

SULIT

4551/2

Biology  
Kertas 2  
Ogos/ Sept  
2010  
2 1/2 jam

Nama Pelajar : .....

Tingkatan : .....



**JABATAN PELAJARAN KELANTAN  
DENGAN KERJASAMA  
PERSIDANGAN KEBANGSAAN PENGETUA-PENGETUA  
SEKOLAH MENENGAH MALAYSIA  
CAWANGAN KELANTAN**

**PEPERIKSAAN PERCUBAAN SPM  
TINGKATAN 5 ( 2010 )**

**BIOLOGY  
KERTAS 2**

Masa : Dua Jam Tiga Puluh Minit

**JANGAN BUKA KERTAS SOALAN INI SEHINGGA DIBERITAHU**

1. Kertas ini adalah dalam dwibahasa.
2. Calon dikehendaki membaca maklumat di halaman 2.

<i>For Examiner's Use</i>			
Section	Question	Full Marks	Marks Obtained
A	1	12	
	2	12	
	3	12	
	4	12	
	5	12	
B	6	20	
	7	20	
	8	20	
	9	20	
Total		100	

Kertas soalan ini mengandungi 24 halaman bercetak.

## MAKLUMAT UNTUK CALON

1. Kertas soalan ini mengandungi DUA bahagian. Bahagian A dan Bahagian B. Jawab semua soalan dalam Bahagian A. Tuliskan jawapan bagi Bahagian A dalam ruang yang disediakan dalam kertas soalan.
2. Jawab DUA soalan daripada Bahagian B. Tuliskan jawapan bagi Bahagian B pada halaman bergaris di bahagian akhir kertas soalan ini.
3. Jawab Bahagian B dengan terperinci. Anda boleh menggunakan persamaan, gambarajah, jadual, graf dan cara lain yang sesuai untuk menjelaskan jawapan anda.
4. Tunjukkan kerja mengira, ini membantu anda mendapatkan markah.
5. Sekiranya anda hendak membatalkan sesuatu jawapan, buat garisan di atas jawapan itu.
6. Rajah yang mengiringi soalan tidak dilukis mengikut skala kecuali dinyatakan sebaliknya.
7. Markah yang diperuntukkan bagi setiap soalan atau ceraihan soalan ditunjukkan dalam kurungan.
8. Masa yang dicadangkan untuk menjawab Bahagian A ialah 90 minit. Bahagian B ialah 60 minit.
9. Anda dibenarkan menggunakan kalkulator saintifik yang tidak boleh diprogramkan.
10. Serahkan semua kertas jawapan anda di akhir peperiksaan.

**INFORMATION FOR CANDIDATES**

1. *This question paper consists of two sections :  
Section A and Section B.*
2. *Answer all questions in Section A. Write your answers for Section A clearly in the spaces provided in the question paper*
3. *Answer TWO question from Section B. Write your answer for Section B on the lines paper in detail. You may use equations, diagrams, tables, graphs and other suitable methods to explain your answer.*
4. *Show your working, it may help you to get marks..*
5. *If you wish to cancel any answer, neatly cross out the answer.*
6. *The diagrams in the questions are not drawn to scale unless stated.*
7. *Marks allocated for each questions or part question are shown in brackets*
8. *The time suggested to complete Section A is 90 minutes, Section B is 60 minutes.*
9. *You may use a non-programmable scientific calculator*
- 10 *Hand in this question paper at the end of the examination*

Section A  
[ 60 marks ]  
Answer all questions.

The time suggested to complete this section is 90 minutes

For  
examiner's  
use

- 1 Diagram 1 shows the process which glucose is accumulated at Q while molecule R assist the process.

Rajah 1 menunjukkan suatu proses di mana glukosa sedang dikumpulkan di Q manakala molekul R membantu dalam proses ini.

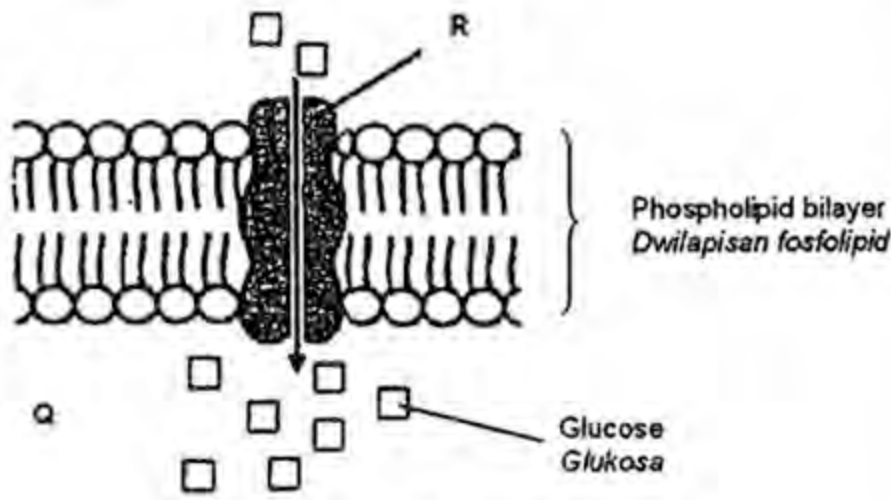


Diagram 1  
Rajah 1

- (a) (i) Name the structure R.  
Namakan molekul R.

.....

- (ii) Name the process in Diagram 1.  
Namakan proses dalam Rajah 1.

.....

[2 marks]  
[2 markah]

1(a)

- (b) What is the importance of the process in (a)(ii) to an organism?  
Apakah kepentingan proses dalam (a)(ii) kepada organisma?

.....

[1 mark]  
[1 markah]

1(b)

Sodium ions is found to be higher in concentration outside a human cell while potassium ions is found to be higher inside the cell.

*Ion natrium didapati tinggi kepekataannya di luar sel manusia manakala ion kalium didapati tinggi kepekataannya di dalam sel.*

(c) Describe the process that leads to the occurrence of the above situation.

*Huraikan bagaimana proses itu berlaku sehingga membawa kepada terjadinya situasi di atas.*

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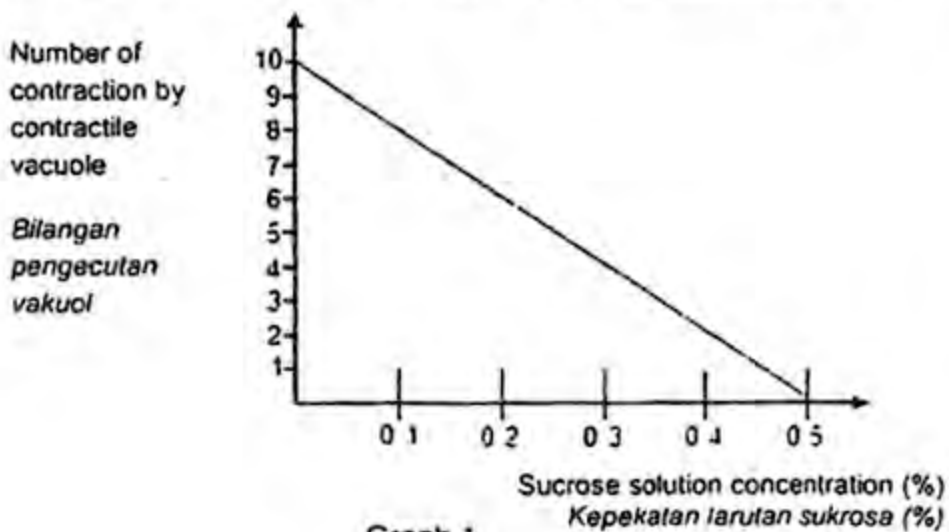
[3 marks]  
[3 markah]

1(c)

	3
--	---

(d) Graph 1 shows the number of contraction of contractile vacuole Paramecium when placed in different concentration of sucrose solution.

*Graf 1 menunjukkan bilangan pengecutan vakuol mengecut bagi Paramecium apabila diletakkan dalam larutan sukrosa yang berlainan kepekatan.*



Graph 1  
Graf 1

- (i) How many times the contractile vacuole has to pump when placed in 0.25% sucrose solution?  
*Berapa kalikah vakuol mengecut perlu mengecut jika ia berada dalam larutan sukrosa 0.25%?*

.....  
 [1 mark]  
 [1 markah]

1(d)(i)

	1
--	---

- (ii) Explain the need of paramecium to carry out the process in (d)(i).  
*Terangkan mengapa paramesium perlu melakukan proses seperti dalam (d)(i).*

.....  
 .....  
 .....  
 .....  
 [2 marks]  
 [2 markah]

1(d)(ii)

	2
--	---

(e) 
 Paramecium will burst and die when placed in the 0.25% sucrose solution added with respiratory poison.  
*Paramesium akan meletus dan mati apabila dimasukkan dalam larutan sukrosa 0.25% yang ditambah racun respirasi.*

Explain the statement above.  
*Terangkan pernyataan di atas.*

.....  
 .....  
 .....  
 .....  
 [3 marks]  
 [3 markah]

1(e)

	3
--	---

Total A1

	12
--	----

2 Diagram 2 shows the organelle involved during the synthesis and secretion of extracellular enzymes in pancreatic cell.

Rajah 2 menunjukkan organel yang terlibat semasa sintesis dan rembesan enzim luar sel di pankreas.

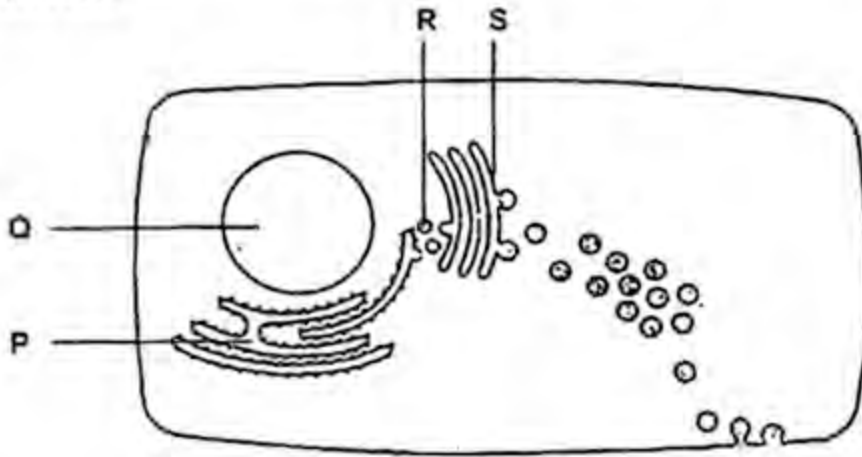


Diagram 2  
Rajah 2

(a) (i) Name the organelles labeled Q and S.  
Namakan organel berlabel Q dan S.

Q : .....  
S : .....

[2 marks]  
[ 2 markah ]

2(a)(i)

(ii) State the function of organelles P.  
Nyatakan fungsi organel P.

.....

[1 mark]  
[ 1 markah ]

2(a)(ii)

(b) (i) Name the extracellular enzyme produced.  
Namakan enzim luar sel yang dihasilkan.

.....

[1 mark]  
[ 1 markah ]

2(b)(i)

(ii) State the meaning of extracellular enzyme.  
Nyatakan maksud enzim luar sel.

.....

.....

[2 marks]  
[ 2 markah ]

2(b)(ii)

- (c) A patient's pancreatic cells have been found to be unable to produce the enzymes in (b)(i). Explain the effect of this to his digestion process.

*Sel pancreas pesakit didapati tidak dapat menghasilkan enzim di (b)(i). Terangkan kesannya terhadap pencernaan beliau.*

.....

[1 mark]  
[ 1 markah ]

2(c)

1
---

- (d) Based on the organelles shown in Diagram 2, explain how extracellular enzymes are produced starting at the ribosome.

*Berdasarkan organel yang ditunjukkan pada Rajah 2, terangkan bagaimana enzim luar sel dihasilkan bermula di ribosom.*

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

[3 marks]  
[ 3 markah ]

2(d)

3
---

- (e) Explain the rate of enzyme reaction at low temperature and at the optimum temperature.

*Terangkan kadar tindakbalas enzim pada suhu rendah dan suhu optimum.*

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

[2 marks]  
[ 2 markah ]

Total A 2

12
----

- 3 Diagram 3(a) shows two human axial skeletal bones P and Q. Q is attached to P.  
*Rajah 3(a) menunjukkan dua tulang rangka paksi manusia P dan Q. Q bersambung pada P.*

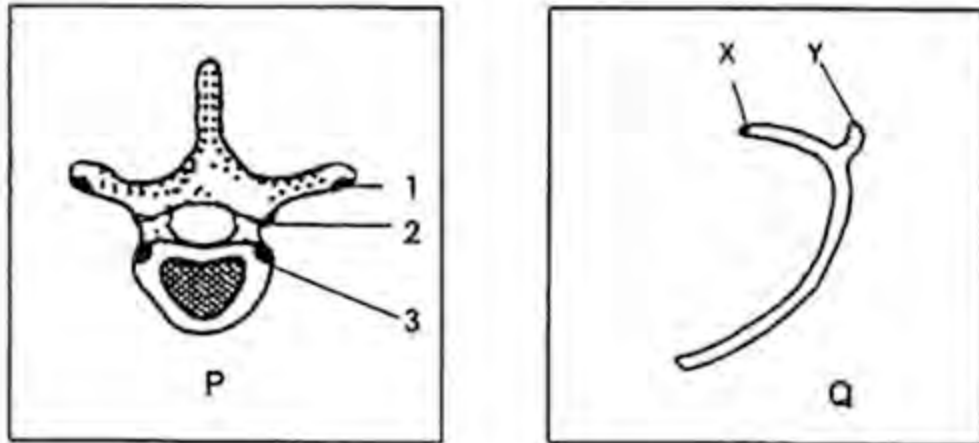


Diagram 3(a)  
 Rajah 3(a)

- (a) (i) Name the bones P and Q.  
*Namakan tulang P dan Q.*

P : .....  
 Q : .....

[ 2 marks ]  
 [ 2 markah ]

- (ii) State two main characteristics of P.  
*Nyatakan dua ciri utama P.*

1. ....  
 2. ....

[ 2 marks ]  
 [ 2 markah ]

- (b) (i) Pair X and Y of Q with the suitable number in P.

*Padankan X dan Y pada Q dengan nombor yang sesuai pada P.*

X : ..... Y : .....

[ 1 mark ]  
 [ 1 markah ]

- (ii) State one function of Q in respiration.  
*Nyatakan satu fungsi Q dalam respirasi.*

.....  
 .....

[ 1 mark ]  
 [ 1 markah ]

3(

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- (c) Diagram 3(b) shows a joint in a human pelvic girdle.  
*Rajah 3(b) menunjukkan sendi lengkungan pelvis manusia.*

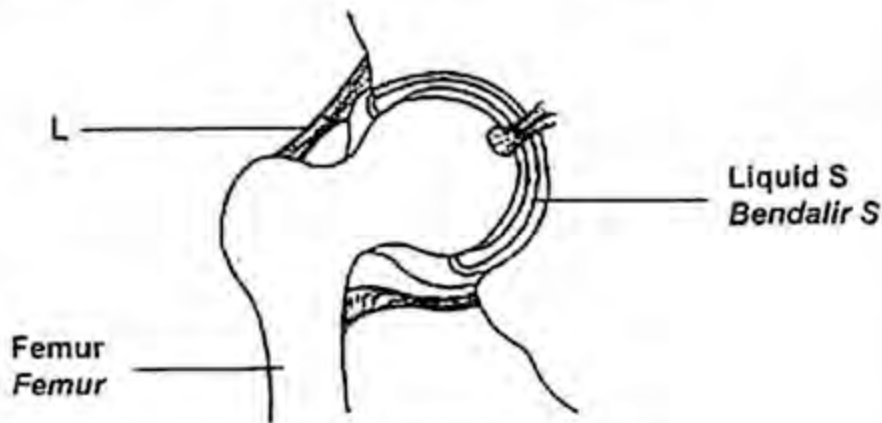


Diagram 3(b) / *Rajah 3(b)*

- (i) Name the structure that produces liquid S.  
*Namakan struktur yang menghasilkan bendalir S.*

.....

[ 1 mark ]  
 [ 1 markah ]

3(c)(i)

	1
--	---

- (ii) Describe briefly the importance of L for movement.  
*Huraikan secara ringkas kepentingan L dalam pergerakan.*

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

[ 3 marks ]  
 [ 3 markah ]

3(c)(ii)

	3
--	---

- (d) A boy has broken his femur during a sport practice. The doctor suggest to take plenty of dairy product and vitamin . Explain why.  
*Seorang budak lelaki patah tulang femur semasa latihan sukan. Doktor mencadangkan dia mengambil banyak hasil tenusu dan vitamin. Terangkan mengapa.*

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

[ 2 marks ]  
 [ 2 markah ]

3(d)(i)

	2
--	---

Total A3

	12
--	----

- 4 Diagram 4.1 shows the formation of a mature embryo sac of an angiosperm.  
*Rajah 4.1 menunjukkan proses pembentukan pundi embrio matang dalam angiosperma.*

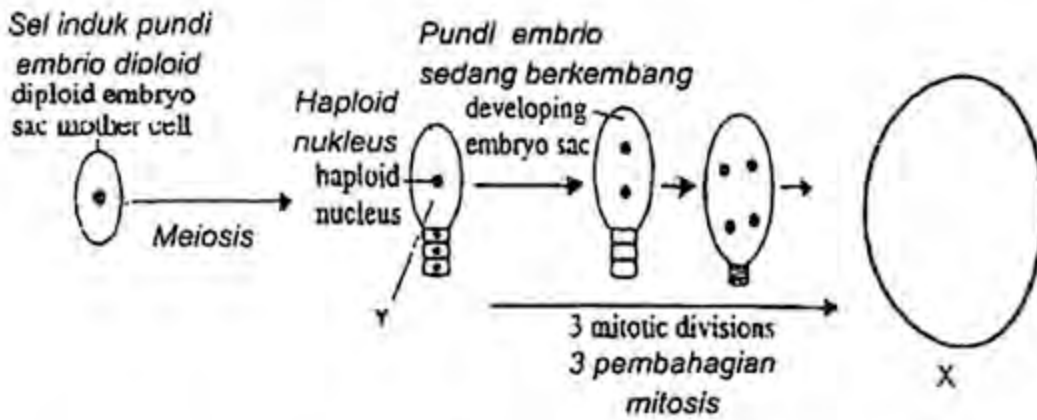


Diagram 4.1  
*Rajah 4.1*

- (a) Name structure Y.  
*Namakan struktur Y.*

.....

[ 1 mark ]  
 [ 1 markah ]

4(a)

	1
--	---

- (b) (i) In Diagram 4.1, complete and label the mature embryo sac.  
*Dalam Rajah 4.1, lukis dan labelkan pundi embrio yang matang tersebut.*

[ 2 marks ]  
 [ 2 markah ]

4(b)(i)

	2
--	---

- (ii) Based on Diagram 4.1, explain the formation of a mature embryo sac.  
*Berdasarkan Rajah 4.1, terangkan proses pembentukan pundi embrio.*

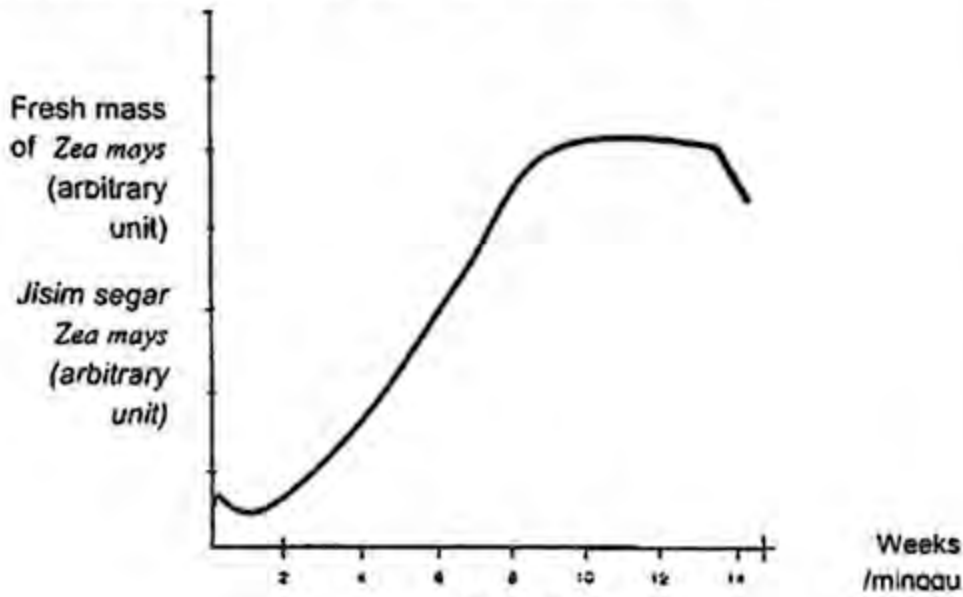
.....  
 .....  
 .....  
 .....  
 .....

[ 4 marks ]  
 [ 4 markah ]

4(b)(ii)

	4
--	---

(c) Graph shows fresh mass of *Zea mays* plotted against time.  
 Graf menunjukkan jisim segar *Zea mays* melawan masa.



Graph 2  
Graf 2

(i) Based on the graph, which period shows the fastest growth rate?  
 Berdasarkan graf, tempoh manakah menunjukkan kadar pertumbuhan paling pantas?

[ 1 mark / 1 markah]

4(c)(i)

	1
--	---

(ii) Explain the growth rates as shown by the graph from start to week 8.

Terangkan kadar pertumbuhan yang ditunjukkan oleh graf dari permulaan sehingga minggu ke-8.

.....

.....

.....

.....

[ 3 marks]

[3 markah]

4(c)(ii)

	3
--	---

(iii) Name the phase of the plant growth after week 8.

Namakan fasa pertumbuhan tumbuhan tersebut selepas minggu ke-8.

.....

[ 1 mark]

[1 markah]

4(c)(iii)

	1
--	---

Total A4

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5 Diagram 5 shows the cross section structure of kidney and nephron which involves in homeostasis in human.

Rajah 5 menunjukkan struktur keratan rentas ginjal dan nefron yang terlibat dalam homeostasis manusia.

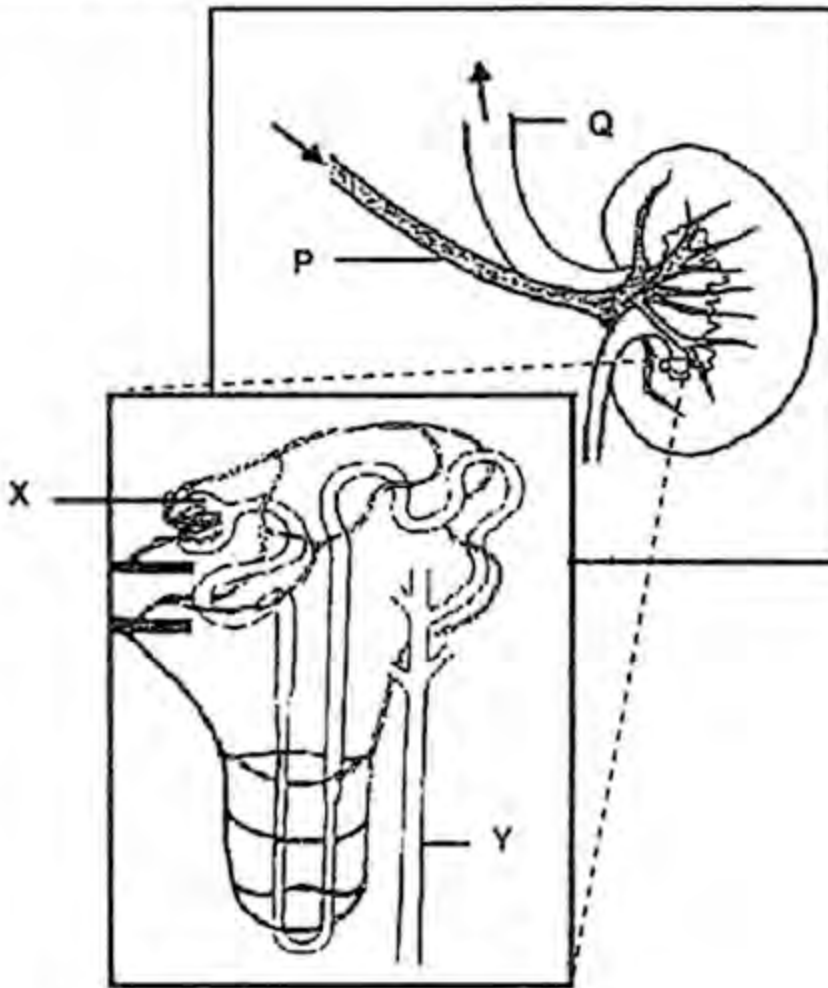


Diagram 5  
Rajah 5

(a) (i) Name blood vessel P and Q.  
Namakan salur darah P dan Q.

P : .....

Q : .....

[ 1 mark ]  
[ 1 markah ]

5(a)(i)

(ii) State one difference in the content of P and Q in excretion.  
Nyatakan satu perbezaan antara kandungan P dan Q dalam perkumuhan.

.....

[ 1 mark ] [ 1 markah ]

5(1)(ii)

(b) The fluid in X is known as glomerular filtrate. Explain how it is formed.  
*Bendalir dalam X dikenali sebagai hasil turas glomerular. Terangkan bagaimana ianya terbentuk.*

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

[3 marks]  
[ 3 markah ]

5(b)  

	3
--	---

(c) State why glucose is not found in Y in a healthy person.  
*Nyatakan mengapa glukosa tidak ditemui dalam Y dalam seseorang yang sihat.*

.....  
.....

[1 mark] / [ 1 markah ]

5(c)  

	1
--	---

(d) Explain the consequences of kidney failure.  
*Terangkan akibat kegagalan buah pinggang.*

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

[2 marks]/[ 2 markah ]

5(d)  

	2
--	---

(e) A man takes too much salty food during lunch. His urine becomes less and concentrated. Explain why.  
*Seorang lelaki mengambil terlalu banyak garam dalam makanan tengaharinya. Air kencing lelaki tersebut menjadi kurang dan pekat. Terangkan mengapa.*

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

[4 marks]/[ 4 markah ]

5(e)  

	4
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Total AS  

	12
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## Section B

[ 40 marks ]

Answer any two questions.

The time suggested to complete this section is 60 minutes

6. (a)(i) A boy steps on a thorn when running in a field, he retracts his leg immediately. Draw and label the reflex arc to show the impulse pathway involved in the boy's reaction.

*Seorang budak terpijak duri semasa berlari di padang lalu menarik kakinya dengan serta-merta. Lukis dan labelkan arka refleks untuk menunjukkan laluan impuls yang terlibat dalam gerakbalas budak itu.*

[4marks  
[4 markah

(a)(ii)

A mother and her young child were involved in an accident. The child was pinned under their car. Upon seeing her child under the car, the mother unconsciously lifted the car to free her child.

*Seorang ibu dan anaknya yang masih kecil terlibat dalam satu kemalangan. Anaknya tersepit di bawah kereta mereka. Apabila melihat keadaan itu, si ibu tanpa sedar telah mengangkat kereta tersebut untuk mengeluarkan anaknya.*

Using your biology knowledge, explain how the endocrine and nervous systems coordinate the mother's response in such situation.

*Dengan menggunakan pengetahuan biologi anda, terangkan bagaimana sistem endokrin dan sistem saraf mengkoordinasikan gerakbalas si ibu dalam situasi tersebut.*

[10marks  
[10 markah

(b)

Both Alzheimer's and Parkinson's disease afflict around 500,000 individuals annually with their eroding and life-sapping effects.

*Penyakit Alzheimer dan Parkinson menyerang dan mengakibatkan kemerosotan kualiti hidup kira-kira 500,000 individu setiap tahun.*

Source: jonty79, Streetdirectory.com editorials

Compare Alzheimer's and Parkinson's diseases.  
*Bandingkan penyakit Alzheimer dan Parkinson.*

[6marks  
[6 markah

7. (a) Diagram 7.1 shows the profile of a mangrove swamp area (P – Q) where the process of colonisation and succession occurs.

*Rajah 7.1 menunjukkan suatu profil kawasan paya bakau (P - Q) di mana berlakunya proses pengkolonian dan penyusunan.*

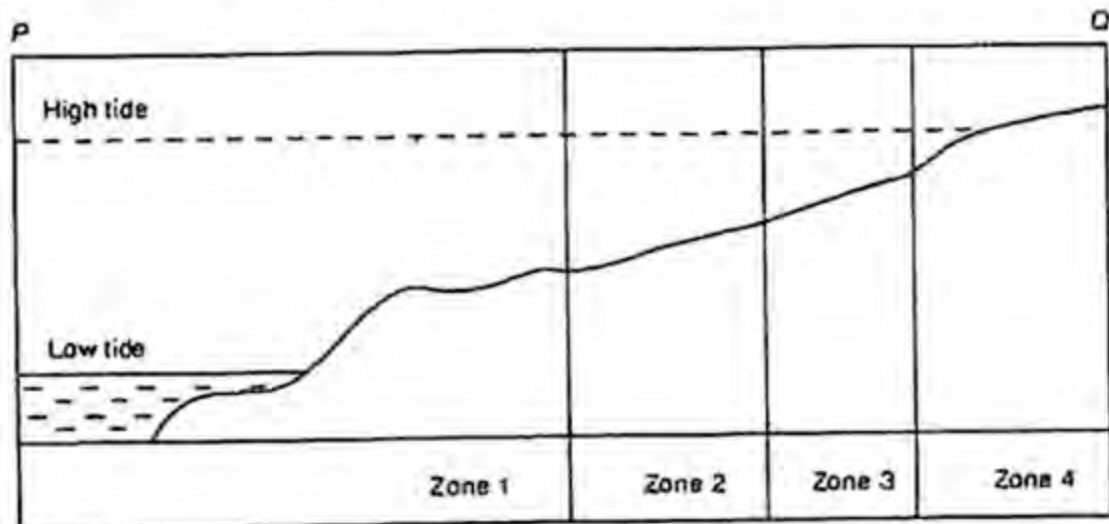


Diagram 7.1 / Rajah 7.1

Based on Diagram 7.1, explain how colonisation and succession take place in zones 1, 2, 3 and 4.

*Berdasarkan Rajah 7.1, terangkan bagaimana pengkolonian dan penyusunan berlaku di zon 1, 2, 3 dan 4.*

[10 marks]  
[10 markah]

- (b) Diagram 7.2 shows a phenomenon X which caused by air pollution.  
*Rajah 7.2 menunjukkan satu fenomena X yang disebabkan oleh pencemaran udara.*



Diagram 7.2  
Rajah 7.2

- (i) Based on Diagram 7.2 , name the phenomenon and explain how it occurs.

*Berdasarkan Rajah 7.2. namakan fenomena dan terangkan bagaimana ia berlaku*

[4 marks]

[4 markah]

- (ii) Describe the effects of the phenomenon on agriculture and aquatic ecosystem and suggest ways to prevent this phenomenon.

*Huraikan kesan fenomena tersebut ke atas pertanian dan ekosistem akuatik serta langkah-langkah yang diambil untuk mencegah fenomena tersebut..*

[6 marks]

[6 markah]

- 8 (a) Diagram 8.1 shows karyotype of individual M who has experienced mutation.

*Rajah 8.1 menunjukkan karyotip individu M yang telah mengalami mutasi.*

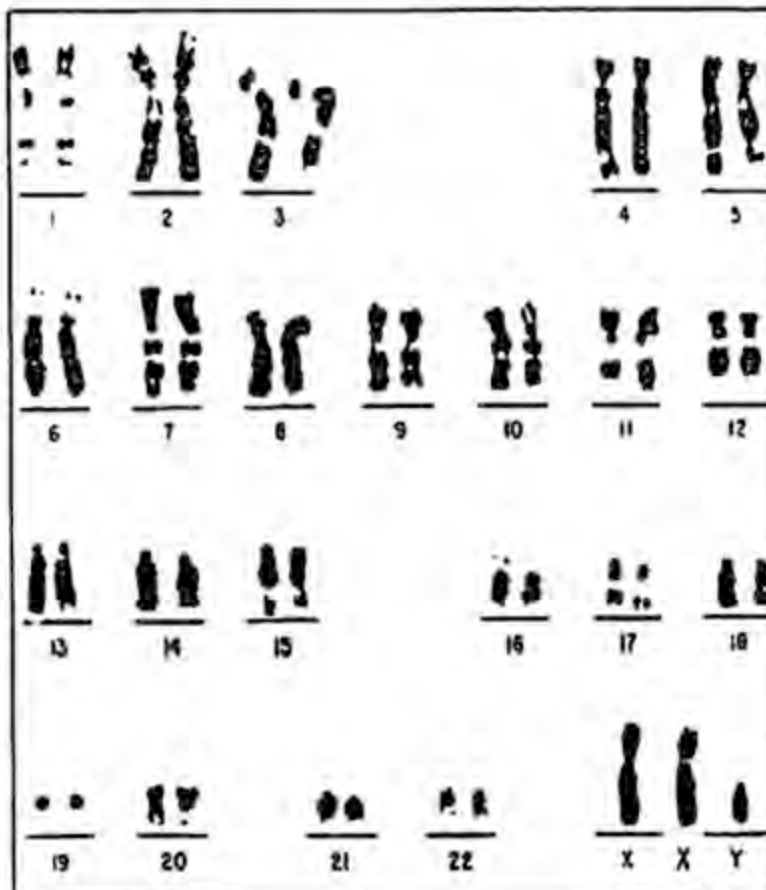


Diagram 8.1

*Rajah 8.1*

- (i) Based on Diagram 8.1, state the meaning of mutation.

*Berdasarkan Rajah 8.1, nyatakan maksud mutasi .*

[ 3 marks ]  
[3 markah]

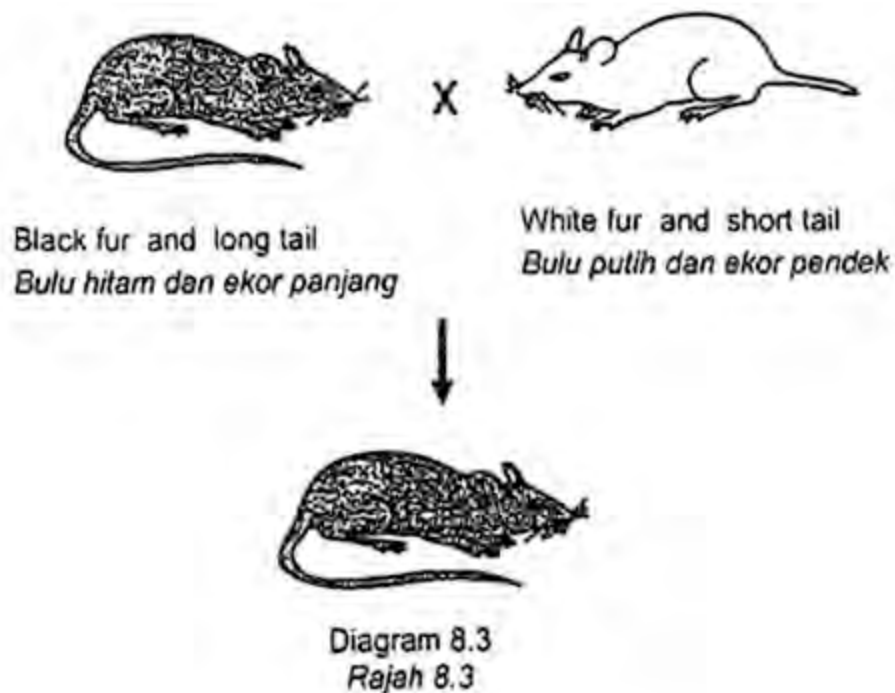
- (ii) Explain the cause of mutation in Diagram 8.1.

*Terangkan sebab berlakunya mutasi pada Rajah 8.1*

[ 7 marks ]  
[7 markah]

- (b) Diagram 8.2 shows the crossbreed between pure breeding mice for black fur and long tail with mice for white fur and short tail.

*Rajah 8.3 menunjukkan kacukan baka tulen antara tikus berbulu hitam dan ekor panjang dengan tikus berbulu putih dan berekor pendek.*



Explain the crossbreed in Diagram 8.3 by using a schematic diagram,  
*Terangkan kacukan dalam Rajah 8.3 dengan menggunakan rajah skema.*

[ 10 marks ]  
[10 markah]

9. (a)

Cultivation of crops always faces a number of uncertainties in the forms of pest, bad weather and to some extent, natural disasters. The production, hence, decreases and the number of population it can support is getting smaller.

*Penanaman pokok sentiasa meghadapi beberapa masalah luar jangkaan dalam bentuk serangga perosak, cuaca buruk dan kemusnahan semulajadi. Oleh itu produk berkurang dan populasi yang boleh ditanggung semakin mengecil*

The above statement is one of the many agricultural problems that have been hurting the farmers and the economy of a country. It has been widely mentioned that genetic engineering in crops can help overcoming these problems. Explain this statement.

*Pernyataan di atas adalah salah satu daripada masalah pertanian yang menjejaskan petani dan ekonomi negara. Kejuruteraan genetik dalam pertanian dapat membantu mengatasi masalah ini. Terangkan pernyataan ini.*

[10 marks]  
[10 markah]

(b)

The increase in world population has been rapid since the last decade. In contrary, falling short in production of food to feed this vast population is increasingly alarming.

*Penambahan penduduk dunia adalah begitu cepat kebelakangan ini. Sebaliknya, pengurangan pengeluaran makanan bagi menampung populasi besar dunia ini semakin serius.*

The above statement is a global problem which is faced by all the countries in this world. Many country heads are placing great emphasis on how to overcome it. Explain how a developing country like Malaysia can solve this problem in terms of improving the quality and quantity of food production.

*Pernyataan di atas merupakan suatu masalah global yang dihadapi semua negara. Ramai ketua negara dunia sedang menumpukan perhatian akan cara mengatasinya. Terangkan bagaimana sesebuah negara sedang membangun seperti Malaysia boleh mengatasi masalah ini dari segi kualiti dan kuantiti pengeluaran makanan.*

[10 marks] [10 markah]

END OF QUESTION PAPER  
KERTAS SOALAN TAMAT