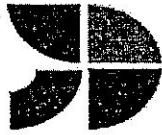


No. Kad Pengenalan

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Angka Giliran

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**UNIT PEPERIKSAAN
KOLEJ YAYASAN SAAD, MELAKA**

Name :

Form 5 :

Biology
Paper 2
Septemer 2012
2 1/2 hours

4551 / 2

**PEPERIKSAAN PERCUBAAN
SIJIL PELAJARAN MALAYSIA**

BIOLOGY

Paper 2

Two hour thirty minutes

DO NOT OPEN THIS QUESTION PAPER UNTIL YOU ARE TOLD TO DO SO

- This question paper consists of two sections :
Section A and Section B.*
- Answer all questions in Section A. Write your answers in the spaces provided in the question paper.*
- Answer two questions from Section B. Answer questions in Section B in detail. You may use equations, tables, graphs and other suitable methods to explain your answers.*
- Show your workings. It may help you to get marks.*
- The diagrams in the questions are not drawn to scale unless stated.*
- You may use a non-programmable calculator.*

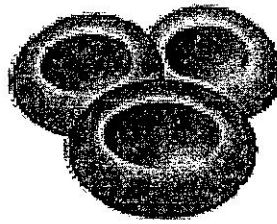
For Examiner's use only			
Section	No.	Marks	Marks obtained
A	1	12	
	2	12	
	3	12	
	4	12	
	5	12	
B	6	20	
	7	20	
	8	20	
	9	20	
Total Marks		100	

This question paper consists of 25 printed pages.

For
Examiner's
Use

SECTION A
Bahagian A
[60 marks]
Answer all questions
Jawab semua soalan

1. An experiment was conducted to investigate the effect of different concentrations of sodium chloride solution on cells P. Table 1 shows the result of the experiment.
Satu kajian telah dijalankan untuk mengkaji kesan larutan sodium klorida berlainan kepekatan terhadap sel-sel P. Jadual 1 menunjukkan keputusan kajian tersebut.



Cells P
Sel-sel P

Solution	Concentrations of sodium chloride solution (g/100 cm ³) <i>Kepekatan larutan sodium klorida (g/100 cm³)</i>	Percentage of crenated and haemolysed cells (%) <i>Peratus sel yang mengecut dan meletus (%)</i>	
		Crenated <i>Mengecut</i>	Haemolysed <i>Meletus</i>
R	0.35	-	52
S	0.40	-	28
T	0.47	-	-
U	0.50	9	-
V	0.55	35	-
W	0.60	86	-

- (a) (i) State the type of cells P

Nyatakan jenis sel P

..... [1 mark]

1(a)(i)



1(a)(ii)

(ii) Name cells P.

Namakan sel P

.....
[1 mark]

1(a)(iii)

(iii) State the function of cells P

Nyatakan fungsi sel P

.....
[1 mark]

(b) State the type of solution R and W relative to cell P.

Nyatakan jenis larutan R dan W berbanding kepada sel P.

1(b)

Solution R:

Larutan R :

Solution W

Larutan W :

[2 marks]

(c) (i) Based on table 1, state the concentration of sodium chloride in the blood plasma.

Berdasarkan jadual 1, nyatakan kepekatan sodium klorida dalam plasma darah

1(c) (i)

.....

[1 mark]

(ii) Explain the reason for your answer in (c)(i).

Terangkan alasan bagi jawapan anda di (c)(i)

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

[3 marks]

1(c) (ii)

[]

(d) If cells P are placed in distilled water, explain what will be the result of the experiment ?

Jika sel P dimasukkan ke dalam air suling, terangkan apakah keputusan kajian tersebut ?

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

[3 marks]

1(d)

[]

TOTAL

[]

2. (a) Diagram 2 (a) shows the formation of a lipid molecule.
Rajah 2 (a) menunjukkan pembentukan satu molekul lemak.

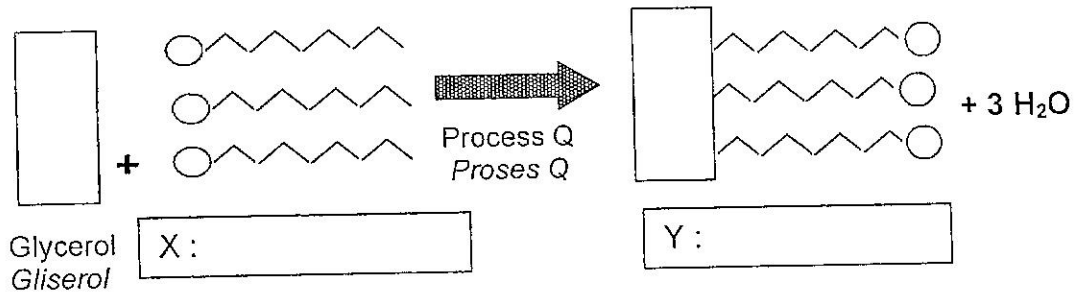


Diagram 2 (a)

Rajah 2 (a)

- (i) Label X and Y

Label X dan Y

[2 marks]

2(a) (i)

- (ii) State what process Q is .

Nyatakan proses Q

[1 mark]

2(a) (ii)

- (iii) Write a word equation to represent the biochemical process in diagram 2 (a)

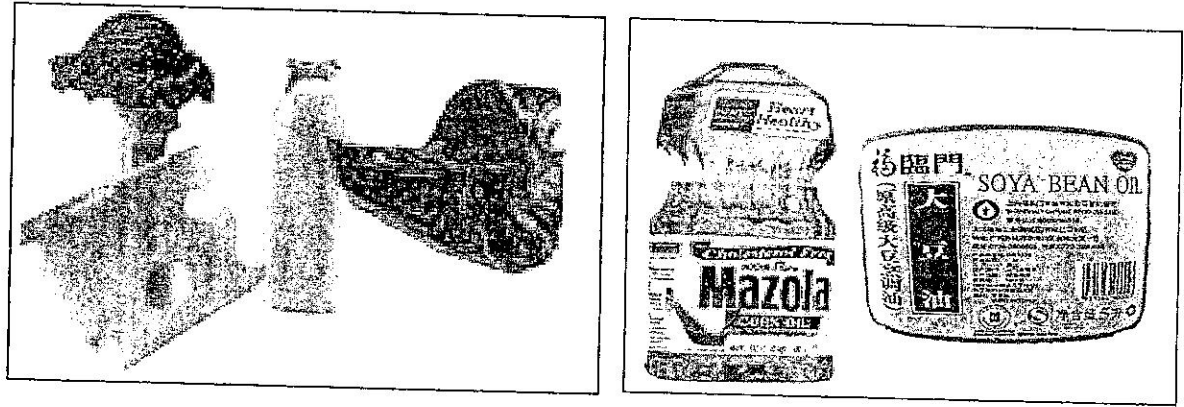
Tuliskan persamaan perkataan untuk mewakili proses biokimia dalam rajah 2 (a)

[1 mark]

2(a)(iii)

(b) Diagram 2(b) shows two types of fats.

Rajah 2 (b) menunjukkan dua jenis lemak



P

Q

Diagram 2(b)

Rajah 2 (b)

(i) State the type of fats shown in diagram 2 (b)

Nyatakan jenis lemak yang ditunjukkan dalam rajah 2 (b)

P :
Q :

[2 marks]

2(b)(i)

(ii) A girl takes food from group P continuously for a long period of time. Explain the consequences to the health of her heart.
Seorang budak perempuan mengambil makanan dari kumpulan P secara berterusan untuk jangkamasa yang panjang. Terangkan kesannya terhadap kesihatan budak tersebut.

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

[3 marks]

2(b)(ii)

(c) A man has his bile duct blocked with gallstones. He is advised to cut down on his fat intake. Explain why such an advice is given to him ?
Seorang lelaki telah mengalami masalah tersumbat salur hempedu oleh batu hempedu. Beliau telah dinasihatkan oleh doktor untuk mengurangkan pengambilan makanan yang berlemak. Terangkan mengapa nasihat seperti itu telah diberikan kepadanya ?

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

[3 marks]

2(c)

TOTAL

3. Diagram 3 shows the exchange of respiratory gases X and Y between the alveolus , blood capillary and the body cells and the transport of the gaseous.

Rajah 3 menunjukkan pertukaran gas respirasi X dan Y diantara alveoli, saluran darah dan sel badan serta pengangkutan gas-gas tersebut.

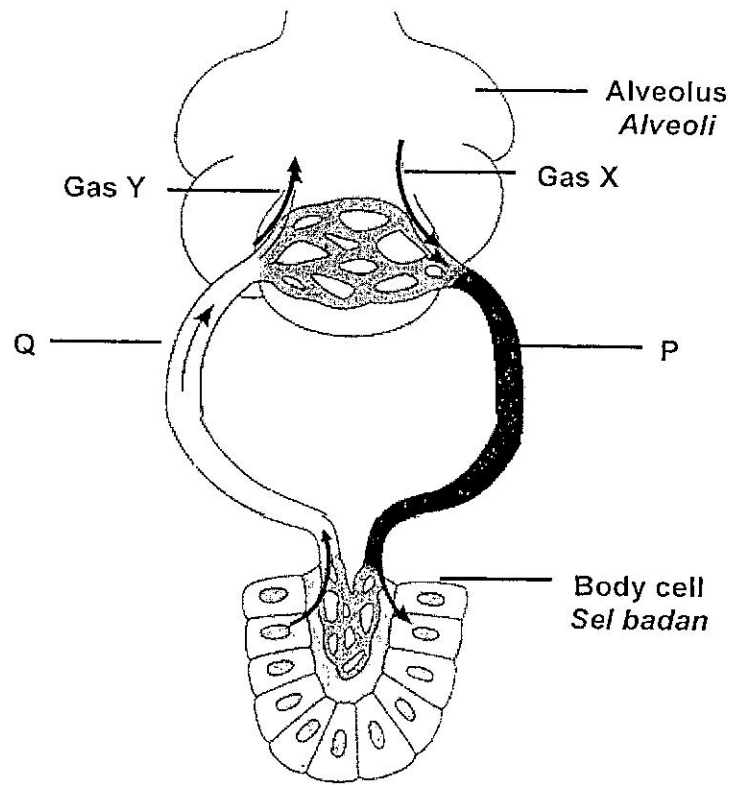


Diagram 3
Rajah 3

- (a) (i) Name gas X and Y.

Namakan gas X dan Y

Gas X :

Gas Y :

[2 marks]

3(a)(i)

- (ii) Explain how the alveolus is structured to increase the efficiency of gaseous exchange.

Terangkan bagaimana alveoli distrukturkan untuk meningkatkan kecekapan proses pertukaran gas.

.....

[2 marks]

3(a)(ii)

- (b) Explain the difference between the concentration of gas X and Y in blood vessel Q.

Terangkan perbezaan antara kepekatan gas X dan Y dalam salur darah Q.

.....

[2 marks]

3(b)

- (c) The concentration of gas X transported in blood vessel P of a cigarette smoker is usually lower than the one in healthy individual. Explain why does this occur ?

Kepekatan gas X yang diangkut dalam salur darah P seseorang penghisap rokok adalah lebih rendah berbanding individu yang sihat. Terangkan mengapa keadaan ini berlaku.

.....

[2 marks]

3(c)

(d) In an experiment, a boy takes part in an 800 metre event track. His exhaled air was obtained three times which were before running, right after he finished running and 10 minutes after running to determine the percentage of carbon dioxide. Table 3.1 shows the result of the experiment.

Dalam satu kajian, seorang budak lelaki telah mengambil bahagian dalam acara trek 800 meter. Udara hembusannya telah diambil sebanyak tiga kali iaitu sebelum berlari, sebaik sahaja selesai berlari dan 10 minit selepas berlari untuk mendapatkan peratus karbon dioksida. Jadual 3.1 menunjukkan hasil kajian tersebut.

	Before running <i>Sebelum berlari</i>	Right after he finishes running <i>Sebaik sahaja selesai berlari</i>	After 10 minutes running <i>Selepas 10 minit berlari</i>
Percentage of carbon dioxide (%) <i>Peratus karbon dioksida (%)</i>	4 %	7.5 %	4 %

Table 3.1
Jadual 3.1

Based on table 3.1, explain how the percentage of carbon dioxide is returned to normal after 10 minutes running.

Berdasarkan jadual 3.1, terangkan bagaimana peratus karbon dioksida dapat dikembalikan kepada normal selepas 10 minit berlari

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.....

[4 marks]

3(d)

TOTAL

4. Diagram 4.1 shows the transmission pathway of information from receptors in the ear to effectors U.

Rajah 4.1 menunjukkan laluan penghantaran maklumat dari reseptor dalam telinga kepada efektor U.

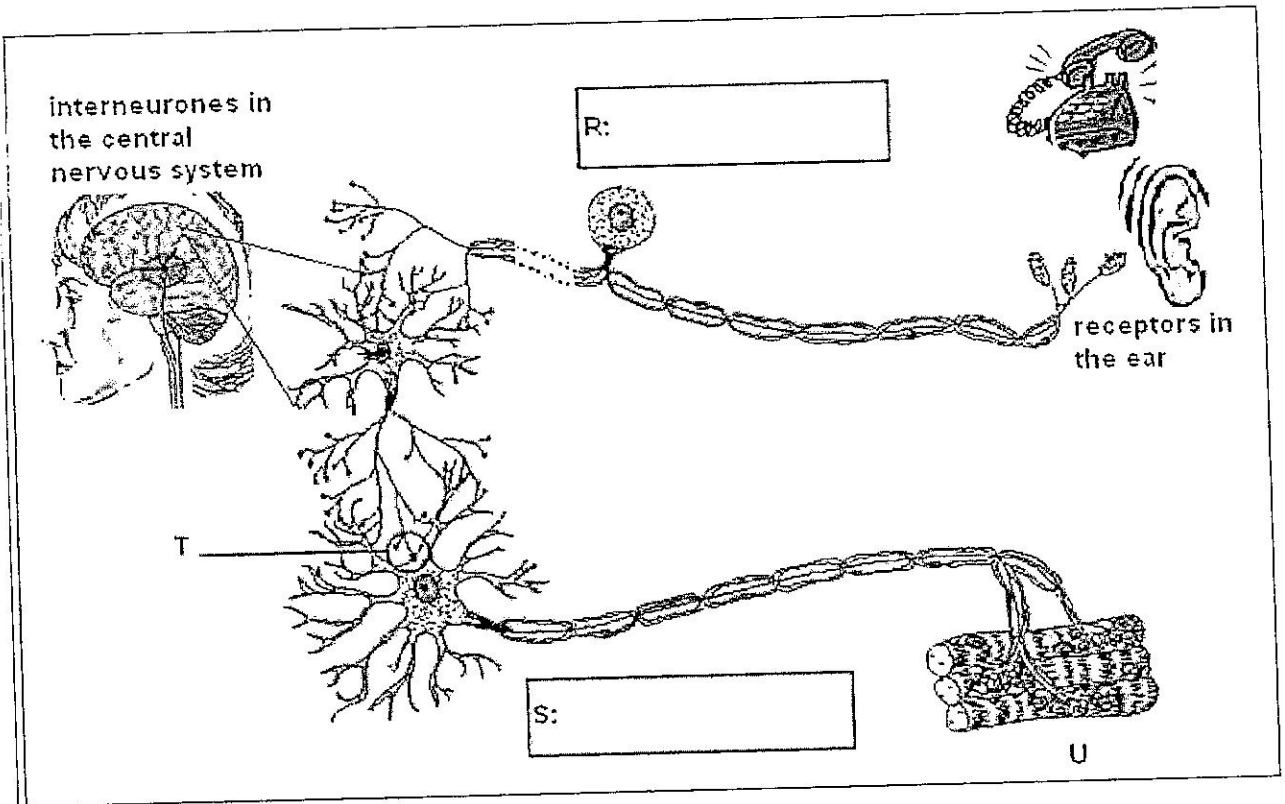


Diagram 4.1

4(a)(i)

(a)(i) Name structures R and S in Diagram 4.1

Namakan struktur R dan S dalam Rajah 4.1

[2 marks]

4(a)(ii)

(ii) State the function of R

Nyatakan fungsi R

[1 mark]

(b) Compare **two** differences of structures R and S.

Bandingkan dua perbezaan dari segi struktur bagi R dan S.

4(b)

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

[2 marks]

(c) Based on Diagram 4.1 describes briefly the pathway of transmission of information from the moment you hear the sound of the ringing telephone until you pick up the phone.

Berdasarkan Rajah 4.1 huraikan secara ringkas laluan penghantaran maklumat dari ketika anda mendengar telefon berbunyi sehingga anda mengangkat telefon itu.

4(c)

.....
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[3 marks]

- (d) Diagram 4.2 shows the transmission of information across structure T.
Rajah 4.2 menunjukkan penghantaran maklumat merentasi srtuktur T.

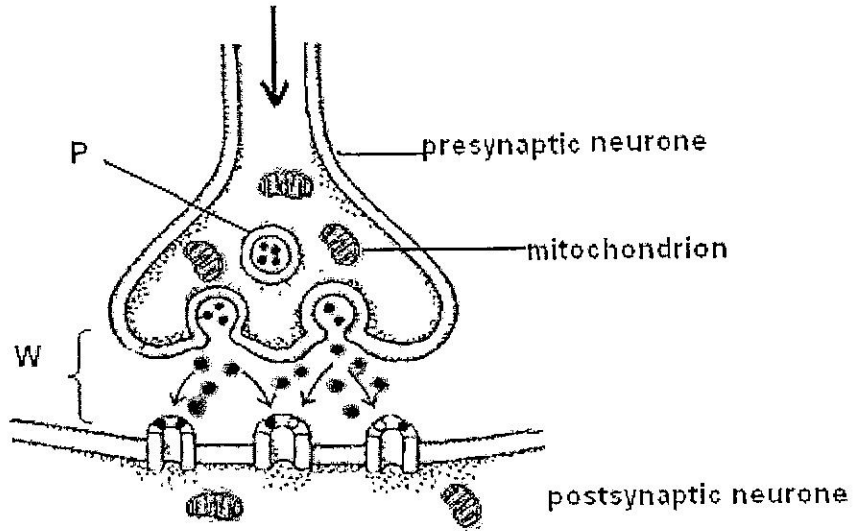


Diagram 4.2

- (i) Explain the role of P in transmission of nerve impulses.

Terangkan peranan P dalam penghantaran impuls saraf.

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

[2 marks]

- (ii) If the chemical substances release from P across W is reduced due to a neurodegenerative disease, explain its effect to a person's health.

Jika bahan kimia yag dibebaskan oleh P merentasi W berkurangan disebabkan oleh kemerosotan sistem saraf , terangkan kesannya kepada kesihatan seseorang.

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.....
.....

[2 marks]

4(d)(i)

4(d)(ii)

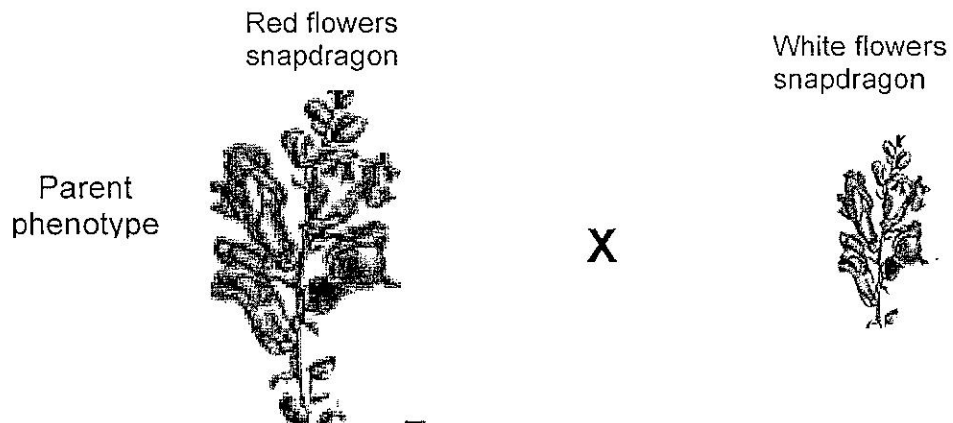
TOTAL

5. When the mechanism of inheritance of flower colour in garden peas was investigated, red flowered plants were crossed with white flowered plants. The first generation plants all had red flowers. However, when these red flowered plants allow to self-fertilized, about 25% of the offspring had white flowers, the remainder having red flowers.

In a similar investigation with snapdragon plants, when pure breeding red flowered of snapdragon plants were crossed with a pure breeding white flowered of snapdragon plants, the resulting all the first generation had pink flowers. When these pink flowered plants were self fertilized, 25% of the offspring had white flowers, 25% had red flowers and 50% had pink flowers.

Dalam satu kajian mekanisme pewarisan warna bunga, pokok kacang pea berbunga merah telah dikacukan dengan pokok kacang pea berbunga putih. Didapati semua anak generasi pertamanya berbunga merah. Apabila generasi ini dikacukkan sama sendiri, 25% anak generasi itu berbunga putih, bakinya berbunga merah.

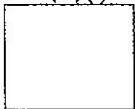
Dalam satu kajian yang serupa, baka tulen pokok snapdragon berbunga merah dikacukkan dengan baka tulen pokok snapdragon berbunga putih. Semua anak generasi pertamanya berbunga merah jambu. Kemudian pokok berbunga merah jambu itu di kacukkan sama sendiri, didapati 25% anak pokok berbunga putih, 25% berbunga merah dan 50% berbunga merah jambu.



(a)(i) Suggest why the results obtained with pea garden are different from those obtained with the snapdragon plants.

Cadangkan mengapa keputusan yang diperlehi dengan pokok kacang pea tidak sama dengan keputusan yang diperolehi pada pokok snapdragon.

5(a)(i)



.....

.....

.....

[2 marks]

(b)(i) Draw the schematic diagram to show the above cross based on Mendel's First Law.

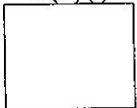
Lukiskan rajah skema untuk menunjukkan kacukkan di atas berdasarkan Hukum Mendel Pertama.

Keys/kekunci:

R = red allele

W = white allele

5(b)(i)

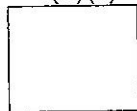


[5 marks]

(ii) State the genotype of the flower colour for the second generation of the snapdragon plants

Nyatakan genotip warna bunga bagi anak generasi kedua pokok snapdragon.

5(b)(ii)



[1 mark]

(c) Some barley plants are susceptible to attack by mildew (a fungus) whilst others are resistance to mildew attack. It was found that the susceptible plants produced only susceptible offspring when self fertilised , but that a resistant plant produced a mixture of resistant and susceptible plants when self – fertilised.

Terdapat sebahagian pokok barli yang mudah diserang oleh kulat, manakala yang lain mempunyai daya tahan terhadap serangan kulat. Didapati bahawa pokok yang mudah diserang kulat menghasilkan anak yang mudah diserang apabila dikacuk sesama sendiri. Tetapi, pokok yang berdaya tahan menghasilkan campuran baka yang tahan rintang dan mudah diserang penyakit apabila dikacuk sesama sendiri.

(i) How would the plant breeder obtain a stock of barley plants which were all resistant to mildew?

Bagaimanakah seorang pembiak tanaman boleh mendapatkan pokok barli yang tahan serangan kulat ?

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

[3 marks]

(ii) Assuming that resistance to mildew is controlled by a single gene. What must be the genotype of the resistant stock ?

Anggapkan baka yang tahan serangan kulat, dikawal oleh satu gen. Apakah genotip baka barli tersebut ?

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

[1marks]

TOTAL

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SECTION B
Bahagian B
 [40 marks]

Answer only **two** question from this section
 Jawab mana-mana **dua** soalan daripada bahagian ini.

6. (a) Diagram 6.1 shows the longitudinal section of a dicotyledonous stem
 Rajah 6.1 menunjukkan keratan menegak batang dikotiledon

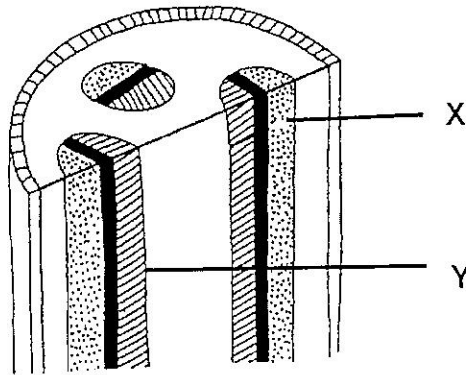


Diagram 6.1

- (i) State what tissue X and Y are.

Nyatakan apakah tisu X dan Y

[2 marks]

- (ii) State the function of tissue X.

Nyatakan fungsi tisu X.

[2 marks]

- (iii) Tissue Y is formed from the specialization of a cell. During cell specialization, the plant is unable to produce lignin. Explain the effect of this on the function of tissue Y.

Tisu Y terhasil daripada proses pengkhususan sel. Sewaktu proses pengkhususan sel, satu tumbuhan tidak dapat menghasilkan lignin. Terangkan kesannya keatas fungsi tisu Y.

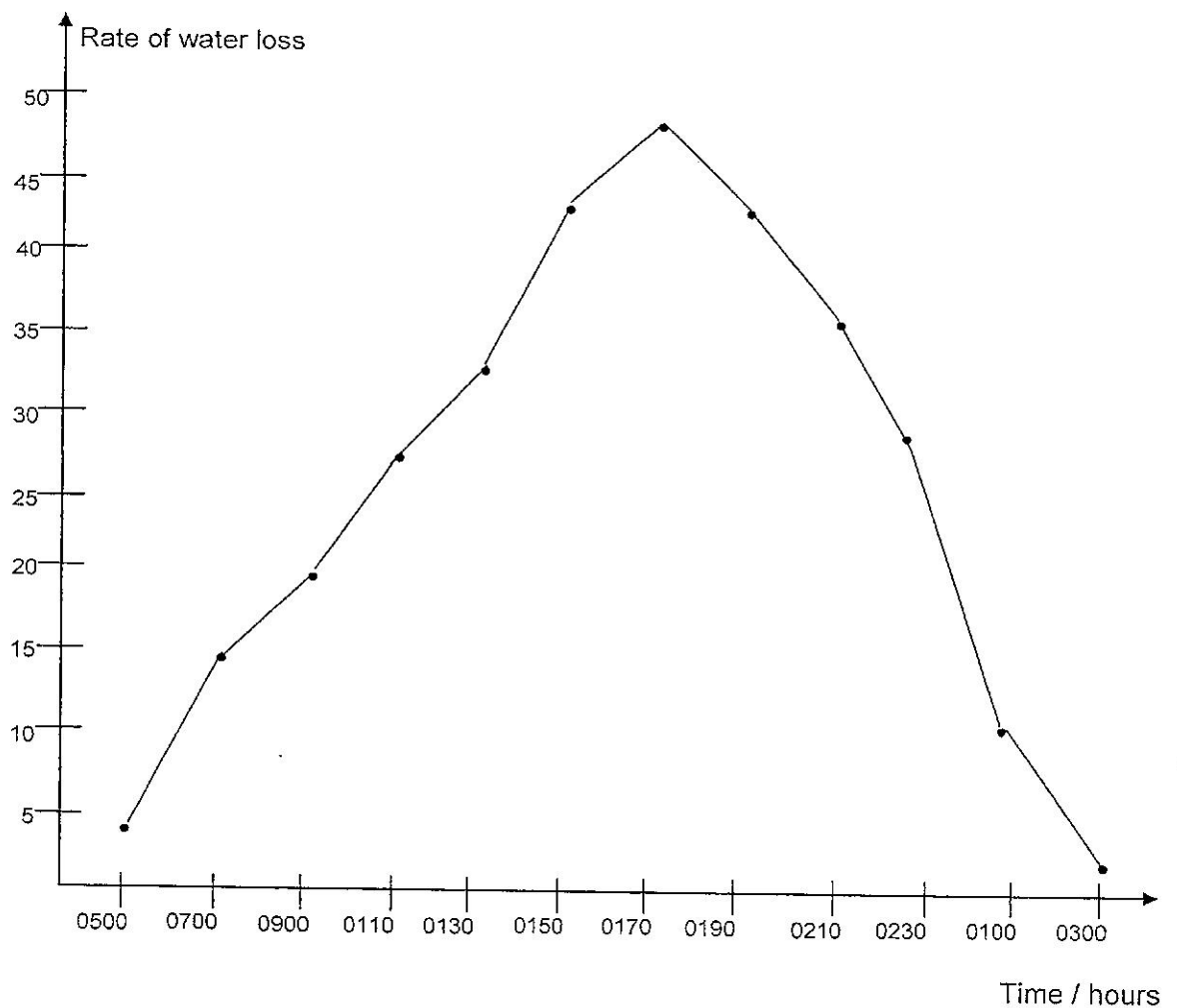
[6 marks]

- (b) An experiment on a plant is carried out to study the rate of water loss from 0500 to 0300 the next day.

Satu kajian keatas sebatang pokok telah dijalankan untuk mengkaji kadar kehilangan air dari jam 0500 hingga 0300 keesokkan harinya

Graph 6.1 shows the result of the experiment and diagram 6.2 shows the structure of a stoma and the cells found in the epidermal layer of a leaf.

Graf 6.1 menunjukkan keputusan kajian dan rajah 6.2 menunjukkan struktur stoma dan sel-sel yang terdapat pada lapisan epidermal sehelai daun.



Graph 6.1

Graf 6.1

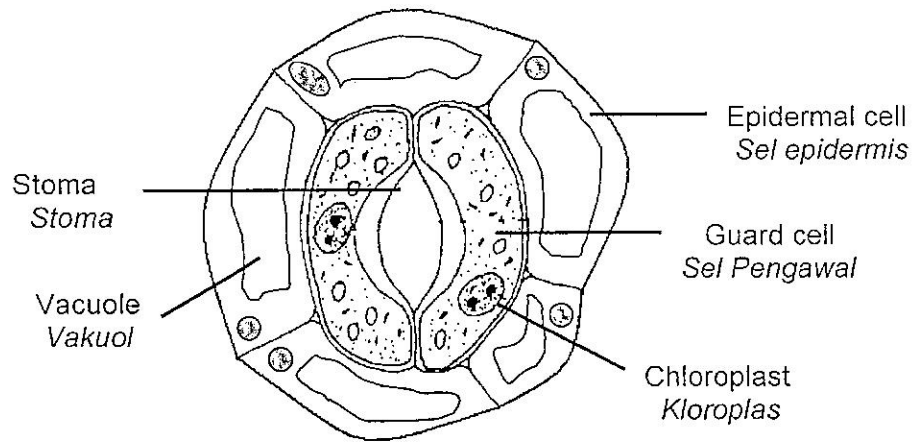


Diagram 6.2
Rajah 6.2

Based on the graph, explain how light intensity and the structure in diagram 6.2 affect the rate of water loss

Berdasarkan graf, terangkan bagaimana keamatan cahaya dan struktur dalam rajah 6.2 memberi kesan keatas kadar kehilangan air.

[10 marks]

7. (a) Diagram 7.1 shows part of the circulatory system and a nephron in human kidney.

Rajah 7.1 menunjukkan sebahagian daripada sistem pengangkutan dan nefron dalam ginjal manusia.

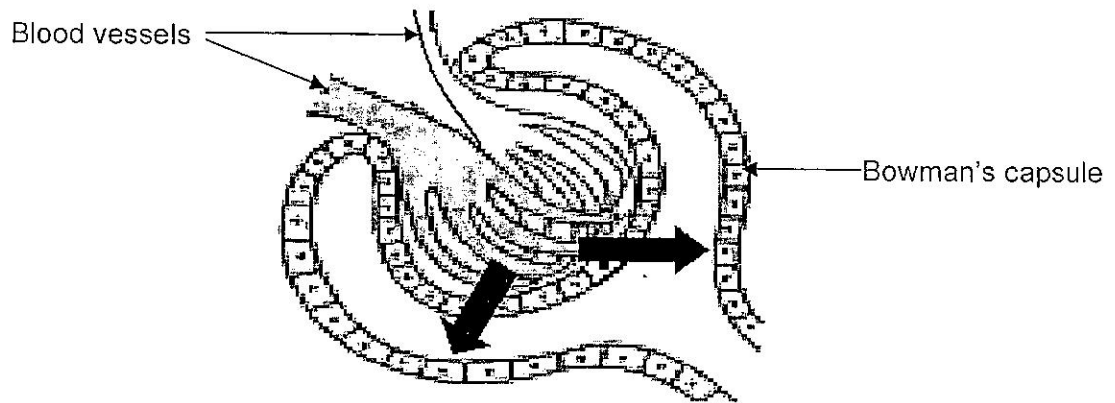


Diagram 7.1
Rajah 7.1

Describe the formation of the glomerular filtrate.

Jelaskan pembentukan turasan glomerular

[4 marks]

- (b) (i) Table 7.1 shows the concentration of solutes in the blood plasma, glomerular filtrate and urine of an adult.

Jadual 7.1 menunjukkan kepekatan bahan dalam plasma darah, turasan glomerular dan air kencing seorang dewasa.

Solute <i>Bahan</i>	Concentration of solutes (g/dm ³) <i>Kepekatan bahan (g/dm³)</i>		
	Blood plasma in the afferent arteriole <i>Plasma darah dalam arteriol afferent</i>	Glomerular filtrate <i>Turasan glomerular</i>	Urine <i>Air kencing</i>
Glucose	1.0	1.0	0.0
Amino acid	1.5	1.5	0.0
Protein	80.0	0.0	0.0
Urea	0.3	0.3	20.0
Sodium ion, Na ⁺	3.2	3.2	1.6

Table 7.1
Jadual 7.1

Based on Table 1, explain why the concentration of solutes in the blood plasma, glomerular filtrate and urine of the adult are differ.

Berdasarkan jadual 7.1, terangkan mengapa kepekatan bahan dalam plasma darah, turasan glomerular dan air kencing bagi seorang individu dewasa tersebut berbeza.

[10 marks]

- (ii) The adult later suffers from diabetes but does not take his regular injection of insulin.
Explain the changes that might occur to the content of his urine and suggest a laboratory experiment to confirm the content of the urine

Individu ini kemudiannya diserang penyakit kencing manis tetapi beliau tidak mengambil suntikan insulin secara berkala. Terangkan perubahan yang akan berlaku pada kandungan air kencingnya dan cadangkan satu kajian makmal untuk mengesahkan kandungan air kencingny

[6 marks]

8

(a) All organisms require nitrogen to live and grow. The atmospheric nitrogen cannot be absorbed directly by plants.

Semua organisme memerlukan nitrogen untuk hidup dan membesar. Nitrogen atmosfera tidak boleh diserap secara terus oleh tumbuhan.

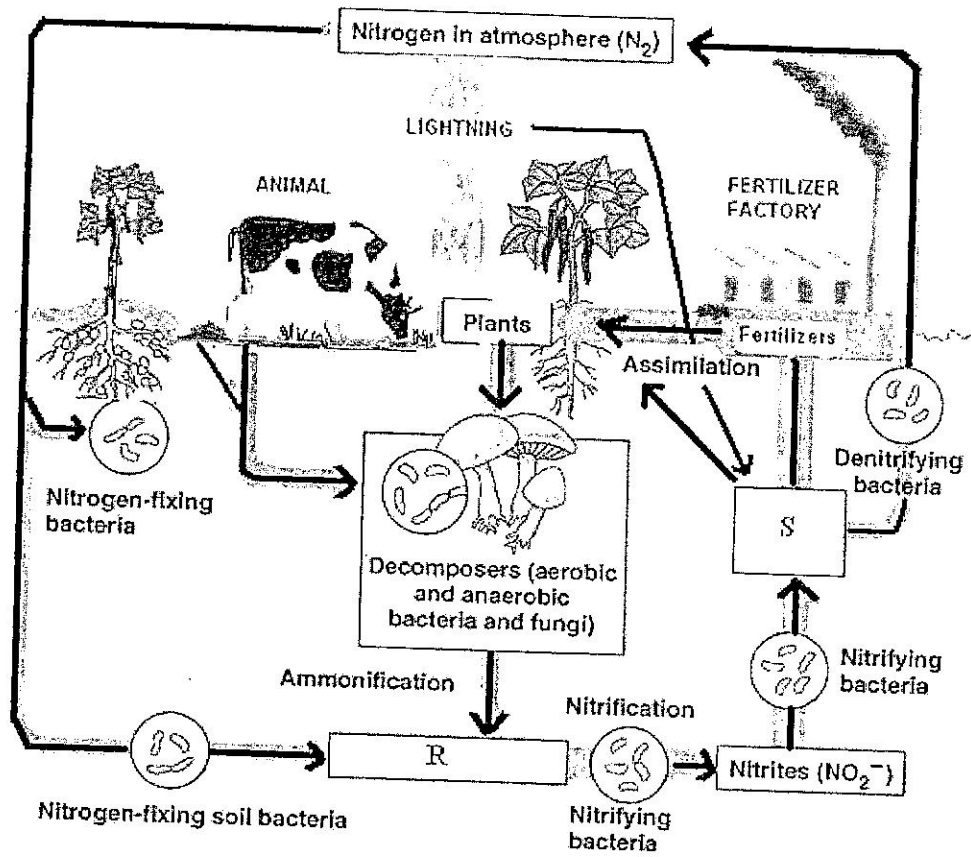


Diagram 8.1

Based on Diagram 8.1 explain how nitrogen in the atmosphere is converted into usable form such as compound R, S, or organic nitrogen and is maintained through the activities of :

Berdasarkan Rajah 8.1 terangkan bagaimana nitrogen di atmosfera ditukarkan kepada bentuk yang dapat digunakan seperti sebatian R dan S atau nitrogen organik dan dikekalkan melalui aktiviti :

- Microorganisms / mikroorganisme
- Factories / kilang
- Lightning / kilat

[10 marks]

- c. The mangroves are fragile complex and dynamic ecosystem, and are dependent on both biotic and abiotic factors .
Paya bakau adalah suatu ekosistem yang kompleks dan dinamik, dan bergantung kepada kedua-dua faktor biotik dan abiotik.

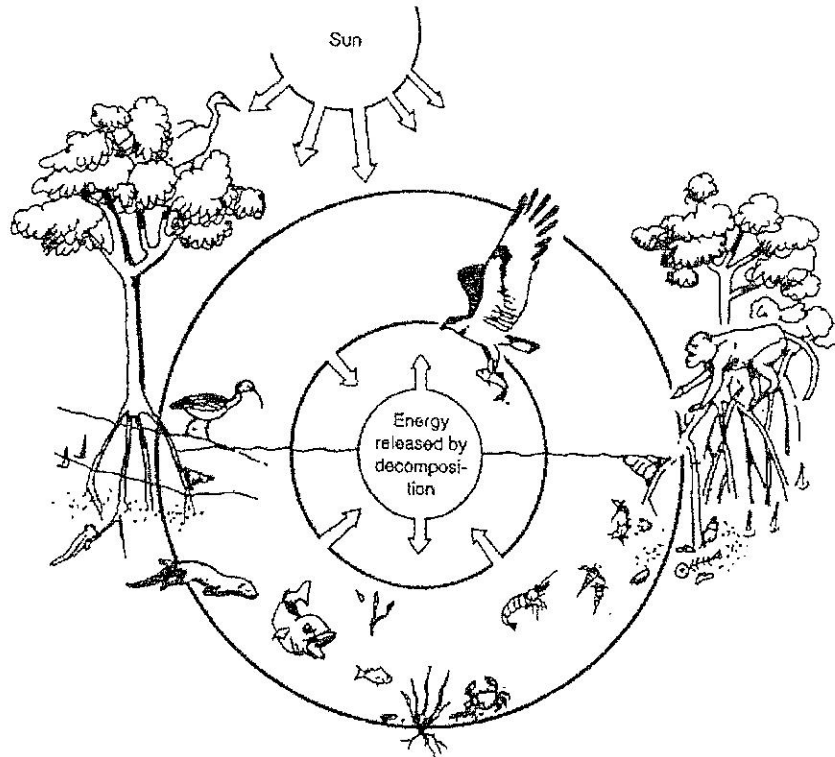


Diagram 8(b)

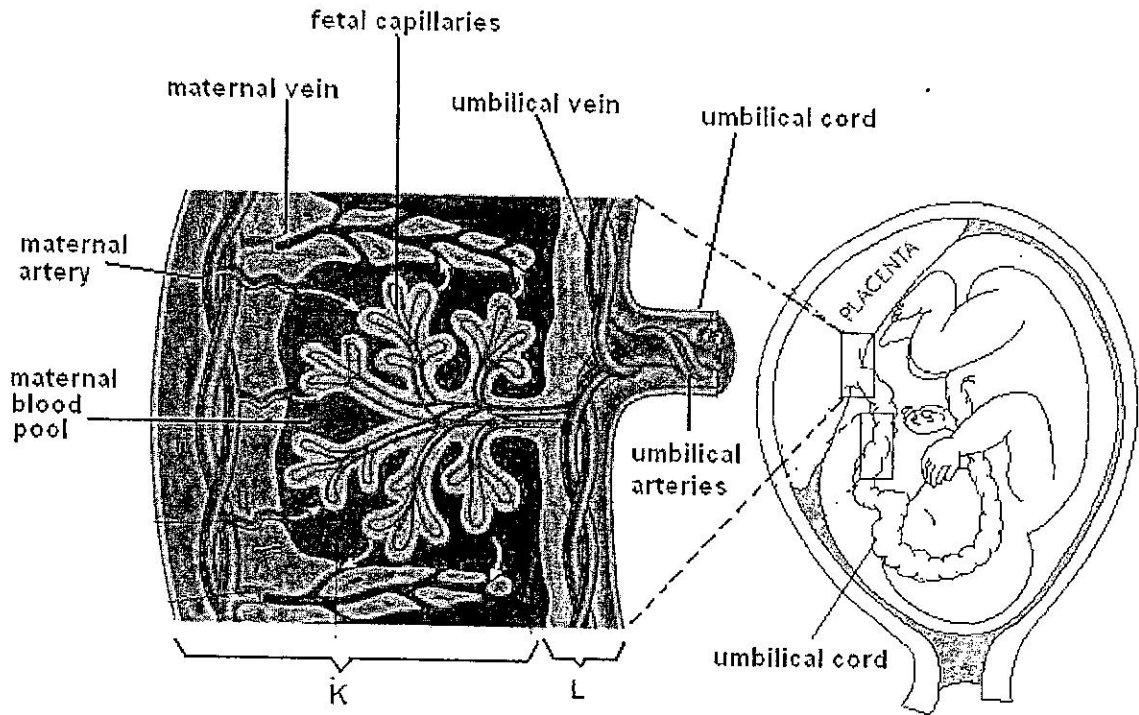
Based on diagram 8 (b), discuss the importance of mangrove.

Berdasarkan kepada rajah 8(b), bincangkan kepentingan paya bakau.

[10 marks]

9.(a) Diagram 9 shows relationship between K and L of placental blood circulatory system.

Rajah 9 menunjukkan perhubungan antara K dan L dari sistem peredaran darah plasenta.



Explain why K and L circulatory system are not directly connected to each other.

Terangkan mengapa sistem peredaran K dan L tidak berhubung secara terus antara satu sama lain.

[10 marks]

Preventing pregnancy and difficulty in having children are two main problems in human reproduction.

Menghalang kehamilan dan kesukaran mendapat anak adalah dua masalah utama dalam pembiakan manusia.

Based on the statement, discuss the moral issues related to application of Science and Technology in overcoming human reproduction's problems.

Berdasarkan kepada pernyataan di atas, bincangkan isu-isu moral yang berkait dengan penggunaan Sains dan Teknologi dalam pembiakan manusia

[10 marks]

END OF QUESTION PAPER