Name : _____[ ] **4551 / 2**

NO. KAD PENGENALAN

Class: _____

						-			-				

BIOLOGY

ANGKA GILIRAN

Paper 2

槟 华 女 子 国 民 型 中 学

SMJK Perempuan China Pulau Pinang

Peperiksaan Pertengahan Tahun, 2014

BIOLOGY *Paper 2*

2 h 30 min

DO NOT OPEN THIS BOOKLET UNTIL INSTRUCTED

1. *This booklet consists of **two** Sections.*
2. *Answer **all** questions in **Section A**, choose **any two** question from **Section B.***
3. *The diagrams in the questions provided are not drawn to scale unless stated.*
4. *You may use a non-programmable scientific calculator.*

Section	Question	Marks	Marks obtained
A	1	12	
	2	12	
	3	12	
	4	12	
	5	12	
B	6	20	
	7	20	
	8	20	
	9	20	
		Total	

This booklet consists of 15 printed pages.

[Lihat sebelah

Section A [60 marks]

Answer **all** the questions in this section

1. Diagram 1.1 shows the blood system associated with the liver in the human body.

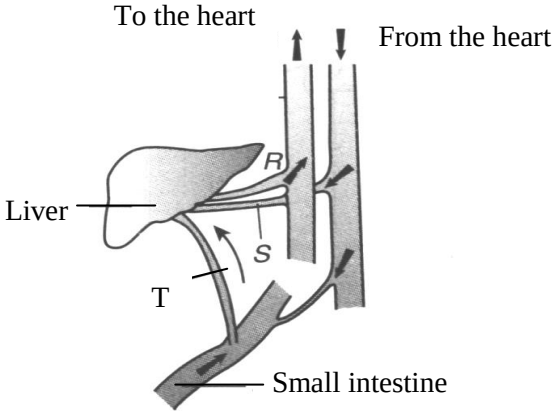


Diagram 1.1

(a) State two functions of the liver in the food digestion

i) _____

_____

ii) _____

_____

[*2 marks*]

(b) What happens to excess glucose when it is carried into the liver?

_____

_____

[1 *marks*]

(c) Name the substance involve in this conversion

_____

[*1 marks*]

(d) What would happen if the human liver is damaged and has to be removed?

_____

_____

_____

[*2 marks*]

(e) A boy had a sardine sandwich and a glass of glucose solution for lunch. In which blood vessel R, S or T would there be the highest concentration of glucose and the highest concentration of urea? Give an explanation for each of your answer

_____

_____

_____

_____

_____

_____

_____

_____

[*4 marks*]

(f) State one effect of regularly taking vitamin pills containing high concentration of fat soluble vitamins exceeding daily dietary requirements.

_____

_____

[*2 marks*]

2. Diagram 2.1 shows the respiratory structures of an insect.

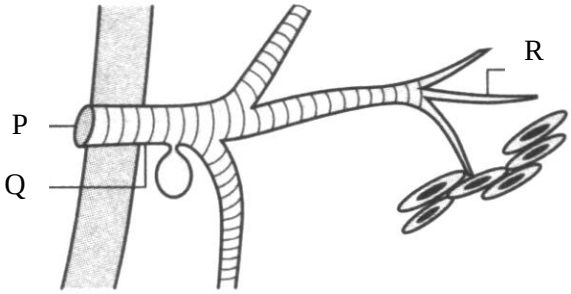


Diagram 2.1

(a) Label P,Q and R

P:_____

Q:_____

R:_____

[*3 marks*]

(b) The opening of P is surrounded by fine hairs. What is the function of these hairs?

_____

_____

[*1 marks*]

(c) Breathing movements in larger insects are aided by contraction and relaxation of the abdominal muscles. Explain how this helps in the movement of gases into and out of the insect's body.

_____

_____

_____

_____

_____

_____

[*4 marks*]

(d) What is the function of Q in the breathing mechanism of insects?

_____

_____

[*1 marks*]

(e) The fluid at the ends of the tubes labelled R plays an important role in the supply of oxygen to actively-respiring tissue. Explain how this occurs.

_____

_____

_____

_____

_____

[*3 marks*]

4. Diagram 4.1 shows the relationship between a blood vessel, a lymphatic vessel and the cells in the human body.

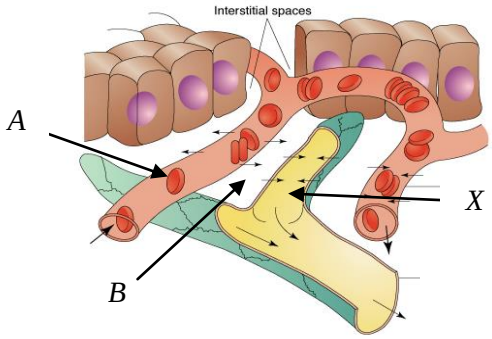


Diagram 4.1

(a) (i) Name the fluid found in the part labelled *A*.

_____

[*1 mark*]

(ii) Name the fluid found in the part labelled *B*.

_____

[*1 mark*]

(b) (i) State **one** substance which is found in *A* but is not found in *B*.

_____

[*1 mark*]

(ii) Explain why the fluid in *A* diffuse into area *B*.

_____

_____

_____

_____

[*2 marks*]

(c) (i) What is the **main** function of cell *X* in the circulatory system of humans?

_____

_____

[*1 mark*]

(ii) Name the complex compound found in cell *X* that enables the cell to carry out its function.

_____

[*1 mark*]

(d) State **two** observations that you can make from the Diagram 4.2 which help you to identify that the blood vessel shown is a capillary.

1. _____

_____

2._____

_____

[*2 marks*]

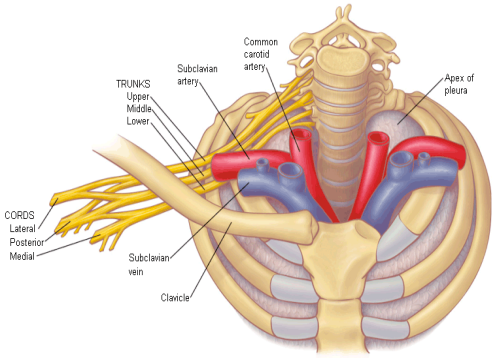


Diagram 4.2

Diagram 4.2 shows parts of lymphatic system in humans.

(e) Using Diagram 4.2, explain how the lymph is drained back to the blood circulatory system in humans.

_____

_____

_____

_____

_____

[3 *marks*]

5. Diagram 5.1 shows two vertebrae of humans.

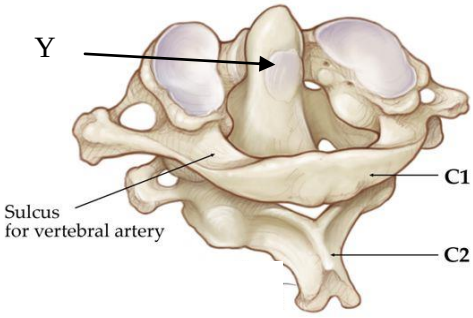


Diagram 5.1

(a) (i) Based on the Diagram 5.1, name vertebra *C1* and vertebra *C2*.

C1 : _____

C2 : _____

[*2 marks*]

(ii) Give **two** reasons to support your answer in (a) (i) C1.

1. _____

_____

2. _____

_____

[*2 marks*]

(b) Name the structure that forms a joint with this vertebra:
(i) on the superior surface.

_____

[*1 mark*]

(ii) on the inferior surface.

_____

[*1 mark*]

Diagram 5.1 shows a *Rainbow trout* at a lake.

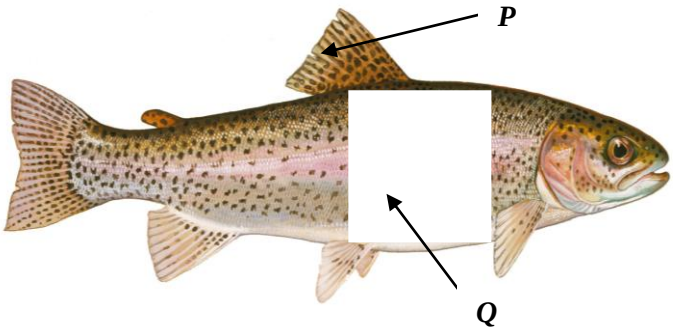


Diagram 5.1

(c) (i) Name *P* on Diagram 5.1 and state its function.

P : _____

Function : _____

[*2 marks*]

(ii) Draw the muscles in the box *Q* and explain how it helps the swimming process take place.

_____

_____

_____

[*2 marks*]

(d) Bone and muscle tissues of fish are denser than water. To maintain depth some fish increase buoyancy by means of a gas bladder. Explain how this structural adaptation carry out its function.

_____

_____

_____

_____

[*2 marks*]

6. Diagram 6.1 shows a neuron in humans.

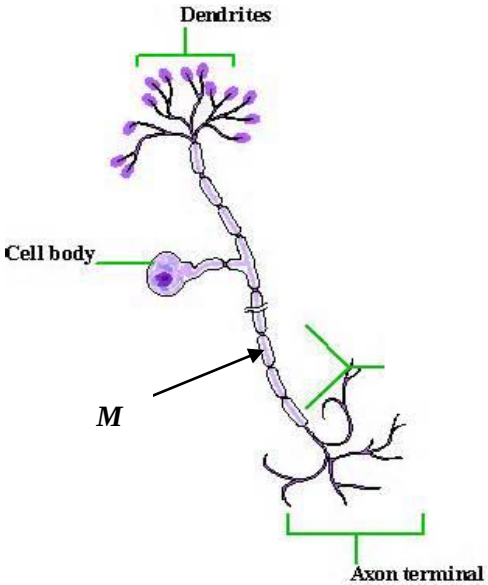


Diagram 6.1

(a) (i) Name the type of the neurone.

_____

[*1 mark*]

(ii) State a reason to support your answer in *(a)* (i).

_____

_____

[*2 marks*]

(b) Using the symbol (⟶), draw the direction of nerve impulse on the Diagram 6.1.

[*1 mark*]

(c) *M* is a long, slender projection. Name the structure *M* and state its function.

_____

_____

[*2 marks*]

Diagram 6.2 shows part of a spinal cord of humans.

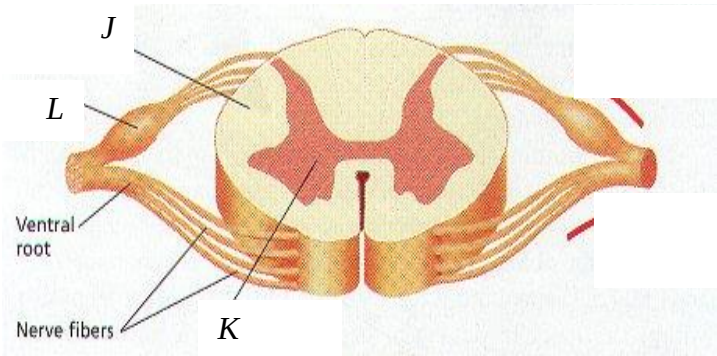


Diagram 6.2

(d) Fill in the blanks.

Area	Name	Content
J		_____ _____
K		_____ _____

[*2 marks*]

(e) Name the spinal nerve labelled *L* and state its function.

L : _____

Function : _____

_____

_____

[*2 marks*]

(f) What will happens if a person injured in the spinal cord?

_____

_____

[*2 marks*]

Section B [40 marks]

Answer any **two** questions from this section.

6. What is meant by "colonisation and succession in a habitat?

[*2 marks*]

(a) Explain the process of colonisation and succession on a bare ground [*8 marks*]

(b) Diagram 6.1 below shows an important organelle in a green plant. R and S are two sites where the mechanism of photosynthesis occurs.

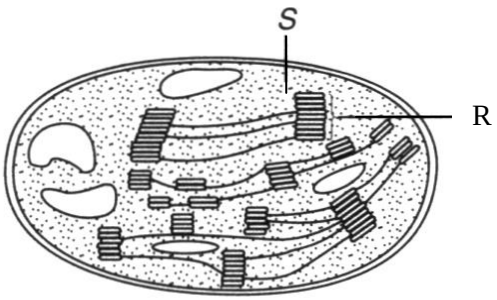


Diagram 6.1

i) Why are there a lot of these organelles in the mesophyll cells of the leaf but none in its epidermal cells? [*3 marks*]

Describe the mechanism of the photosynthesis process that occurs at R and S. [*7 marks*]

7. Describe briefly the respiratory system found in organisms R and how they obtained their oxygen supply for respiration.

R

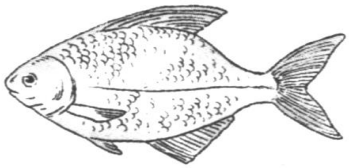


Diagram 7.1 [*4 marks*]

(a) Molecule A is used to catalyse the biochemical reactions in a cell. Describe and explain the roles and functions of the two types of nucleic acids in the synthesis of molecule A.

[*6 marks*]

(b)

> The meiosis process is important in humans to maintain the diploid condition from one generation to the next generation. In this way, the number of chromosomes in each generation is maintained.

i) Based on the above extract, give justifications to explain the statement. [*6 marks*]

Diagram 7.2 shows the process of crossing over in a stage in meiosis

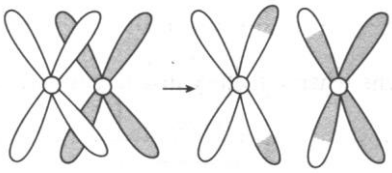
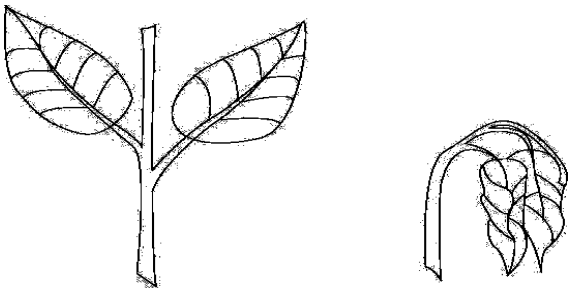


Diagram 7.2

ii) Describe the process of crossing over and its importance.

[*4 marks*]

8. *(a)* Diagram 8.1 *(a)* and *(b)* show parts of the same plant at different times of the day. Diagram 8.1*(a)* shows the condition of the plant in the morning while Diagram 8.1*(b)* shows the same plant in the afternoon.



(a) *(b)*

Diagram 8.1

Name the condition shown by the plant Diagram 8.1 *(b)* and explain what causes this condition.

[*4 marks*]

(b) Why is the process which causes the condition shown in Diagram 8.1 necessary to the plant?

[*6 marks*]

(c) Diagram 8.2 shows the longitudinal section of part of the root of a plant.

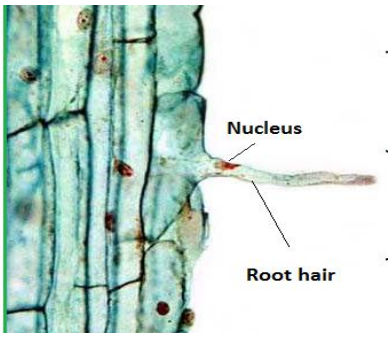


Diagram 8.2

Describe how water and mineral salts are absorbed from the soil and transported to the leaves.

[*10 marks*]

9 *(a)* Diagram 9.1 *(a)* shows a man is facing a external environmental threats that pose a danger to his physical survival.

Diagram 9.1

Based on this example, explain the coordination involving both nervous system and the endocrine system that take place in the body to help him from perceived attack, harm or threat to his survival.

[*10 marks*]

Diagram 9.2 shows synapse in humans.

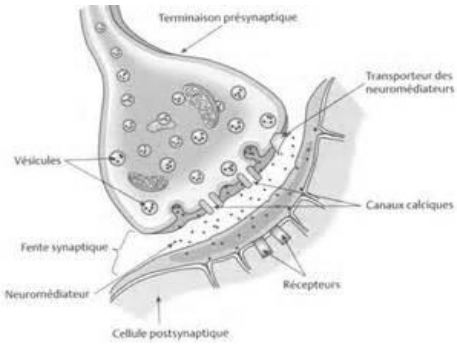


Diagram 9.2

(b) Explain how the synapse transmists the impulse between two neurones.

[*10 marks*]

End of question paper

Prepared by *Checked by* *Approved by*

Mr. Tan Ban Leong
Pn. Salini