a) The following are some of the materials and apparatus used in this experiment.

Di bawah adalah sebahagian daripada bahan dan radas yang digunakan di dalam eksperimen ini.

Sportsman, J-tube, beaker, 0.1 % potassium hydroxide, water, ruler, test tube, rubber tube
Ahli sukan, Tiub-J, bikar, 0.1 % kalium hidroksida, air, pembaris, tabung uji, salur getah

List all the materials and apparatus used in Table 1.

Dalam Jadual 1, senaraikan semua bahan dan radas yang digunakan..

Material Bahan	Apparatus Radas

[3 marks]

TABLE 1

Table 2 shows the results of this experiment.
Jadual 2 menunjukkan keputusan eksperimen ini.

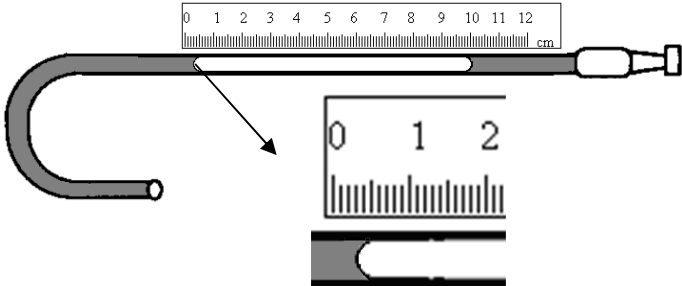
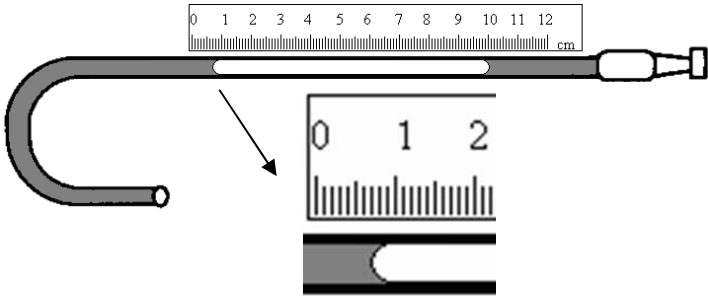
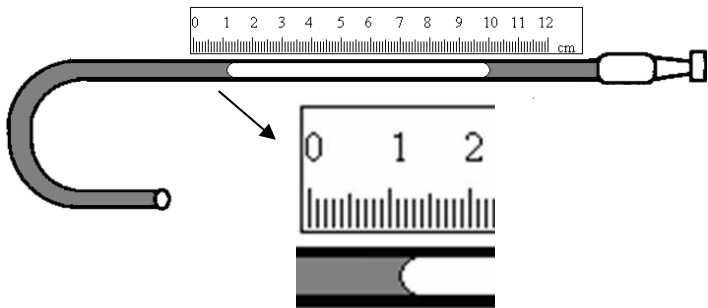
The distance <i>Jarak</i>	Length of air column after five minutes treated with potassium hydroxide. <i>Panjang turus udara selepas lima minit diuji dengan kalium hidroksida</i>	Length of air column (cm) <i>Panjang turus udara (cm)</i>
100 meters		<div style="border: 1px solid black; width: 100px; height: 50px; display: flex; align-items: center; justify-content: center;"> cm </div>
400 meters		<div style="border: 1px solid black; width: 100px; height: 50px; display: flex; align-items: center; justify-content: center;"> cm </div>
800 meters		<div style="border: 1px solid black; width: 100px; height: 50px; display: flex; align-items: center; justify-content: center;"> cm </div>

TABLE 2
JADUAL 2

(b) Record the length of air column in the boxes provided in Table 2.
Rekodkan panjang turus udara di dalam petak yang disediakan dalam Jadual 2.

[3 marks]

3

- (c) (i) State **two** different observations made from Table 2.
*Nyatakan **dua** pemerhatian yang berbeza yang dibuat daripada Jadual 2.*

Observation 1 / *Pemerhatian 1*

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

Observation 2 / *Pemerhatian 2*

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

[3 marks]

3

- (ii) State the inference which corresponds to the observations in 1 (c)(i)
Nyatakan inferens yang sepadan dengan pemerhatian di 1 (c)(i)

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

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

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

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

[3 marks]

3

(d) Complete Table 3 based on this experiment.
Lengkapkan Jadual 3 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>
Controlled variable <i>Pembolehubah dimalarkan</i>

[3 marks]

Table 3
Jadual 3

3

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

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

[3 marks]

3

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

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

- The distance taken by the boy to run.
Jarak yang diambil oleh pelajar untuk berlari
- The difference in the air column before and after running.
Perubahan panjang turus udara sebelum dan selepas berlari.
- Percentage of carbon dioxide.
Used formula:

$$\text{Percentage of carbon dioxide} = \frac{\text{Difference in the length of air column} \times 100}{\text{Original length of air column}}$$

- *Peratus kandungan karbon dioksida*

Guna formula:

$$\text{Peratus karbon dioksida} = \frac{\text{Perubahan panjang turus udara} \times 100}{\text{Panjang asal turus udara}}$$

[3 marks]



(ii) Use the graph paper provided to answer this part .
 Using the data in 1 (f) (i), draw the graph of percentage of carbon dioxide against the distance taken by the boy to run.
*Gunakan kertas graf yang disediakan untuk menjawab ceraiian soalan ini.
 Menggunakan data di 1 (f)(i), lukis graf peratus kandungan karbon dioksida melawan jarak yang diambil untuk pelajar itu berlari..*

[3 marks]

	3
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(g) Based on the graph in 1(f)(ii), explain the relationship between the distance taken and the percentage of carbon dioxide released.
Berdasarkan graf di 1 (f)(ii), terangkan hubungan di antara jarak yang diambil dan peratus karbon dioksida yang dihasilkan .

.....

[3 marks]

	3
--	---

(h) This experiment is repeated at 1500 meters. Predict the percentage of carbon dioxide released.
 Explain your prediction.
*Eksperimen ini diulang bagi larian 1500 meters. Ramalkan peratus karbon dioksida yang dihasilkan oleh ahli sukan tersebut.
 Terangkan ramalan anda.*

.....

[3 marks]

	3
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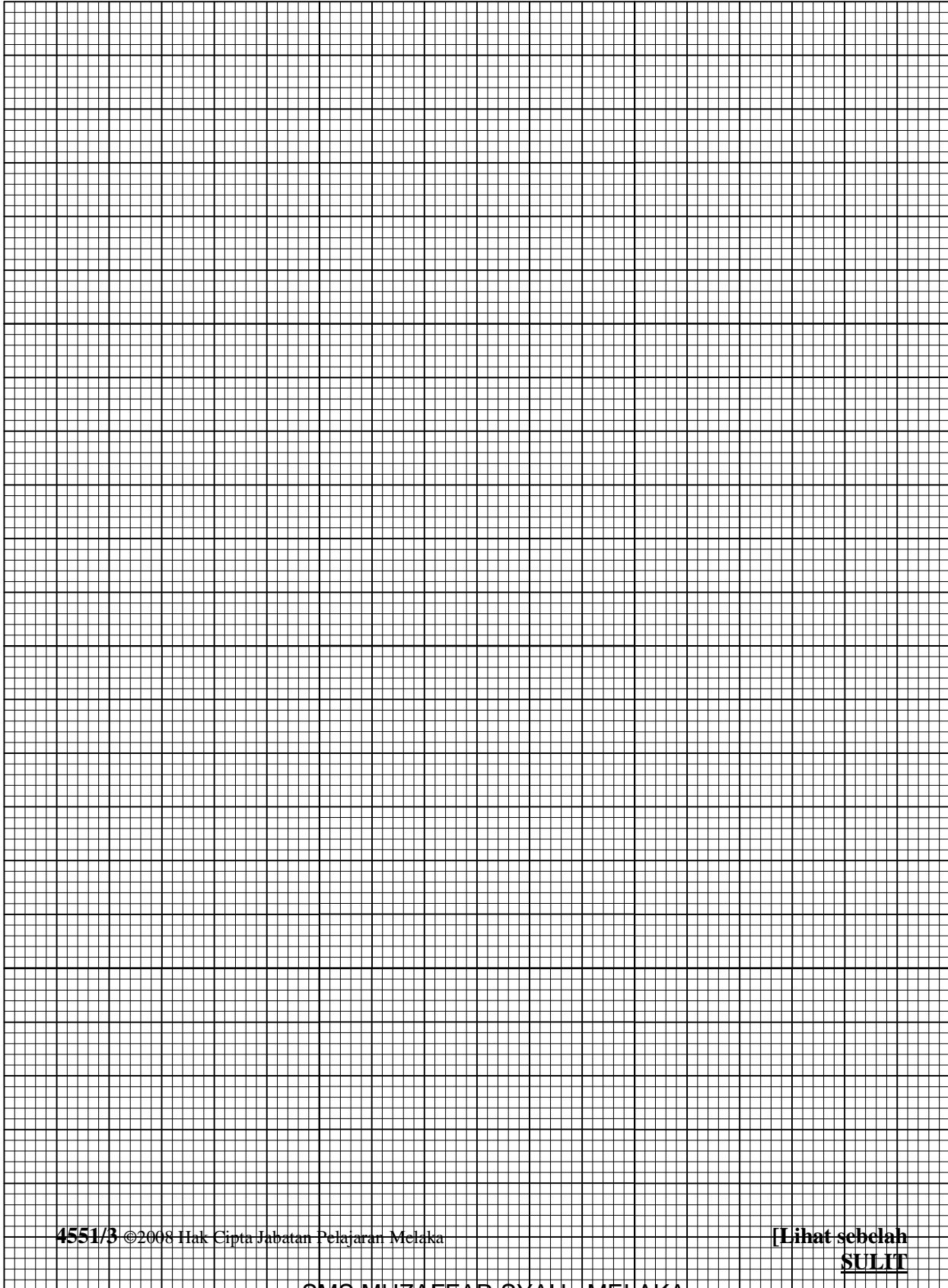
(i) Based on the result from this experiment, what can you deduce about expired air?
Berdasarkan keputusan daripada eksperimen ini, apakah yang dapat dirumuskan tentang udara hembusan?

.....

[3 marks]

	3
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Graph of the percentage of carbon dioxide against the distance taken by the boy
Graf peratus kandungan karbon dioksida melawan jarak yang diambil oleh pelajar



2. Mamat is a farmer. He owns a plot of land in Cameron Highlands which is quite high above sea level and is quite cold as well. He plants vegetables and some temperate fruit trees.

Mamat adalah seorang petani. Dia mempunyai sebuah ladang di Cameron Highland yang terletak sangat tinggi dari aras laut dan terlalu sejuk. Beliau menanam sayur-sayuran dan sedikit tumbuhan buah-buahan iklim sederhana.

In the afternoon, Mamat used to notice his vegetable plants wilt, though the surrounding is not hot. This phenomenon does not happen early in the morning.

Pada hari bercahaya dan bersinar, Mamat sedia maklum tanaman sayurannya menjadi layu walaupun hari tidak panas. Fenomena ini tidak berlaku pada waktu awal pagi.

Based on the above information, plan a laboratory experiment to determine the effects of light intensity on the rate of transpiration. The planning of your experiment must include the following aspects.

Berdasarkan pernyataan di atas, rancangkan satu eksperimen mengkaji untuk kesan keamatan cahaya ke atas kadar transpirasi. Perancangan eksperimen anda hendaklah meliputi aspek-aspek berikut:

- Problem statement / *Penyataan masalah*
- Aim of investigation / *Objektif kajian*
- Hypothesis / *Hipotesis*
- Variables / *Pembolehubah*
- List of apparatus and material / *Senarai radas dan bahan*
- Technique used / *Teknik yang digunakan*
- Experimental procedure or method / *Kaedah atau prosedur eksperimen*
- Presentation of data / *Cara data dipersembahkan*
- Conclusion / *Kesimpulan*

[17 marks]

**END OF QUESTION PAPER
KERTAS SOALAN TAMAT**

**SCHEME BIOLOGY
PAPER 3
TRIAL 2008**

1(a)

Score	Explanation												
	<p>Answer;</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th style="text-align: center;">Apparatus</th> <th style="text-align: center;">Material</th> </tr> </thead> <tbody> <tr> <td>1. J-tube</td> <td>1. Potassium hydroxide</td> </tr> <tr> <td>2. Ruler</td> <td>2. Water</td> </tr> <tr> <td>3. Rubber tube</td> <td>3. The boy</td> </tr> <tr> <td>4. Beaker</td> <td></td> </tr> <tr> <td>5. Test tube</td> <td></td> </tr> </tbody> </table>	Apparatus	Material	1. J-tube	1. Potassium hydroxide	2. Ruler	2. Water	3. Rubber tube	3. The boy	4. Beaker		5. Test tube	
Apparatus	Material												
1. J-tube	1. Potassium hydroxide												
2. Ruler	2. Water												
3. Rubber tube	3. The boy												
4. Beaker													
5. Test tube													
3	<i>Able to list all material and 4 or 5 apparatus used in the experiment correctly.</i>												
2	<i>Able to list all material and 2 or 3 apparatus correctly.</i>												
1	<i>Able to list any one material and one apparatus correctly.</i>												
0	<i>No response or wrong response</i>												

1 (b)

Score	Explanation
	<p>Answer; Data 1: 9.7 cm Data 2: 9.3 cm Data 3: 8.9 cm</p>
3	<i>Able record all three data correctly.</i>
2	<i>Able record any two data correctly.</i>
1	<i>Able record only one data correctly.</i>
0	<i>No response or wrong response</i>

1 (c) (i)

Score	Explanation
3	<p><i>Able to state any two correct observation based on following criteria.</i></p> <p>P1 – length of air column P2 – sportsman activities</p> <ol style="list-style-type: none"> 1. After running for 100 metres ,the length of the air column is 9.7 cm. 2. After running for 400 metres, the length of the air column is 9.3 cm. 3. After running for 800 metres, the length of the air column is 8.9 cm.
2	<p><i>Able to state any one correct observation or two inaccurate response.</i></p> <ol style="list-style-type: none"> 1. Running for 100 metres produces higher length of air column. 2. Running faster produces the lower length of air column.
1	<p><i>Able to state one correct observation or two inaccurate response or idea.</i></p> <ol style="list-style-type: none"> 1. Different distances result in different length of air column.
0	<i>No response or wrong response (response like hypothesis)</i>

1(c) (ii)

Score	Explanation
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3	<p><i>Able to state two reasonable inferences for the correspond to the observation.</i></p> <p>P1 – amount of air / carbon dioxide P2 – absorbed by potassium hydroxide</p> <p>1. The longer air column is a result of little amount of air / carbon dioxide being absorbed by potassium hydroxide 2. The shorter air column is a result of more air / carbon dioxide being absorbed by potassium hydroxide</p>
2	<p><i>Able to state one correct inference and one inaccurate inference.</i></p> <p>1. Little air has lost from the air column. 2. Less water has lost from the air column</p>
1	<p><i>Able to state one correct inference or two inaccurate inference or idea.</i></p> <p>1. inference like hypothesis</p>
0	<p><i>No response or wrong response.</i></p>

1(d)

Score	Explanation
	<p><i>Able to state the variable and the method to handle variable correctly (✓) for each variable and method</i></p> <p>Manipulated Variable: The distance taken by the boy to run (✓) Method to handle: The boy ran at different distances which were 100 m, 400 m and 800 m (✓)</p> <p>Responding Variable: Length of air column (✓) Method to handle: Measure and Record the length of air column in J-tube by using a ruler (✓)</p> <p>Controlled variable : Initial length of air column (✓) Method to handle: Measure the initial distance of air column which was 10 cm. (✓)</p>
3	<i>Able to get all 6 (✓)</i>
2	<i>Able to get 4 – 5 (✓)</i>
1	<i>Able to get 2 – 3 (✓)</i>
0	<i>No response or wrong response</i>

1(e)

Score	Explanation
3	<p>Able to state the hypothesis correctly based on the following criteria: P1 (manipulated) – the distance P2 (responding) – length of air column. R - State the relationship between P1 and P2.</p> <p>1. The farther the distance taken by the boy, the shorter the length of the air column . 2. The content of carbon dioxide increases when the boy ran at a farther distance</p>
2	<p>Able to state the hypothesis but less accurate. Running at a farther distance increases the cellular respiration.</p>
1	<p>Able to state the idea of the hypothesis. The carbon dioxide produced is different when running at different distances. Running at different distance produces different amount of carbon dioxide</p>
0	<i>No response or wrong response</i>

1(f) (i)

Score	Explanation												
3	<p>Able to construct a table and record the result of the experiment which the following criteria:</p> <p>C – State the distance taken by the boy to run (√) D – Transfer all data correctly / the difference in air column (√) T – calculate percentage of carbon dioxide(unit %) (√)</p> <table border="1" style="margin-left: 40px;"> <thead> <tr> <th>The distance</th> <th>The difference in air column</th> <th>Percentage of carbon dioxide (%)</th> </tr> </thead> <tbody> <tr> <td>100</td> <td>0.3</td> <td>3.0</td> </tr> <tr> <td>400</td> <td>0.7</td> <td>7.0</td> </tr> <tr> <td>800</td> <td>1.2</td> <td>12.0</td> </tr> </tbody> </table>	The distance	The difference in air column	Percentage of carbon dioxide (%)	100	0.3	3.0	400	0.7	7.0	800	1.2	12.0
The distance	The difference in air column	Percentage of carbon dioxide (%)											
100	0.3	3.0											
400	0.7	7.0											
800	1.2	12.0											
2	Able to construct a table and record any two criteria												
1	Able to construct a table and record any one criteria												
0	<i>No response or wrong response</i>												

1 (f) (ii)

Score	Explanation
	<p>Able to draw the graph for relationship between the distance taken by the boy to run against the percentage of carbon dioxide.</p> <p>P1 – right y-axis and x-axis (√) P2 – Percentage of carbon dioxide (√) P3 – Smooth curve (didn't touch X-axis or/and Y-axis) (√)</p>
3	Able to get all criteria correct
2	Able to get any two criteria correct
1	Able to get any one criteria correct
0	<i>No response or wrong response</i>

1(g)

Score	Explanation
3	<p><i>Able to interpret data correctly and explain with the following aspect.</i></p> <p>Relationship: P1 - Able to state <u>the relationship between manipulated and responding variable</u></p> <p>Explanation: P2 - Able to state the percentage of <u>carbon dioxide released</u>. P3 - Able to state <u>the distance taken by the boy to run</u>.</p> <p>Sample Answer: When the distance taken by the boy to run increases, the percentage of carbon dioxide in the exhaled air increases</p>
2	<i>Able to interpret data correctly with two aspect correctly.</i>
1	<i>Able to interpret data correctly with one aspect correctly. The water absorb is higher/increase.</i>
0	<i>No response or wrong response</i>

1(h)

Score	Explanation
3	<p><i>Able to predict and explain the outcome of the experiment correctly with the following aspect.</i></p> <p>Prediction: P1 – Able to predict <u>the length of air column// percentage of carbon dioxide (12 % or more)</u></p> <p>Explanation: P2 – Able to state the <u>increase of cellular respirations / most active</u> P3 – Able to state <u>more carbon dioxide produced / anaerobic respiration</u></p> <p>Sample answer: The length of air column is 8.9 cm (less) //The percentage of carbon dioxide released by the boy is 12 % / or more / because cellular respiration increases and more carbon dioxide is produce// an anaerobic respiration takes place.</p>
2	<i>Able to predict based on any two criteria.</i>
1	<i>Able to predict based on any one criteria.</i>
0	<i>No response or wrong response</i>

1(h)

Score	Explanation
3	<i>Able to state the definition of expired air completely and correctly, based on the following criteria.</i> P1 – contain carbon dioxide P2 – carbon dioxide is absorbed by potassium hydroxide P3 – amount of carbon dioxide produced is influenced by the distance taken <i>Sample answer</i> The expired air contains carbon dioxide which can be absorbed by potassium hydroxide and the amount of carbon dioxide produced is influenced by the distance taken by the boy.
2	<i>Able to state the definition of expired air operationally based on any two criteria.</i>
1	<i>Able to state the definition of expired air operationally based on any one criterion or an ideal or hypothesis form.</i>
0	<i>No response or wrong response</i>

Question 2:

Score	Explanation
01 ✓	Identified the problem
3	<i>Able to state problem statement correctly</i> P1 – light intensity P2 – rate of transpiration <i>Sample answer:</i> Is the light intensity increase the rate of transpiration of plant?
2	<i>Able to state problem statement but slightly incorrect</i>
1	<i>Able to state idea only (not in question)//Hypothesis form.</i>
0	<i>No response or wrong response.</i>

✓	Objective of study/Aim <i>Able to state the objective of study correctly</i> <i>Sample answer:</i> To investigate the effects of light intensity on the rate of transpiration of a balsam plant.
✓	Variables <i>Able to state any one item for each variable given.</i> Manipulated Variable : distance light sources// ligh intensity Responding Variable : Time taken for the air bubble move// rate of transpiration Fixed / Controlled Variable: temperature//type of plant

02	√	Statement of hypothesis P1 – light intensity P2 – rate of transpiration P3 – The rate transpiration / air bubble movement / is influence by light intensity
3		<i>Able to state the hypothesis correctly by relating two variable correctly.</i> <i>Sample answer:</i> The higher the light intensity, the rate of transpiration of a balsam plant increase.
2		<i>Able to state hypothesis but slightly incorrect.</i>
1		<i>Able to state idea only.</i>
0		No response or wrong response.

05	√	List of apparatus Photometer, stopwatch, cutter (knife), beaker, fluorescent lamp, meter ruler List of materials Balsam plant, Vaseline, water, tissue
3		<i>Able to list down 4 apparatus and 3 material.</i>
2		<i>Able to list down 2 apparatus and 2 material.</i>
1		<i>Able to list down 1 apparatus and 1 material.</i>
0		No response or wrong response.

B1 – 1	√	Technique used Measure and record the time taken for the air bubble to move in a distance for 10 cm by (B1-1).
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04	√	Experimental procedure <ol style="list-style-type: none"> 1. A suitable balsam plant is selected (K1) and is cut using a sharp knife (K1). The cut end is immediately immersed in a beaker filled with distilled water. (K1) 2. The cut plant is then fixed onto a photometer (K1) and the joints between the plant and the photometer are sealed using Vaseline to make them airtight (K5). 3. The laboratory curtains and doors are pulled and closed so that outside lightning will not affect the outcome of the experiment (K1). 4. A 40W (K2) fluorescent lamp is set 30 cm (K3) away from the edge of the (K3) photometer with a meter rule placed to measure the distance. 5. The air bubble in the photometer is set to 0 cm (K4). The lamp is switched on and the stopwatch is started (K4) when the air bubble cross the X mark . 6. The movement of air bubble is observed and the stopwatch is stopped when the bubble reaches Y mark, that is 10 cm (K2).
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	<p>7. Record the time taken into a table(K4) .</p> <p>8. Steps 4 to 7 are repeated, with the distance of the lamp are put at 40 cm(K3), 50 cm(K3), 60 cm (K3) away from the photometer.</p> <p>9. All the findings are recorded into the table(K4).</p>
3	<p>All 5K criteria correct</p> <p>K1 – any three criteria</p> <p>K2 – any one criteria</p> <p>K3 – any three criteria</p> <p>K4 – any two criteria</p> <p>K5 – any one criteria</p>
2	3K – 4K criteria correct.
1	At least 2K criteria correct.
0	No response or wrong response.

B2 – 1	<p>√ Presentation of data</p> <p>Data is present in a table with right unit for rate of transpiration (for B2 – 1 cm/second or cm second⁻¹)</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Distance of lamp from the edge of the photometer (cm)</th> <th>Time taken for the air bubble to travel for X to Y (s)</th> <th>Rate of Transpiration (cm/second)</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table> <p>If without the unit for the rate of transpiration, give no an idea (x) and B2 - 0.</p>	Distance of lamp from the edge of the photometer (cm)	Time taken for the air bubble to travel for X to Y (s)	Rate of Transpiration (cm/second)												
Distance of lamp from the edge of the photometer (cm)	Time taken for the air bubble to travel for X to Y (s)	Rate of Transpiration (cm/second)														
	<p>√ Conclusion</p> <p><i>Write the hypothesis or another hypothesis.</i></p> <p><i>Sample answer:</i></p> <p>The higher the light intensity the higher the rate of transpiration. Hypothesis is accepted.</p>															
03	Report writing															
3	Score 3 = 7-9															
2	Score 2 = 4-6 √															
1	Score 1 = 1-3 √															
0	No response or wrong response.															

Question 1: 33 Marks

Question 2: 17 Marks

(Total = 50 marks)

Sample Question

Identified the problem

Is the light intensity increasing the rate of transpiration of a plant?

Objective of study/Aim

To investigate the effects of light intensity on the rate of transpiration of a balsam plant.

Variables

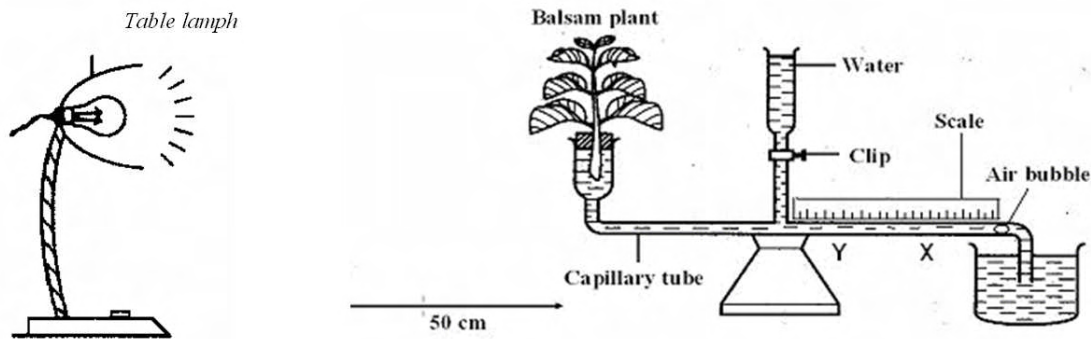
Manipulated Variable : distance light sources// light intensity

Responding Variable : Time taken for the air bubble move// rate of transpiration

Fixed / Controlled Variable: temperature//type of plant

Statement of hypothesis

The higher the light intensity, the rate of transpiration of a balsam plant increase.



List of apparatus

Photometer, stopwatch, cutter (knife), beaker, fluorescent lamp, meter ruler

List of materials

Balsam plant, Vaseline, water, tissue

Technique used

Measure and record the time taken for the air bubble to move in a distance for 10 cm by (B1-1).

Experimental procedure

1. A suitable balsam plant is selected and is cut using a sharp knife. The cut end is immediately immersed in a beaker filled with distilled water.
2. The cut plant is then fixed onto a photometer and the joints between the plant and the photometer are sealed using Vaseline to make them airtight.
3. The laboratory curtains and doors are pulled and closed so that outside lightning will not affect the outcome of the experiment.
4. A 40W fluorescent lamp is set 30 cm away from the edge of the photometer with a meter rule placed to measure the distance.

5. The air bubble in the photometer is set to 0 cm. The lamp is switched on and the stopwatch is started when the air bubble cross the X mark.
6. The movement of air bubble is observed and the stopwatch is stopped when the bubble reaches Y mark, that is 10 cm.
7. Record the time taken into a table.
8. Steps 4 to 7 are repeated, with the distance of the lamp are put at 40 cm, 50 cm, 60 cm away from the photometer.
9. All the findings are recorded into the table.

Presentation of data

Distance of lamp from the edge of the photometer (cm)	Time taken for the air bubble to travel for X to Y (s)	Rate of Transpiration (cm/second)

Conclusion

The higher of light intensity increase the rate of transpiration. Hypothesis is accepted.

END OF THE SCHEME MARKING