

SULIT

Name:.....

Form :

4551/2

Biology

Paper 2

Sept

2009

2 $\frac{1}{2}$ hours

**PERSIDANGAN KEBANGSAAN PENGETUA-PENGETUA
SEKOLAH MENENGAH
NEGERI KEDAH DARUL AMAN**

PEPERIKSAAN PERCUBAAN SPM 2009

BIOLOGY

PAPER 2

Two hours and thirty minutes

DO NOT OPEN THE TEST PAPER UNTIL YOU ARE TOLD TO DO SO

1. This paper consists of two sections. **Section A, Section B.** Answer all the questions in Section A, any two questions in Section B.
2. Write your answers in the spaces provided for Section A. Important steps in calculations must be shown .
3. Write your answers on the separate answer sheets provided for Section B.
4. Answer Section B in details. You may use equation, diagram, table, graph and other suitable methods to explain your answers.
5. Show your working, it may help you to get marks.
6. If you wish to change your answer, neatly cross out the answer that you have done. Then write down the new answer
7. The diagrams in the questions are not drawn to scale unless stated.
8. Marks allocated for each question or part of the questions are shown in brackets.
9. The time suggested to answer Section A is 90 minutes, Section B is 60 minutes.
10. The use of a non programmable calculator is permitted.

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

This Question Paper Consists of 22 Printed Pages

SULIT

2

Section A
Bahagian A

[60 marks]
[60 markah]

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

- 1 Table 1 shows the result of an experiment in which three similar towels have the same fat stains. The towels were washed by using enzyme-containing washing powder at three different temperatures.

Jadual 1 menunjukkan keputusan eksperimen di mana tiga tuala yang mempunyai kotoran yang sama. Semua tuala ini dibasuh menggunakan bahan pencuci yang mengandungi enzim pada tiga suhu yang berlainan.

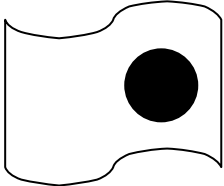
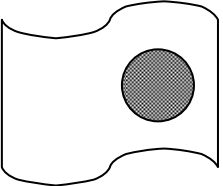
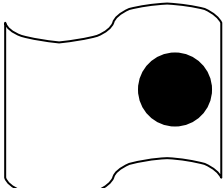
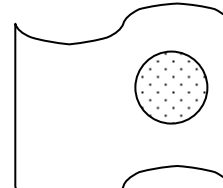
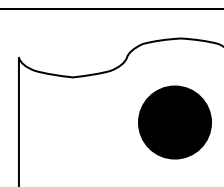
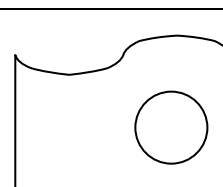
Before washing <i>Sebelum dibasuh</i>	After Washing <i>Selepas dibasuh</i>	Washing Temperature <i>Suhu basuhan</i>
		
		
		

Table 1
Jadual 1

- (a) (i) Based on the results in Table 1, choose a suitable temperature 10°C, 40°C or 60°C to fill into Table 1.

Berdasarkan jadual 1, pilih suhu yang sesuai 10 °C, 40 °C atau 60 °C untuk diisikan dalam jadual 1

[3 marks]
[3 markah]

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3

(ii) Explain the result of washing the towels at :
Terangkan hasil keputusan basuhan tuala pada :

i. 10°C

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

[2 marks]
[2 markah]

ii. 40°C

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

[2 marks]
[2 markah]

(b) Name one enzyme used in the washing powder
Namakan satu enzim yang digunakan dalam serbuk pencuci itu.

.....

[1 mark]
[1 markah]

(c)

Besides being used in the manufacturing of detergents, enzymes are widely used in our daily life as well as in various industries.
Selain digunakan dalam penghasilan detergen, enzim juga banyak digunakan dalam kehidupan seharian begitu juga dalam kebanyakan industri.

Explain two examples of the uses of enzymes.
Terangkan dua contoh kegunaan enzim.

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

[4 marks]
[4 markah]

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2 Diagram 2 (a) shows the cross-section of dicotyledonous leaf. Diagram 2(b) shows the structure of organelle P found in the cells of green leaves.

Rajah 2 (a) menunjukkan keratan rentas daun dikotiledon. Rajah 2 (b) menunjukkan struktur organel P yang terdapat dalam sel daun hijau.

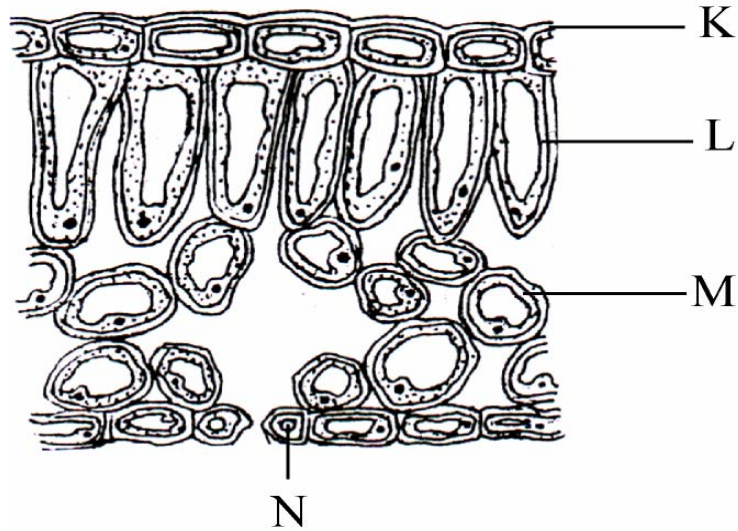


Diagram 2 (a)
Rajah 2 (a)

Organelle P
Organel P

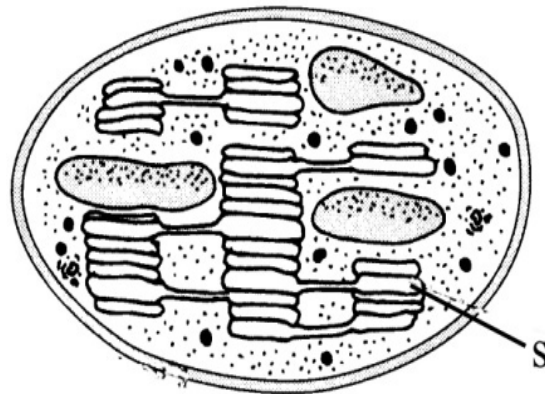


Diagram 2 (b)
Rajah 2 (b)

(a) Name the cells labelled L and N in diagram 2(a).
Namakan sel-sel yang berlabel L dan N di rajah 2 (a)

L :

N :

[2 marks]
[2 markah]

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(b) Which cell in diagram 2(a) has the highest density of organelle P ?
Di rajah 2 (a), sel yang manakah mempunyai ketumpatan organel P paling tinggi ?

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

(c) (i) Describe the process that occurs in X of organelle P.
Perihalkan proses yang berlaku di X dalam organel P.

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

(ii) Name two factors that affect the rate of the process in c (i)
Namakan dua faktor yang mempengaruhi kadar proses di c (i).

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

(iii) Explain how the factors in c (ii) affect the rate of the process in c(i)
Terangkan bagaimana faktor-faktor di c (ii) mempengaruhi kadar proses di c (i)

Factor 1:
Faktor 1:
.....
.....
.....

Factor 2:
Faktor 2:
.....
.....
.....

[4 marks]
[4 markah]

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3 Diagram 3.1 shows the structure of a human arm

Rajah 3.1 menunjukkan struktur bahagian tangan manusia.

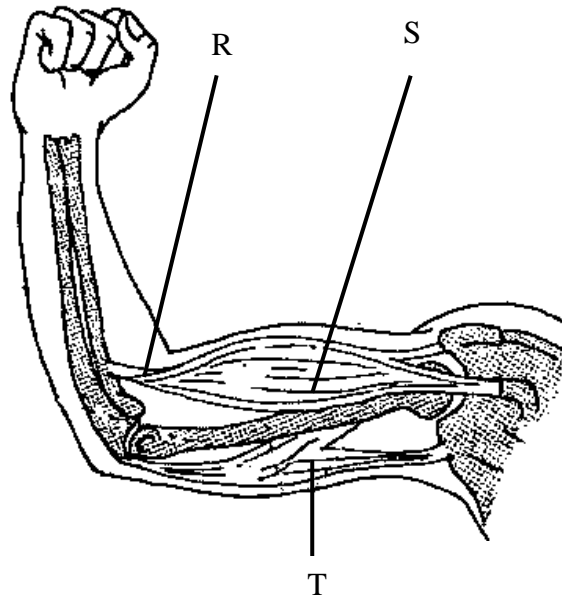


Diagram 3.1
Rajah 3.1

(a) Name the parts labelled S and T.

Namakan bahagian berlabel S dan T

S :

T :

[2 marks]
[2 markah]

(b) (i) Explain the role of S and T to straighten the arm.
Terangkan peranan S dan T untuk meluruskan tangan.

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

[2 marks]
[2 markah]

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- (ii) S and T will need sufficient blood supply to function efficiently.
Explain why?

*S dan T memerlukan bekalan darah yang cukup untuk berfungsi dengan baik .
Terangkan mengapa?*

.....

[2 marks]
[2 markah]

- (c) (i) State the function of R.
Nyatakan fungsi R.

.....

[1 mark]
[1 markah]

- (ii) State two physical characteristics of tissue R that enable it to carry out it's function efficiently.
Nyatakan dua sifat fizikal R untuk membolehkannya berfungsi dengan baik.

.....

[2 marks]
[2 markah]

- (iii) What will happen if tissue R is torn off?
Apakah yang akan berlaku jika tisu R mengalami kecederaan (terkoyak)?

.....

[1 mark]
[1 markah]

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- (e) Diagram 3.2 shows one of the diseases caused by impaired musculoskeletal system. The disease cause the joints to become swollen, stiff and painful.

Rajah 3.2 menunjukkan sejenis penyakit yang disebabkan oleh sistem otot rangka yang tidak berfungsi dengan baik. Penyakit ini menyebabkan sendi menjadi bengkak, kaku dan sakit.



Diagram 3.2
Rajah 3.2

- (i) Name the disease shown in diagram 3.2.

Namakan penyakit seperti yang ditunjukkan dalam rajah 3.2.

.....
.....

[1 mark]
[1 markah]

- (ii) What is the cause of the disease?

Apakah penyebab penyakit tersebut?

.....
.....

[1 mark]
[1 markah]

4 (a) Figures 4.1 (a) and 4.1 (b) show different types of fingerprint and a group of form five students with various body height.

Rajah 4.2 (a) dan 4.2 (b) menunjukkan berbagai jenis cap ibu jari dan berbagai ketinggian sekumpulan pelajar tingkatan lima.



Diagram 4.1 (a)
Rajah 4.1 (a)



Diagram 4.1 (b)
Rajah 4.1 (b)

(i) State the types of variation shown by the two diagrams above.

Nyatakan jenis variasi yang ditunjukkan dalam dua rajah di atas.

Diagram 4.1 (a) :
Rajah 4.1 (a)

Diagram 4.1 (b) :
Rajah 4.1 (b)

[2 marks]
[2 markah]

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(b) State two differences between the two types of variation in (a) (i).
Nyatakan dua perbezaan antara dua jenis variasi dalam (a) (i)

1

.....

.....

.....

2

.....

.....

.....

[4 marks]
[4 markah]

(c) Explain the importance of variation.
Terangkan kepentingan variasi

.....

.....

.....

[2 marks]
[2 markah]

(d) Mutation is one of the factor that cause variation. Diagram 4.2 shows two types of chromosomal mutation.
Mutasi adalah salah satu factor yang menyebabkan variasi. Rajah 4.2 menunjukkan dua jenis mutasi kromosom.

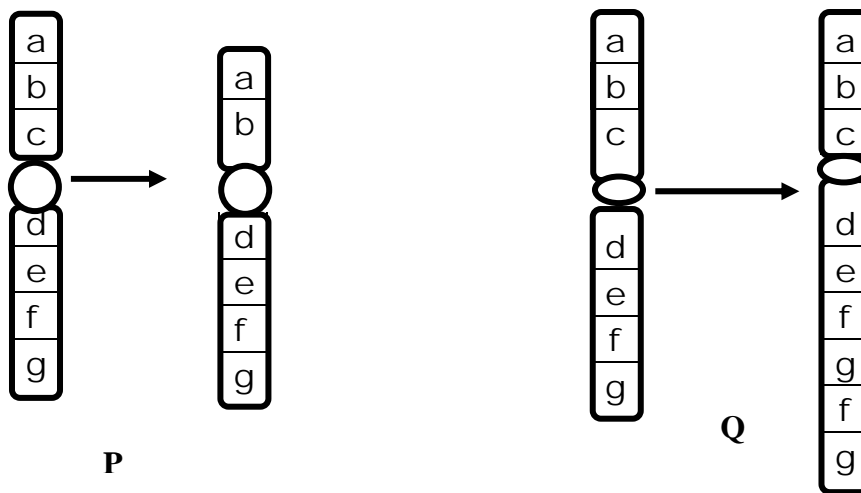


Diagram 4.2
Rajah 4.2

SULIT

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- (i) Name the processes involved in the mutation of P and Q.

Namakan proses-proses yang berlaku dalam mutasi P dan Q.

P:

Q:

[2 marks]
[2 markah]

- (ii) Explain one bad effect cause by mutation.

Terangkan satu kesan buruk yang disebabkan oleh mutasi.

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

[2 marks]
[2 markah]

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5 Diagram 5 shows a foetus in the mother's uterus.

Diagram 5 menunjukkan fetus di dalam uterus ibunya.

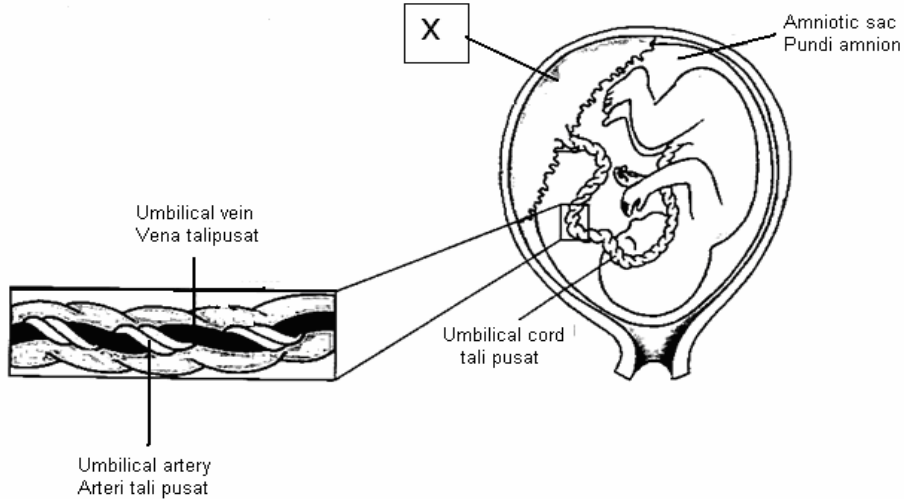


Diagram 5
Rajah 5

(a) Structure X is connected to the foetus via the umbilical cord.
Struktur X dihubungkan kepada fetus melalui tali pusat.

(i) Name structure X.
Namakan struktur X.

.....

[1 marks]
[1 markah]

(ii) Explain two functions of structure X.
Terangkan dua fungsi struktur X

1

2

[4 marks]
[4 markah]

- (b) State the difference between the content of the blood in umbilical artery and umbilical vein.

Nyatakan perbezaan di antara kandungan darah dalam arteri tali pusat dengan vena tali pusat.

.....

.....

.....

.....

.....

[2 marks]
[2 markah]

- (c) Puan Lisa who is Rhesus negative is pregnant. During her first pregnancy, she carries a foetus which is Rhesus positive . The development of the first foetus was not affected. However during her second pregnancy , if the foetus is Rhesus positive, the foetus will be harmed. Puan Lisa should seek medical advice to prevent this condition .

Puan Lisa mempunyai Rhesus negatif telah hamil. Semasa kehamilan pertama , dia mempunyai fetus Rhesus positif. Perkembangan fetus pertamanya tidak terjejas. Walaubagaimanapun, untuk kehamilan kedua, jika fetus mempunyai Rhesus positif, kesan yang membahayakan akan berlaku keatas fetus. Puan Lisa harus mendapatkan nasihat perubatan untuk mencegah keadaan tersebut berlaku.

- (i) Explain the condition that occur during Puan Lisa’s second pregnancy.
Terangkan keadaan yang berlaku semasa kehamilan kali kedua Puan Lisa.

.....

.....

.....

.....

.....

[2 marks]
[2 markah]

- (ii) How can this problem be avoided ?
Bagaimanakah masalah ini dapat dielak dari berlaku?

.....

.....

[1 marks]
[1 markah]

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- (d) A woman who is a heavy smoker is pregnant. Explain why she should stop smoking.

Seorang perempuan yang kuat merokok disahkan hamil. Terangkan mengapa beliau mesti berhenti merokok.

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

[2 marks]
[2 markah]

Section B
Bahagian B

[40 marks]

[40 markah]

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

- 6 (a) Diagram 6.1 shows the part of the regulatory mechanism of oxygen and carbon dioxide contents in the body.
Rajah 6.1 menunjukkan bahagian mekanisma pengawalatur kandungan oksigen dan karbon dioksida di dalam badan manusia

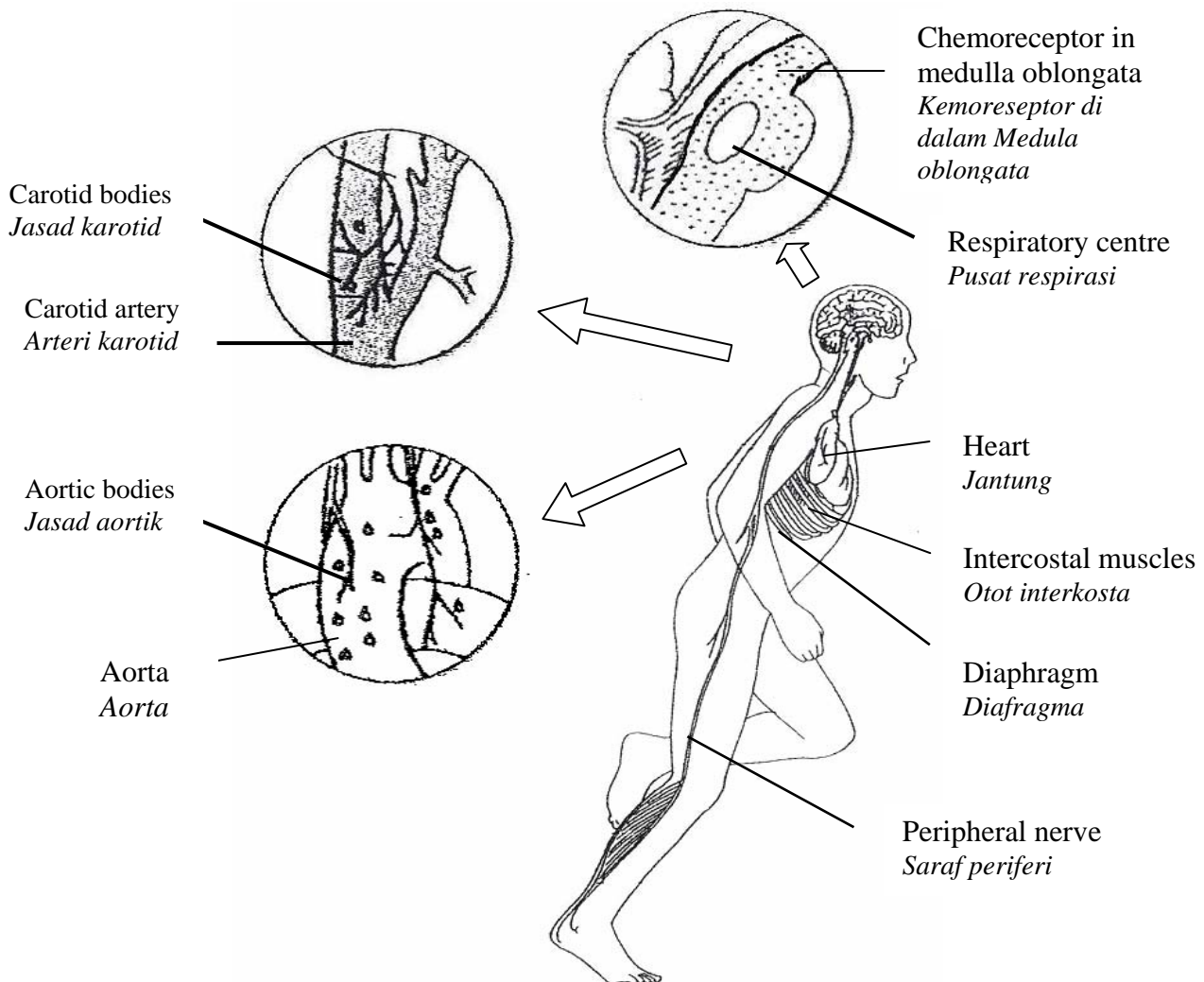


Diagram 6.1

Rajah 6.1

- (i) Based on the diagram, explain how the concentration of carbon dioxide in the blood is regulated during a vigorous activity.
Berdasarkan rajah tersebut, terangkan bagaimana kepekatan karbon dioksida di dalam darah dikawalatur semasa melakukan aktiviti cergas.

[8 marks]

[8 markah]

- (ii) Explain why the pulse rate takes several minutes to return to normal after a vigorous activity.

Terangkan kenapa kadar denyutan nadi seseorang itu mengambil masa beberapa minit untuk kembali normal selepas melakukan aktiviti cergas.

[4 marks]





[4 markah]

- (b) Diagram 6.2(a) and 6.3(a) show paddy seedlings and terrestrial plant growing in a waterlogged condition soil.

Rajah 6.2(a) dan 6.3(a) menunjukkan anak benih pokok padi dan tumbuhan darat yang tumbuh dalam keadaan tanah berair.

Diagram 6.2 (b) and 6.3 (b) show the growth of the plants after four months.

Rajah 6.2(b) dan 6.3(b) menunjukkan pertumbuhan kedua-dua tumbuhan selepas empat bulan

After one month / selepas satu bulan	After four months / selepas empat bulan
 <p>Diagram 6.2(a) <i>Rajah 6.2(a)</i></p>	 <p>Diagram 6.2(b) <i>Rajah 6.2(b)</i></p>
 <p>Diagram 6.3(a) <i>Rajah 6.3(a)</i></p>	 <p>Diagram 6.3(b) <i>Rajah 6.3 (b)</i></p>

Explain the process that occurs in the roots of both plants which result in the condition shown in diagram 6.2(b) and 6.3(b).

Terangkan proses yang berlaku dalam kedua-dua akar tumbuhan yang menyebabkan keadaan seperti ditunjukkan dalam rajah 6.2(b) dan 6.3 (b).

[8 marks]

[8 markah]

7. Diagram 7.1 shows a type of fungi.
Rajah 7.1 menunjukkan sejenis fungi.

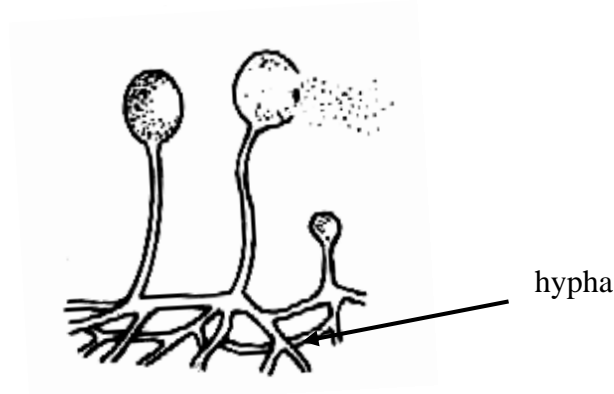
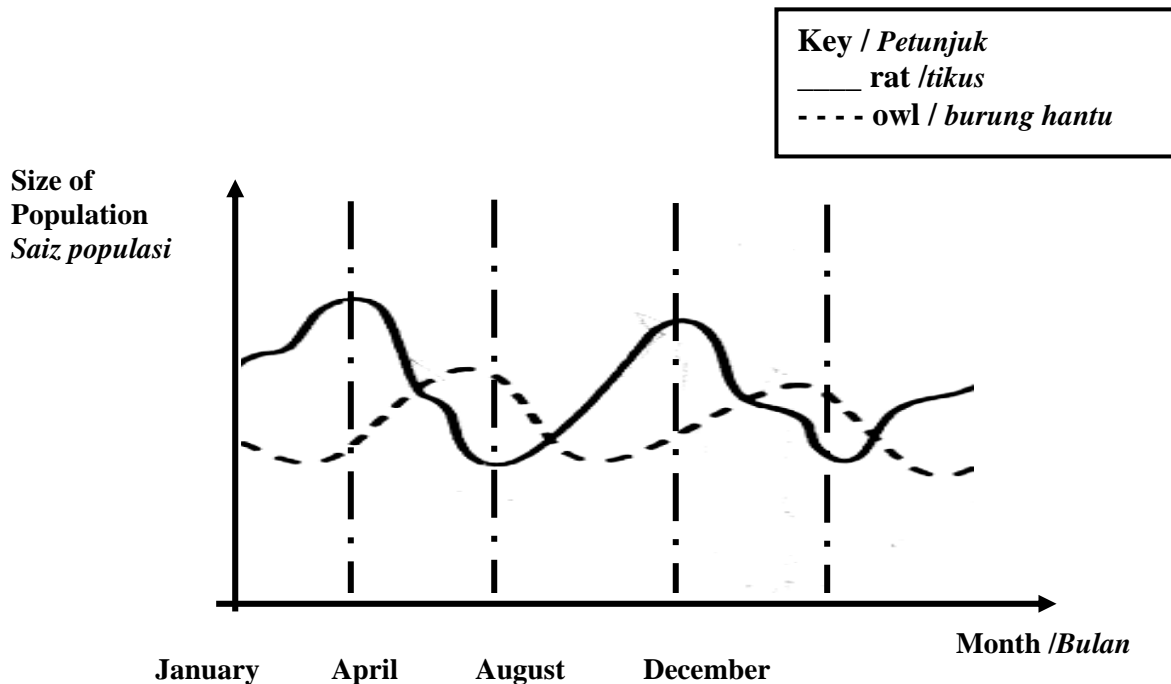


Diagram 7.1
Rajah 7.1

- (a) Explain how this organism obtained the nutrient.
Terangkan bagaimana organisma ini memperolehi makanan..

[4 marks]
 [4 markah]

- (b) Graph 7.1 below shows the population size of rats and owls in an oil palm estate change throughout the year.
Graf di bawah menunjukkan perubahan saiz populasi tikus dan burung hantu dalam sebuah ladang kelapa sawit sepanjang tahun.



Graph 7.1
Graf 7.1

Based on graph 7.1, explain the changes in the size of population of the owls and the rats throughout the year.

Berdasarkan kepada graf di atas, huraikan perubahan saiz populasi bagi burung hantu dan tikus sepanjang tahun.

[6 marks]

[6 markah]

(c)

Diagram 7.2 shows the nitrogen cycle which plays an important role in the formation of protein. Plants and animals need nitrate to form protein. Explain the role of plants, animals and microorganism A, B, C, and D in this cycle.

Rajah 7.2 menunjukkan kitar nitrogen yang memainkan peranan penting dalam pembentukan protein. Tumbuhan dan haiwan memerlukan nitrat untuk membentuk protein.

Huraikan peranan tumbuhan, haiwan dan microorganisma A, B, C, dan D dalam kitar ini.

[10 marks]

[10 markah]

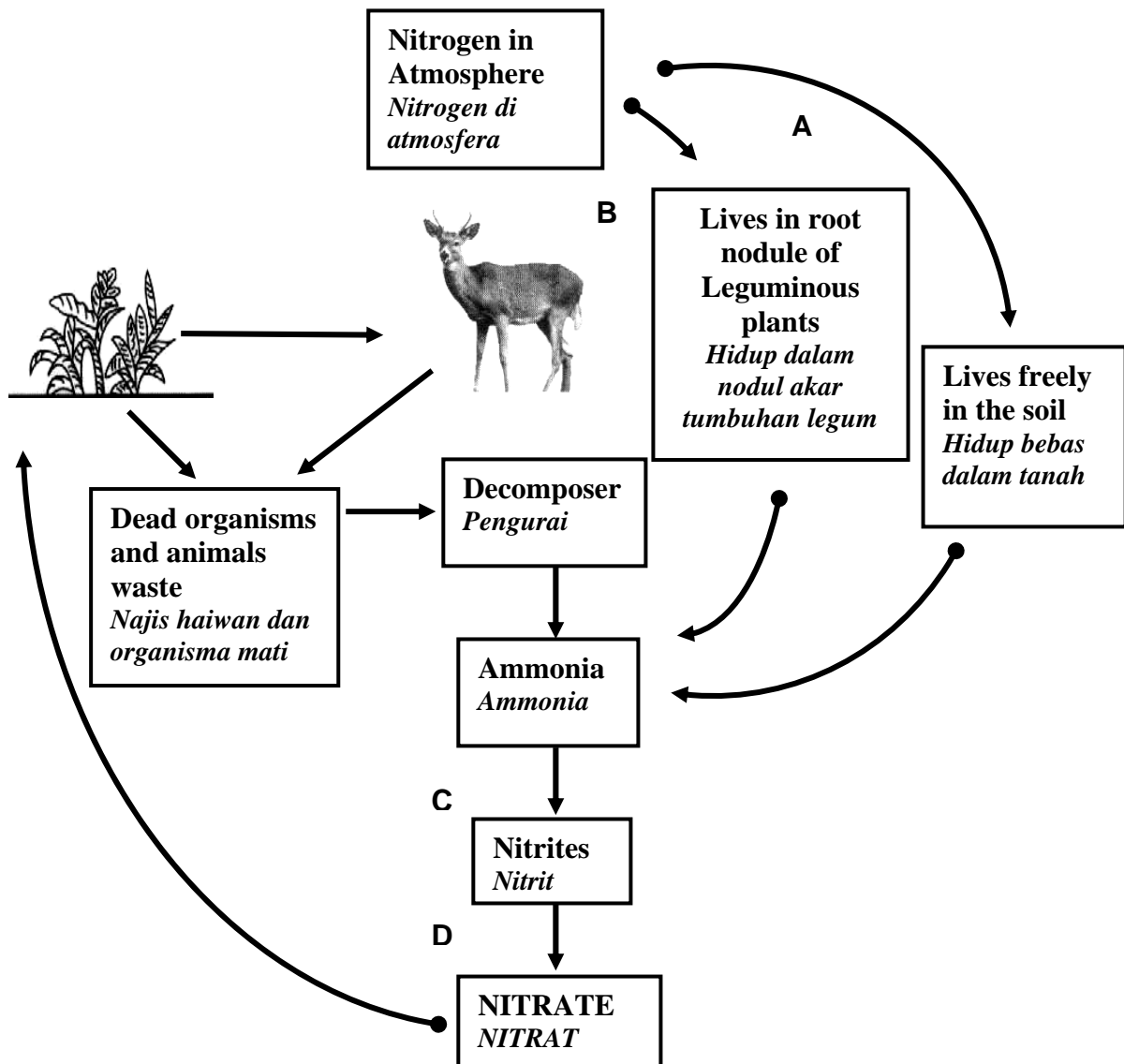


Diagram 7.2
Rajah 7.2

- 8 Diagram 8.1 shows the structure of nephron in the human kidney.
Rajah 8.1 menunjukkan struktur nefron dalam ginjal manusia.

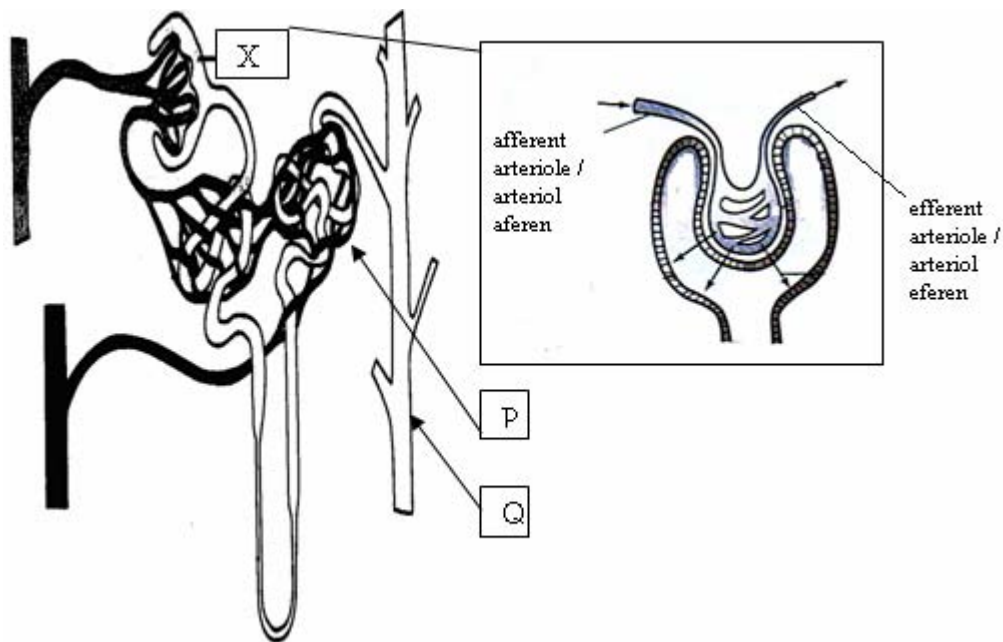


Diagram 8.1
Rajah 8.1

- (a) Explain the process that occurs in the region labelled X.
Terangkan proses yang berlaku pada bahagian yang berlabel X.

[4 marks]
 [4 markah]

- (b) Explain the process that occurs in P and Q in osmoregulation of blood osmotic pressure.
Terangkan proses yang berlaku di P dan Q dalam pengosmokawalaturan tekanan osmosis darah.

[6 marks]
 [6 markah]

- (c) (i) Homeostasis occurs through a negative feedback mechanism. State the importance of homeostasis.
Homeostasis berlaku melalui mekanisma suapbalik negative. Nyatakan kepentingan homeostasis.

[2 marks]
 [2 markah]

- (ii) Diagram 8.2 shows the negative feedback mechanism involved in regulation of blood glucose concentration in human.

Rajah 8.2 menunjukkan mekanisme suap balik negative yang terlibat dalam pengawalan kepekatan glukosa darah manusia.

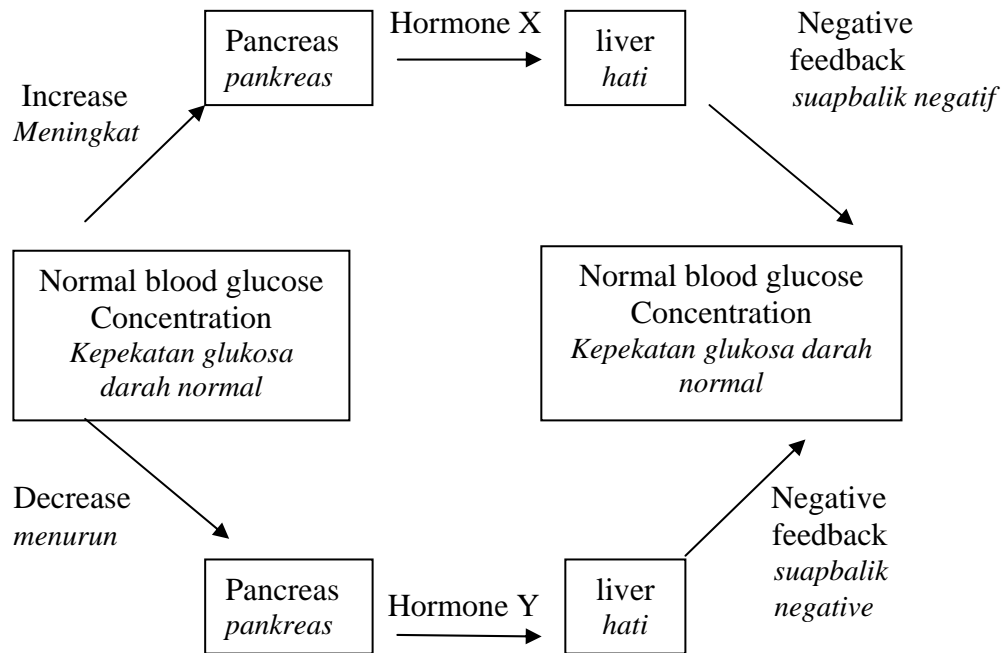


Diagram 8.2
Rajah 8.2

Explain how hormone X and Y regulate the blood glucose level in human.

Terangkan bagaimana hormone X dan Y mengawalatur aras glukosa darah dalam manusia.

[8 marks]
[8 markah]

9. Diagram 9.1 shows the blood group of a married couple and their offspring. The couple has three boys and one girl but all of them have different types of blood group.

Rajah 9.1 menunjukkan jenis kumpulan darah bagi satu keluarga. Pasangan tersebut mempunyai tiga anak lelaki dan seorang anak perempuan dengan kumpulan darah yang berbeza.

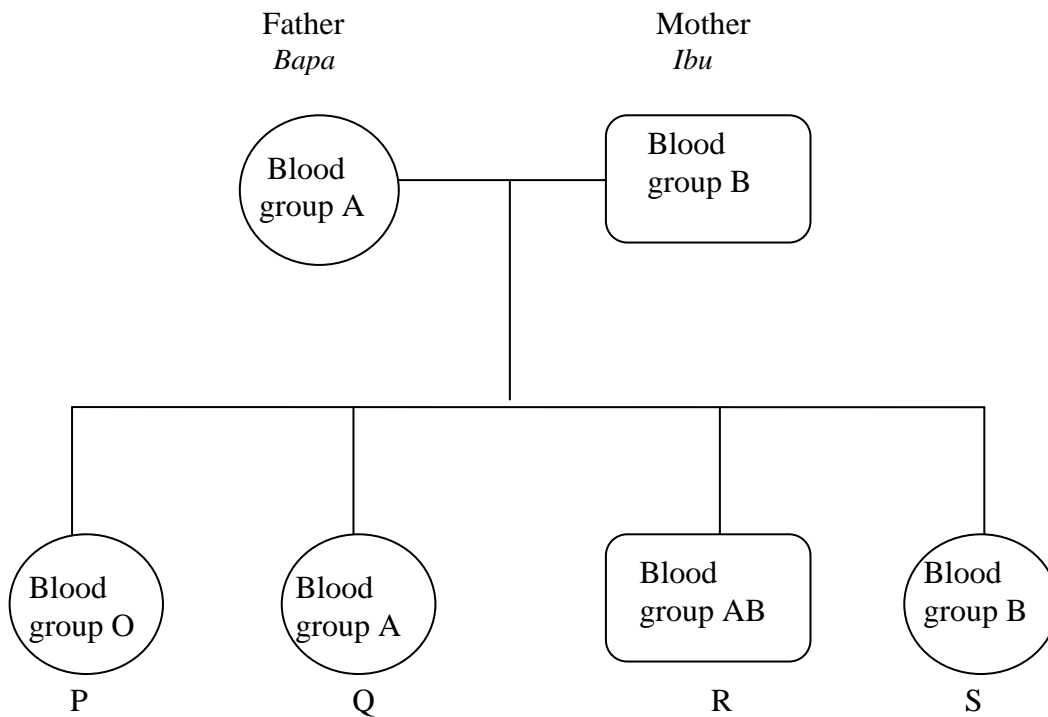


Diagram 9.1
Rajah 9.1

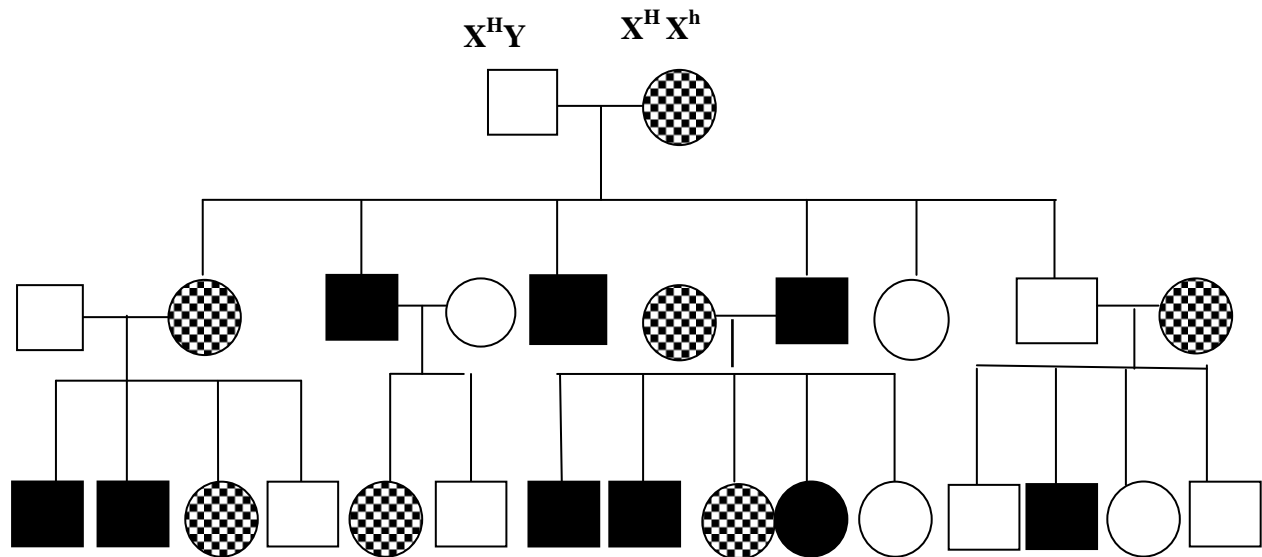
- a) Based on Mendel's First Law, with the help of Punnet square schematic diagram, explain why the blood of each member in the family is different.

Berdasarkan Hukum Mendel yang pertama dan dengan bantuan rajah segiempat Punnet, terangkan kenapa setiap ahli dalam keluarga tersebut mempunyai jenis darah yang berbeza.

[8 marks]
[8 markah]

(b) Hereditary diseases are diseases that can be transmitted from parents to their offspring. Haemophilia is a hereditary sex-linked disease. Diagram 9.2 below shows the pedigree of a family in three generations.

Penyakit genetik adalah penyakit yang diwarisi daripada ibubapa. Hemofilia adalah sejenis penyakit terangkai seks. Rajah 9.2 di bawah menunjukkan gambarajah pokok satu keluarga bagi tiga generasi.



Keys / Petunjuk:					
H - Dominant allele <i>Alel Dominan</i>		Normal male <i>Lelaki normal</i>		Hemophiliac male <i>Lelaki Hemofilia</i>	
h - recessive allele <i>Alel resesif</i>					
	Normal Female <i>Perempuan normal</i>		Carrier female <i>Perempuan pembawa</i>		Hemophiliac female <i>Perempuan hemofilia</i>

Diagram 9.2
Rajah 9.2

- (i) What is the sex-linked disease? [2 marks]
Apakah penyakit terangkai seks? [2 markah]
- (ii) From the diagram given, more males are affected with the disease compared to females. Explain why it usually affects males more than females. [8 marks]
Berdasarkan rajah yang diberi, lebih ramai lelaki yang mendapat penyakit hemofilia berbanding perempuan. Terangkan kenapa penyakit ini selalunya terdapat pada lelaki lebih daripada perempuan. [8 markah]
- (iii) Explain how the inheritance of the disease can be avoided. [2 marks]
Terangkan bagaimana untuk mengelakkan penyakit ini daripada diwarisi. [2 markah]