



[4551/1] [4551/2]

Biology



Analysis of Biology (2004 - 2007)

TOPICS	2004				2005				2006				2007			
	P1	P2	P3		P1	P2	P3		P1	P2	P3		P1	P2	P3	
	OBJECTIVE	STRUCTURE	ESSAY		OBJECTIVE	STRUCTURE	ESSAY		OBJECTIVE	STRUCTURE	ESSAY		OBJECTIVE	STRUCTURE	ESSAY	
1 Introduction to Biology.																
2 Cell structure and cell organisation.	3				4				3	1			4			
3 Movement of substances across the plasma membrane.	3	1			4		1		4		1	1	4		1	
4 Chemical composition of the cell.	4	1			2	1			3	½		1	5			
5 Cell division	2				2	1			3				2	1		
6 Nutrition	5			1	6			1	3	½	2		3	1	1	1
7 Respiration	2		1		2	1			3				2			
8 Dynamic ecosystem	3	1		1	3	1			4				7	1		½
9 Endangered ecosystem	3				3		1		2				1		1	
10 Transport	8	1			5	1			5		1		6			
11 Support and locomotion	2				3		1		3				2			
12 Coordination and response	5		1		5				4	1			5		1	
13 Reproduction and growth	4	1			5		1		5	1			3			
14 Inheritance	4		1½		5		1		5	1			4	1		
15 Variation	2		½		1				3				2	1		½
Total	50	5	4	2	50	5	4	2	50	5	4	2	50	5	4	2

JAWAPAN boleh didapati di laman web <http://www.times.my>

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



MAHSA COLLEGE

B.Sc. (Hons) in
Nursing Studies (4+0)
University of Teesside (UK) KPT/JPS (KA6675) 02/11





SULIT

TIMES HIGHER EDUCATION

SOALAN ULANGKAJI SPM 2008

BIOLOGY

Paper 1

Nov./Dis

1 hour 15 minutes

DO NOT OPEN UNTILL INTRUCTED TO

1. Answer all the questions
2. Think thoroughly before answering any of the questions. If you need to change your answer, erase the answer properly and thoroughly before remarking the question sheet.

This question paper contains 8 printed pages and 0 non printed pages

4551/1

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

Lihat sebelah
SULIT



**MAHSA
COLLEGE**

B.Sc. (Hons) in

Nursing Practice Development

Top-up Degree, Northumbria University (UK) KPT/JPS (KA6722) 02/11





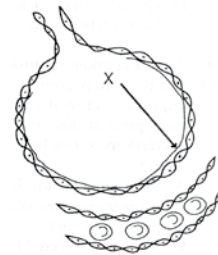
SULIT

Each question followed by four or five options. Choose the best option for each question.

- 1
- | | |
|--|---|
| Data collection | 1 |
| Recognising a problem and producing a hypothesis | 2 |
| Analysing data | 3 |
| Conclusion | 4 |
| Plan an experiment | 5 |
| Discussion of data obtained | 6 |
| Report | 7 |
| Control the variables in an experiment | 8 |
| Conduct the experiment | 9 |

The statements above represent the steps taken in a scientific research. The correct order would be.....

- A 5, 1 8, 9, 2, 3, 4, 7, 6
 B 1, 2, 3, 4, 9, 5, 6, 7, 8
 C 2, 5, 8, 9, 1, 3, 6, 4, 7
 D 9, 8, 7, 6, 5, 4, 3, 2, 1
2. What is the function of the large vacuoles in plant cells?
 A To prevent plants from dehydration
 B The store of nutrients and control osmotic pressure
 C Store extra DNA and RNA
 D Maintain cell shape
3. can be found in large numbers in pancreatic cells.
 A Rough endoplasmic reticulum
 B Smooth endoplasmic reticulum
 C Mitochondria
 D Golgi apparatus
4. What food should a patient suffering from kwashiorkor take to recover from this disease?
 A Rice and bread
 B Fish, eggs and milk
 C Sweets and butter
 D Vegetables and fruits
5. Carbon dioxide affect the pH of the blood because
 A carbon dioxide is acidic in nature.
 B carbon dioxide dissolves in the blood to form carbonic acid
 C carbon dioxide combines with calcium carbonate to form carbonic acid.
 D carbon dioxide contains negative particles, which makes a solution acidic.



6. P in Diagram 1 refers to a layer found on the alveolus. What is the function of this layer?
 A To filter air before is passed into the capillaries.
 B To trap dust and impurities before it enters the blood stream.
 C To dissolve oxygen from the inhaled air before it diffuses into the capillaries.
 D It is a secretion from the cells forming the alveolus and serves no important function.
7. Every class of food is digested at a particular location with a specific enzyme in the digestive system. Which of the following organs are involved in protein break down?
 I. Mouth
 II. Stomach
 III. Liver
 IV. Pancreas
 A I and II only
 B I and III only
 C II and IV only
 D III and IV only
8. A plasma membrane consists of component X which is scattered in a bilayer of component Y. What are components X and Y?

	Component X	Component Y
A	Lipid	Carbohydrate
B	Carbohydrate	Lipid
C	Protein	Lipid
D	Lipid	Protein

9. In the food industry, the protease enzyme is usually used
 I to skin the fish
 II for tenderising meat
 III to remove hair from hides
 IV to remove seed coats from cereal grains
 A I and IV only
 B II, III and IV only
 C I, II and IV only
 D I, II, III and IV

4551/1

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

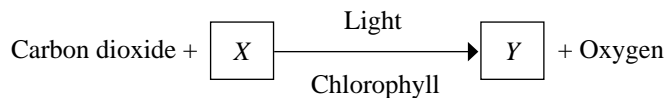
Lihat sebelah
SULIT





SULIT

10. Diagram 2 represents a chemical equation for photosynthesis.



	X	Y
A	Water	Ion
B	Water	Glucose
C	Hydrogen ion	Starch
D	Hydrogen ion	Glucose

11. The information below shows the result of an experiment to determine the calorific value of a cashew nut.

Mass of cashew nut = 0.5 g
 Mass of water = 20 g
 Initial temperature of water = 40°C
 Final temperature of water = 60 °C

What is the calorific value of the cashew nut?
 A 2.1 kJ g⁻¹ C 33.6 kJ g⁻¹
 B 3.36 kJ g⁻¹ D 21 kJ g⁻¹

12. Puan Maznah has a large part of her colon removed in an operation three months ago. As result, she will not be able to

- A eat solid food
- B absorb digested food efficiently
- C produce solid faeces
- D eat fatty food

13. Which of the following information is true for both aerobic respiration and photosynthesis?

	Aerobic respiration	Criteria	Photosynthesis
A	All types of living things	Cell that carries out this process	Cells with chloroplast
B	Absence of light	Condition takes place	Presence of light
C	Glucose	Substrate	Water and carbon dioxide
D	Carbon dioxide, ethanol and energy		Glucose

14. Table 1 shows the differences between light reaction and dark reaction during photosynthesis.

	Light reaction	Dark reaction
I	Takes place in the stroma	Takes place in the grana
II	Oxygen is released	Oxygen is not released
III	Occurs during day time	Occurs during the night
IV	Glucose is not formed	Glucose is formed

Table 1

Which of the following are the correct differences between light reaction and dark reaction?

- A I and III only C II and IV only
- B I, II and IV only D II, III and IV only

15. Which of the following are true about the importance of water in organism cells?

- I To provide moisture to alveoli
 - II To maintain the body temperature
 - III As a medium for biochemical reaction
 - IV To maintain osmotic balance between the blood and interstitial blood
- A I, II and III only C I, III and IV only
 B I, II and IV only D I, II, III and IV

16. Diagram 3 shows a model of the ribs to illustrate the breathing mechanism in humans.

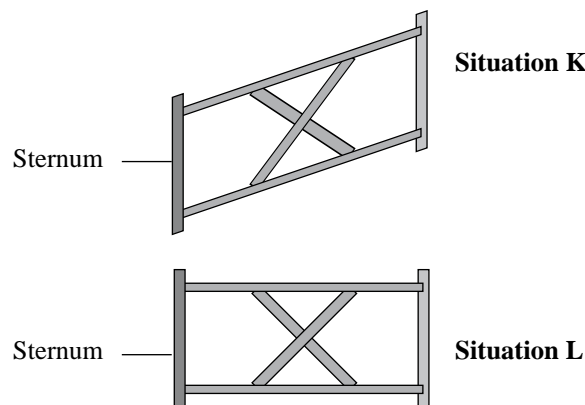


Diagram 3

What takes places as the position of the ribs changes from K to L?

- I Inhalation takes places
 - II Pressure in the lungs increases
 - III Volume of chest cavity decreases
 - IV Rib cage pushes upwards and outwards
- A I and II only C III and IV only
 B II and III only D I, II and IV only

JAWAPAN boleh didapati di laman web http://www.times.my





SULIT

17. Which of the following is the smallest microorganism that can only be seen under an electron microscope?

- A Virus
- B Fungi
- C Protozoa
- D Bacteria

18. Hydrogen peroxide is broken down to oxygen and water by the enzyme catalase. According to the 'key' and 'lock' hypothesis, which substance represents the 'key' and which substance represent the 'lock'?

	'Key'	'Lock'
A	Oxygen	Catalase
B	Hydrogen peroxide	Catalase
C	Catalase	Hydrogen peroxide
D	Oxygen	Hydrogen peroxide

19. Which of the following match is correct?

	Chemical	Function
A	Lipids	Build cell wall
B	Protein	Synthesis of antibodies
C	Nucleic acids	Build external skeletons
D	Carbohydrates	Synthesis of sex hormones

20. Diagram 4 shows various stages of the mitosis cell cycle.

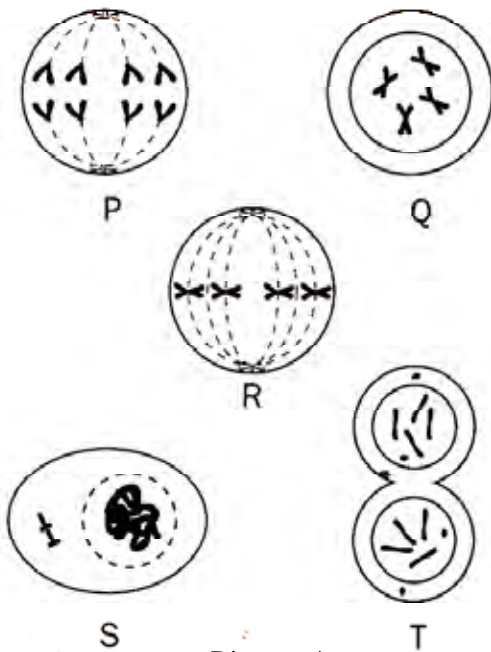
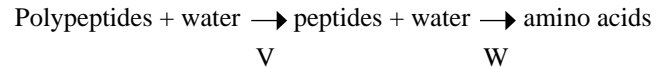


Diagram 4

Arrange the correct order of the stages.

- A Q P R T S
- B Q S P T R
- C S Q P R T
- D S Q R P T

21. The equation shows a step in the digestion of proteins.



Which of the following represent enzymes P and Q?

	Enzyme P	Enzyme Q
A	Pepsin	Rennin
B	Erepsin	Lipase
C	Trypsin	Erepsin
D	Rennin	Lipase

22. The following statements describe an organelle in an animal cell.

- An aqueous solution
- Stores water, salts, dissolved gases and enzymes
- Give shape, provide support and protects the cell

- A Chloroplast
- B Ribosomes
- C Mitochondrion
- D Golgi apparatus

23. Which of these is the mode of nutrition of decomposers?

- A Parasitism
- B Saprophytism
- C Holozoic nutrition
- D Autotrophic nutrition

24. Puan Arinni soaked a duck egg in a saturated salt solution. After a week, she found that the egg tasted salty.

Which of the following statements explain this phenomena?

- I Salt particles diffuse into the egg
- II Salt particles enter the egg by active transport
- III Saturated salt solution is hypertonic to the egg
- IV The egg shell and membrane are permeable to salts

- A I and II only
- B III and IV only
- C I, II and IV only
- D I, II, III and IV

25. The statements below describe the effects of the deficiency of one type of macronutrient in plants.

- Poor root growth
- Red spots on old leaves
- Formation of dark green leaves

- A Calcium
- B Magnesium
- C Sulphur
- D Phosphorus





SULIT

26. Table 2 shows the types and quantity of food taken by 17 year old Hijratul Suffiah, in a day.

Types of food	Quantity/g	Energy /kJ per 100 g
Noodle	200	2000
Chicken	100	800
Soya Milk	200	300
Butter	50	3000
Sweet Potatoes	100	500
Banana	50	50

The total energy obtained by Hijratul Suffiah is

- A 6 425 kJ C 7 425 kJ
 B 6 650 kJ D 8 950 kJ

27. Which of the following processes in plants need energy?

- I Mitosis
 II Water diffusion
 III Growth of pollen tube
 IV Mineral salts absorption

- A I and II only C I, III and IV only
 B III and IV only D I, II, III and IV

28. Diagram 5 shows the structure of a villus.

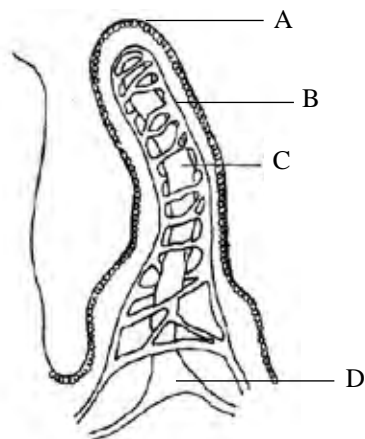


Diagram 5

Which of the parts labelled A, B, C and D where fats-soluble vitamins are absorbed, will be transported together with lipids?

29. Which of the following descriptions is true about the circulatory system?

- I The blood vessels consists of arteries and veins
 II In insects, haemolymph is the medium of transport.
 III Blood as a medium to carry the essential substances
 IV The heart which is a muscular organ functions as the pump that circulates blood throughout the body

- A I and II only C III and IV only
 B II, III and IV only D I, II, III and IV

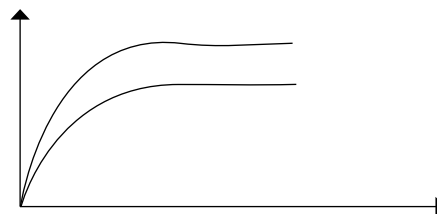
30. Besides genetic factors, a diet high in fats and low in fibre, lack of exercise, obesity and smoking contribute to the risk of cardiovascular disease. Based on the statement, which of the following helps to maintain a person's healthy cardiovascular system?

- A Quit smoking
 B Eat less fibre
 C Do less exercise
 D Eat excessive fatty food

31. A blood clot that travels in bloodstream is known as

- A a plaque
 B a thrombus
 C an embolus
 D a thrombosis

32. Graph 1 show the rate of photosynthesis against light intensity at two different concentration of carbon dioxide.



Graph 1

Based on the graph, we can conclude that

- I the increase in light intensity does not increase the rate of photosynthesis beyond a certain value of light intensity.
 II carbon dioxide concentration becomes a limiting factor beyond a certain value of light intensity
 III the increase in the rate of photosynthesis only occurs if there is an increase in the concentration of carbon dioxide
 IV the increase in the rate of photosynthesis depends on the surrounding temperature

- A I and II only C II, III and IV only
 B I, II and III only D I, II, III and IV

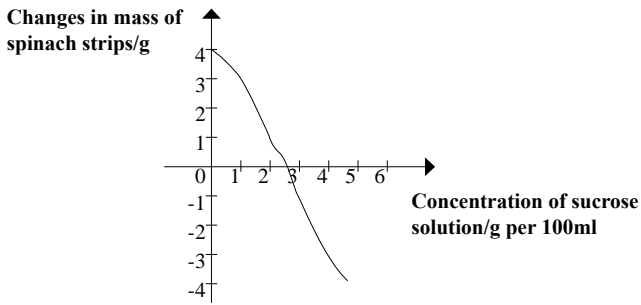
JAWAPAN boleh didapati di laman web <http://www.times.my>





SULIT

33. Graph 2 shows the changes in the mass of spinach strips immersed in different concentrations of sucrose solution.

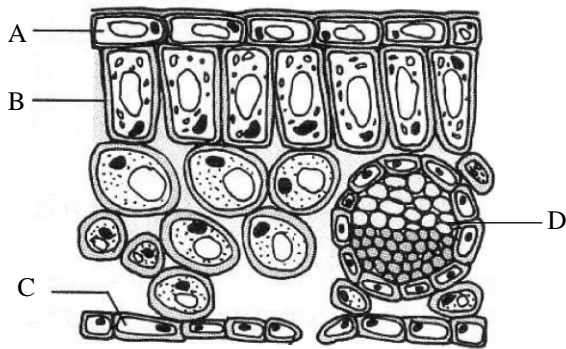


Graph 2

Based on the graph, which of the following concentration of sucrose solution should be used so that a flaccid spinach strip regains its turgidity?

- A 1.5 g per 100 ml
- B 2.5 g per 100 ml
- C 3.5 g per 100 ml
- D 4.5 g per 100 ml

34



Which parts of the plant structure labelled A, B, C and D provides the pathways for the transport of water and food?

35. A Visking tube filled with a 30% sucrose solution is immersed in a beaker of distilled water. After half an hour

- I the Visking tube becomes soft
- II the mass of the Visking tube increases
- III the Visking tube expands and becomes firm
- IV diffusion of water happens from the beaker into the Visking tube

- A I and II only
- B II, III and IV only
- C III and IV only
- D I, II, III and IV

36. Diagram 6 shows the human alimentary canal.

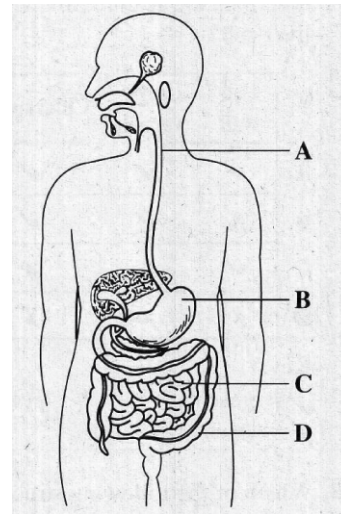


Diagram 6

In which part of the alimentary canal, A, B, C or D, is most water mostly absorbed?

37. Diagram 7 shows two types of blood cells P and Q.



Diagram 7

Which of the following statement is correct about the main function of each cell?

	P	Q
A	Clotting blood	Transports oxygen
B	Procedure antibody	Transports oxygen
C	Clotting blood	Transports carbon dioxide
D	Procedure antibody	Clotting blood

38. Which of the following is a definition for the term 'traits'?

- A A distinctive inherited feature of an organism.
- B A variant for a specific characteristic.
- C The genetic constituent of an organism.
- D A genetic code on the DNA of a chromosome.





SULIT

39. Diagram 8 shows the mechanism of blood clotting in humans.

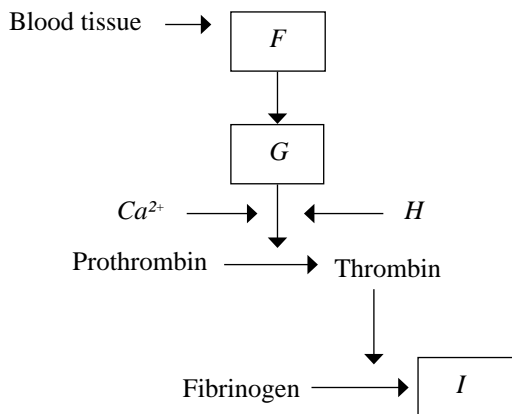


Diagram 8

Name *F*, *G*, *H* and *I*

	<i>F</i>	<i>G</i>	<i>H</i>	<i>I</i>
A	Fibrin	Platelet	Vitamin D	Thrombokinase
B	Platelet	Thrombikinase	Vitamin K	Fibrin
C	Fibrin	Thrombokinase	Vitamin D	Platelet
D	Platelet	Fibrin	Vitamin K	Thrombokinase

40. Which of the following are the differences between injection of serum containing antibodies and injection of vaccine?

- I Injection of vaccine gives immediate immunity
- II Injection of serum gives immediate immunity
- III Injection of vaccine gives long term immunity
- IV Injection of serum gives immediate immunity just for a few days

- A I and II only
- B II, III and IV only
- C III and IV only
- D I, II, III and IV

41. Marianne has blood group B while her brother has blood group A. Which of the following combination of genotypes belong to their parents ?

	Mother	Father
A	BO	AO
B	BB	AO
C	BB	AA
D	BO	AA

42. Diagram 9 shows a change in the structure of a chromosome.

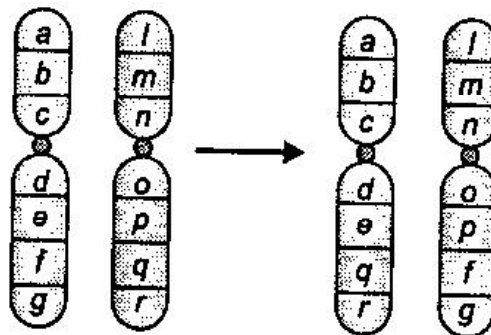


Diagram 9

What is the type of the chromosomal mutation?

- A Inversion
- B Deletion
- C Insertion
- D Translocation

43. Diagram 10 below shows a potometer used to study the effect of air movement on the rate of transpiration in the balsam plant.

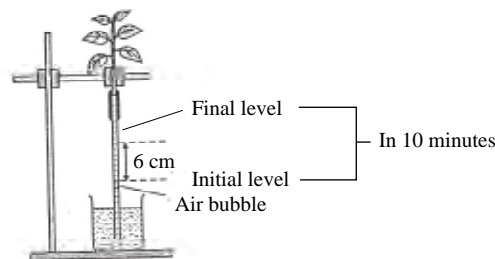


Diagram 10

If the distance travelled by an air bubble is 6.0 cm 10 minutes after a fan is switched on, predict the distance travelled by the air bubble if the fan is not switched on.

- A 5.0 cm
- B 6.5 cm
- C 7.0 cm
- D 8.5 cm

44. In which stage of a spermatogenesis process will the numbers of diploid chromosomes remain?

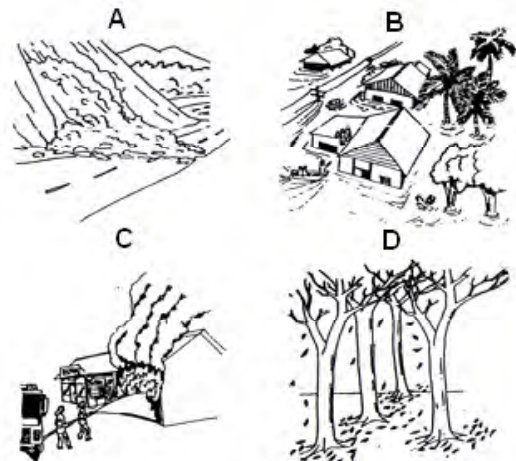
- A Spermatogonium Primary spermatocyte
- B Primordial germ cells Secondary spermatocyte
- C Primary spermatocyte Secondary spermatocyte
- D Secondary spermatocyte Spermatisid

JAWAPAN boleh didapati di laman web http://www.times.my



SULIT

45. Which of the statements below correctly refers to osteoarthritis?
- A A sudden contraction of one or more muscles and an inability to use the affected muscles.
 - B The progressive degeneration and weakening of the skeletal muscles that control movement.
 - C A common bone disorder which causes the bones to become thinner, more brittle and more porous.
 - D The ageing process caused by the wear and tear of the cartilage between the bones inside certain joints.



46. Which of the following organisms is a saprophyte?

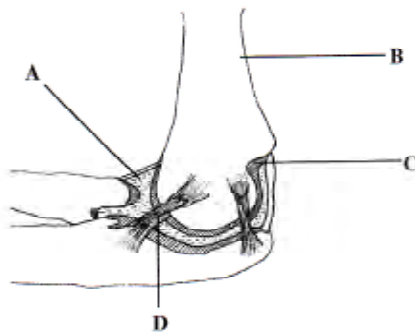
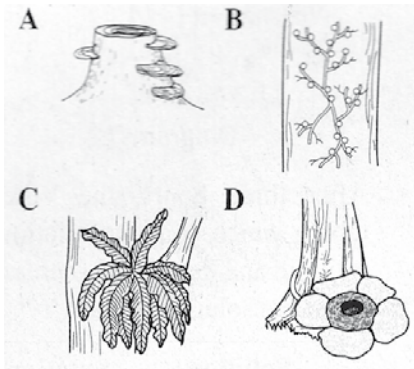


Diagram 11

47. Diagram 11 shows a hinge joint of a human. Which of the parts labelled A, B, C and D are flexible, strong and elastic?

48. Diagram 12 shows a natural phenomenon.

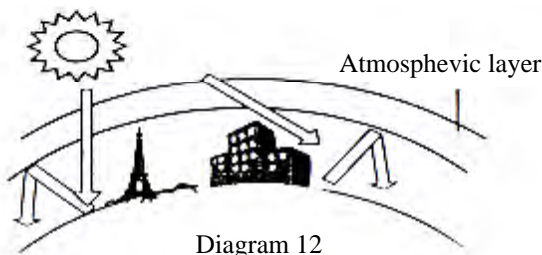
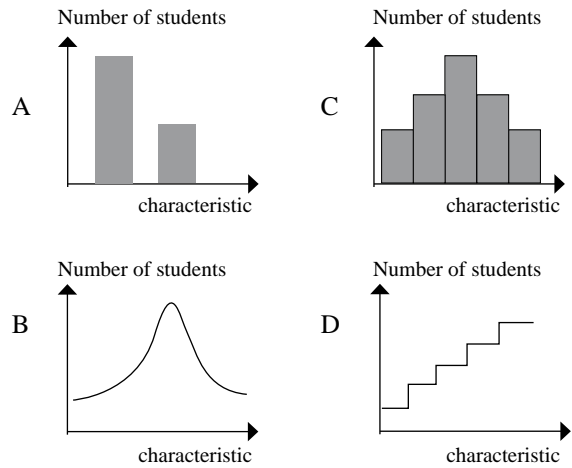


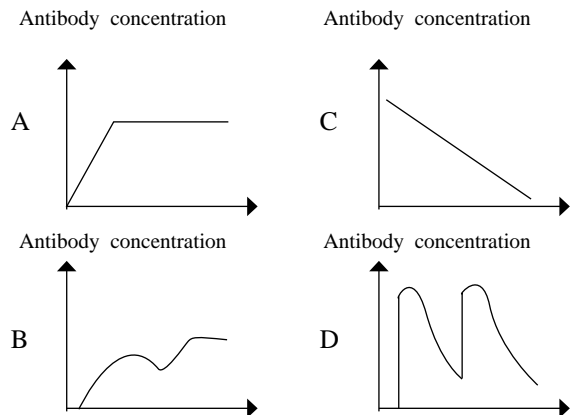
Diagram 12

Which of the following figures give the same effect as the natural phenomenon in Diagram 10?

49. Which of the following shows the variations caused by genetic factors?



50. Which graph correctly show are administered the concentration of antibody in the blood after the first and second vaccine given for a certain disease? The second vaccine is given three months after the first vaccination.





SULIT

TIMES HIGHER EDUCATION

SOALAN ULANGKAJI SPM 2008

BIOLOGY

Paper 2

Nov./Dis

2 hour 30 minutes

DO NOT OPEN UNTILL INTRUCTED TO

1. Answer all the questions
2. Think thoroughly before answering any of the questions. If you need to change your answer, erase the answer properly and thoroughly before remarking the question sheet.

This question paper contains 5 printed pages and 0 non printed pages

4551/2

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

Lihat sebelah
SULIT



**MAHSA
COLLEGE**

Diploma in

Medical Imaging (Radiography)

KPT/JPS (KA6493) 10/10





SULIT

SECTION A

Answer all questions. The time suggested is 90 minutes.

1. Diagram 1 shows a reflex arc.

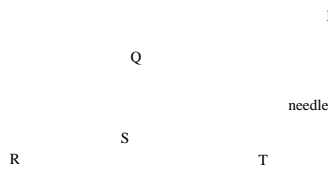


Diagram 1

(a) Give the definition of 'Reflex Action'.

.....
.....

[2 marks]

(b) Name the parts in Diagram 1.

- P :
- Q :
- R :
- S :
- T :

[5 marks]

(c) Describe the reflex action in Diagram 1.

.....
.....

[5 marks]

2. Diagram 2 shows the distribution of mangrove trees found in Kuala Selangor.

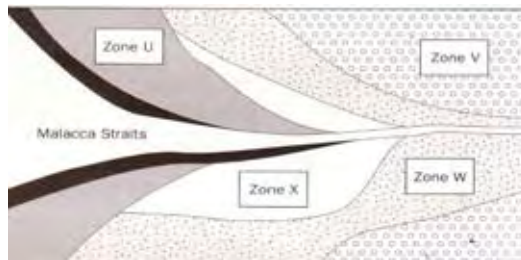


Diagram 2

(a) Name the species of the mangrove trees found in zones U, V, W and X.

.....
.....

[2 marks]

(b) Explain how succession occurs in the mangrove swamp.

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

[3 marks]

(c) Name two changes that have taken place among the mangrove trees on this habitat.

.....
.....

[2 marks]

(d) Give two characteristics that will enable the mangrove trees to grow in a swampy area.

.....
.....

[3 marks]





SULIT

3. Diagram 3 shows the respiration system of two types of organisms.

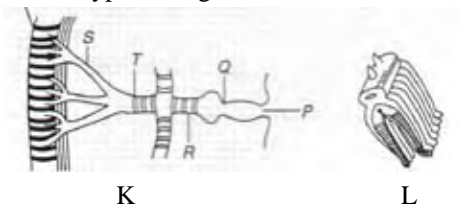


Diagram 3

(a) Name the respiratory system for organism K and L.

..... [2 marks]

(b) Explain the functions of the structures labelled Q and T.

..... [4 marks]

(c) S contains fluids. Explain how the fluids help in gaseous exchange.

..... [2 marks]

(d) Explain how air moves between Q and R in organism K.

..... [2 marks]

(e) Explain the difference between the gaseous exchange in K and L.

4. Diagram 4 below shows figure of the muscle and bones of a human arm.

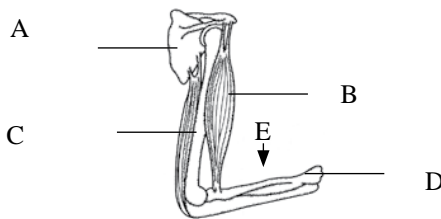


Diagram 4

(a) Name the main tissues that build structures A and B.

..... [2 marks]

(b) (i) Name the tissue that connects A to B.

..... [1 mark]

(ii) Label this tissue on the diagram.

..... [1 mark]

(c) Muscle B and C is a set of antagonistic muscle. Explain.

..... [3 marks]

(e) (i) If tissue B is attached to D at point E, would more or less effort be required to lift a thing?

..... [1 mark]

(ii) Explain why tissue B is attached close to the elbow joint.

..... [2 marks]

Lihat sebelah SULIT

4551/2

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

JAWAPAN boleh didapati di laman web <http://www.times.my>





SULIT

5. Diagram 5 shows two reproductive structures in the reproductive organs of two different organisms.

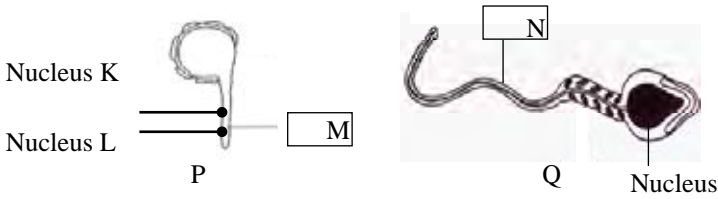


Diagram 5

- (a) Name the organs that produce P and Q.
..... [2 marks]
- (b) Label the parts M, N and nucleus K in Diagram 5.
..... [3 marks]
- (c) Describe the roles played by P and Q in ensuring that fertilisation takes place.
..... [2 marks]
- (d) Explain what happens to nuclei K and L before fertilisation takes place.
..... [2 marks]
- (e) (i) In the figure below, draw the development and growth of structure M up to the embryo sac. [2 marks]



- (ii) Name the process that occurs when structure M reaches the plant's embryo sac.
..... [1 mark]

JAWAPAN boleh didapati di laman web <http://www.times.my>





SULIT

SECTION B

Answer any one question.

The time suggested is 30 minutes.

6

Foods that constitutes a balanced diet should contain 7 major nutrients. These nutrients must be taken in the correct proportion to meet the daily requirements of the body. Eating a balanced diet is important to avoid malnutrition and overnutrition and also to prevent health problems caused by bad eating habits.

- (a) Describe the relationship between a balanced diet, malnutrition and overnutrition. [8 marks]
- (b) Explain how bad eating habits can cause a health problem. [2 marks]
- (c) The table below shows the results of an analysis of a meat-based fast food.

- Excess fats
- Excess proteins
- Insufficient fibre
- Excess mineral salts
- Presence of food colouring and flavouring

State your opinion regarding the suitability and effects of frequent consumption of this type of food by a teenager over a long period of time. [10 marks]

7. (a) Ibrahim made the following observation.

Distilled water has different effects on erythrocytes and on onion cells when both cells are placed in equal volumes of distilled water.

Explain Ibrahim's observation.

[10 marks]

- (b) Puan Mashita believes that soaking fruits in salt solution before eating them can help eliminate the harmful effects of insecticides that have been sprayed on the fruits.
- (i) Explain why fruits becomes soft if they are soaked too long in salt solution. [6 marks]
- (ii) Suggest how Puan Mashita can restore the withered vegetables back to their normal condition. [4 marks]

SECTION C

Answer any one question.

The time suggested is 30 minutes.

8. (a) The two main organs involved in the regulation of blood sugar level is pancreas and liver.
- (i) Describe the definition of 'osmoregulation'. [2 marks]
- (ii) Based on the above statement, explain how the two organs regulate the blood sugar level. [8 marks]
- (b) Tropism response in plants is controlled by a plant hormone known as auxins. Explain the role of auxins in the response of root to light. [10 marks]
9. (a) Discuss how environmental education can help maintain the quality of the environment. [10 marks]
- (b) Describe the ways to control water pollution due to the disposal of domestic waste. [10 marks]

4551/2

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

Lihat sebelah
SULIT



**MAHSA
COLLEGE**

**Pusat Bandar Damansara Campus
Jalan Universiti Campus**





SULIT

TIMES HIGHER EDUCATION

SOALAN ULANGKAJI SPM 2008

BIOLOGY

Paper 3

Nov./Dis

30 minutes

DO NOT OPEN UNTILL INTRUCTED TO

1. Answer all the questions
2. Think thoroughly before answering any of the questions. If you need to change your answer, erase the answer properly and thoroughly before remarking the question sheet.

This question paper contains 5 printed pages and 0 non printed pages

4551/2

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

Lihat sebelah
SULIT

**MAHSA
COLLEGE****1800 88 0300 • 603-2092 9999 / 2093 8992 • www.mahsa.edu.my**

Partner Universities

Universitas Hasanuddin
Indonesia

Liverpool John Moores University, UK

University of
West of England
BRISTOL UKUNIVERSITY of CAMBRIDGE
International Examinations
United Kingdom



SULIT

Answer all questions.

The time suggested to complete each question is 45 minutes.

- An experiment was carried out to determine and compare the energy value of four different food samples.
The mass of each food sample used was 5.0 g.
The volume of distilled water was 20 ml .
The density of water is 1 gml⁻¹

Figure 1 shows the set-up of the apparatus used in the experiment.

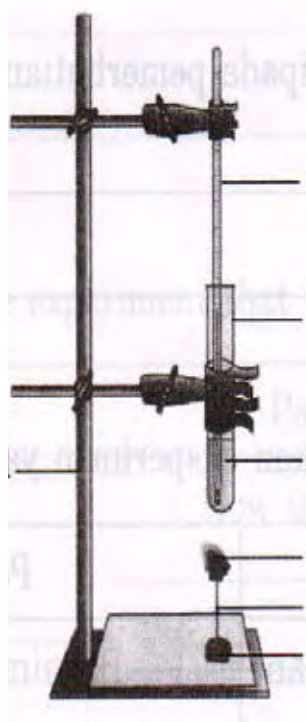


Figure 1

Figure 2 shows the initial water temperature for each food sample.



Initial water temperature =°C

Figure 2



SULIT

Table 1 shows the highest water temperature after each food sample is completely burnt.

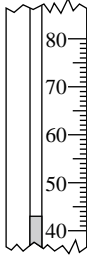
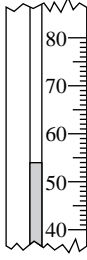
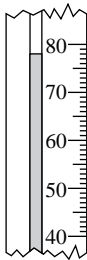
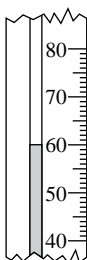
Food sample	Water temperature / °C
Food sample W	 <input data-bbox="949 481 1109 571" type="text"/>
Food sample X	 <input data-bbox="949 772 1109 862" type="text"/>
Food sample Y	 <input data-bbox="949 1052 1109 1142" type="text"/>
Food sample Z	 <input data-bbox="949 1344 1109 1433" type="text"/>

Table 1

- (a) (i) Record the initial water temperature in the space provided in Figure 2.
- (ii) Record the final water temperature in the boxes provided in Table 1. [3 marks]
- (b) (i) State two different observations made in Table 1.
1.
2.
- [2 marks]





SULIT

(ii) State two inferences from the observation in (b) (i).

1.
2.

[2 marks]

(c) Complete Table 2 based on the experiment that was carried out.

Variables	Particulars to be implemented
Manipulated Variable	How to alter the manipulated variable
Responding Variable	How to determine the responding variable
Controlled Variable	How to maintain the controlled variable

Table 2

[6 marks]

(d) State the hypothesis for this experiment.

.....

[3 marks]

(e) (i) Construct a table to record the results of this experiment.

Your table should contain the following titles:

- ▶ Food sample
- ▶ Increase in water temperature
- ▶ Energy value

Specific heat capacity of water is $4.2 \text{ Jg}^{-1} \text{ } ^\circ\text{C}^{-1}$

Energy value

$$= \frac{\text{Mass of water} \times \text{specific heat capacity of water temperature increase}}{\text{Mass of food}}$$

[3 marks]



JAWAPAN boleh didapati di laman web <http://www.times.my>



SULIT

(ii) Based on the table in (e)(i), state the relationship between the food class and the energy value of each food sample.

.....
.....

[3 marks]

(f) State two precautions for this experiment.

.....
.....

[2 marks]

(g) Explain whether or not the energy value obtained is equal to the actual value of the food sample.

.....
.....

[3 marks]

(h) Based on the results of the experiment, state the operational definition of energy value.

.....
.....

[3 marks]

(i) The picture shows various types of food samples.

Rice, butter, palm oil, steamed potatoes, groundnut and bread.

Classify the food samples into two food classes in Table 3, based on the energy value that is equivalent.



Food samples with equivalent energy values as	

Table 3

[3 marks]

2. Yeast cells can either respire aerobically (when oxygen is present), or anaerobically (in the absence of oxygen) to produce energy for their life processes. In the absence of oxygen, yeast undergoes anaerobic respiration. Glucose is partially broken down to release carbon dioxide, ethanol, and heat energy. This anaerobic respiration of yeast is also called fermentation. Plan a laboratory experiment to investigate the process of anaerobic respiration in yeast.

Your experiment planning need to include the following aspects:

- Aims of investigation
- Statement of hypothesis
- List of apparatus and materials
- Technique used
- Experimental procedure
- Presentation of results
- Conclusion

[17 marks]

