

NAME _____ CLASS _____ ADMNO _____

ALLIANCE HIGH SCHOOL

FORM THREE END OF TERM 2 2015

BIOLOGY 2HOURS

1. State the functions of the following organelles (4marks)

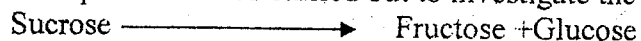
a) Lysosomes

b) Golgi apparatus

c) Chloroplast

d) Ribosome

2. An experiment was carried out to investigate the rate of reaction shown below



For the products; Fructose and Glucose to be formed, it was found that substance K was to be added and the temperature maintained at 37°C. When another substance L was added, the reaction slowed down and eventually stopped.

(a) Suggest the identity of the substances K and L (2marks)

K _____

L _____

(b) Explain how substance L slowed down the reaction. (1mark)

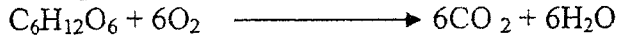
3. In body cells of all organisms chromosomes occur in pairs. Members of each pair have a characteristic length and shape.

(a) What is the scientific name of such a chromosome pair? (1 mark)

(b) What name is given to a cell that contains one member of each pair of chromosomes? (1 mark)

(c) Name the part in human females where meiosis takes place (1 mark)

4. The equation below represents a process that take place in plants and animals



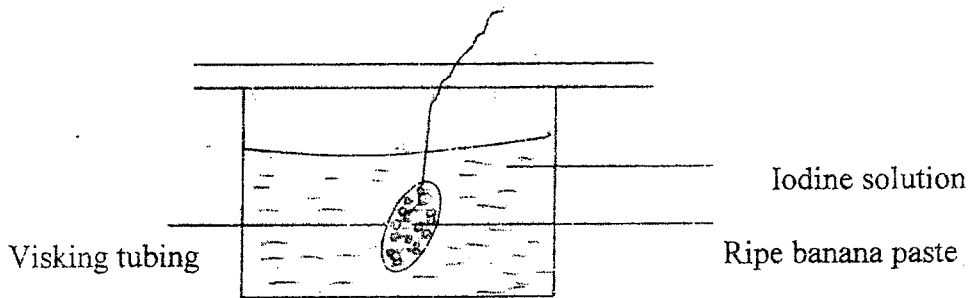
(a) Name the process. (1 mark)

(b) State two requirements necessary for the process (a) above to process at maximum rate. (2 marks)

What is the role of Cristae in the process above? (1 marks)

(c) In which part of the cell does glycolysis and Krebs cycle occur? (2 marks)

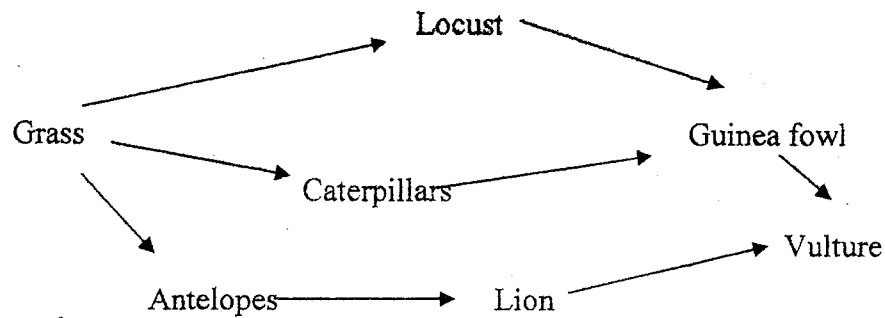
5. A student mashed a piece of ripe banana and made it into a paste by adding water, placed the paste in a visking tubing and suspended it in a beaker containing iodine solution as shown below. The set-up was left for 40 minutes.



a) State the physiological process under investigation. (1 mark)

(b) Account for the result obtained from the investigation above (2 marks)

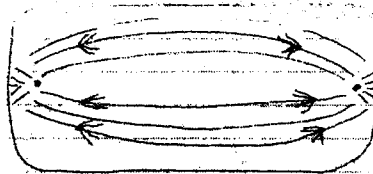
6. Study the food web below representing a certain ecosystem and use it to answer the questions that follow.



(a) With a reason, name the organism that would have the largest Biomass. (2marks)

(b) State the trophic level occupied by the Lion in the food web. (1mark)

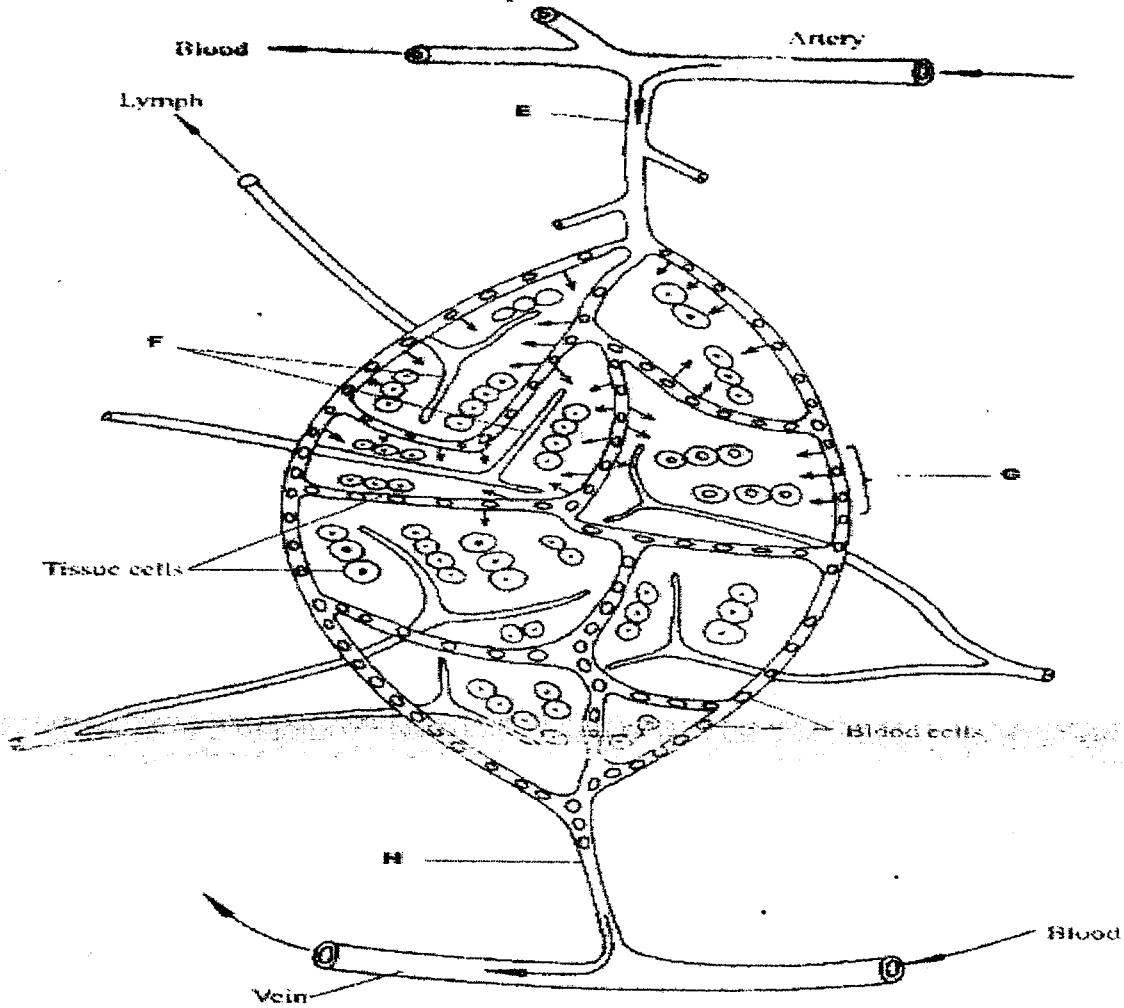
7. Study the diagram of a cell below and answer the questions that follow.



i. Name the type of cell division in the cell. (1mark)

ii. Give **two** reasons for your answer in (a) above. (2marks)

10. Study the diagram below and answer questions that follow.



a) Identify the parts labeled E, F and H. (3 marks)

E _____

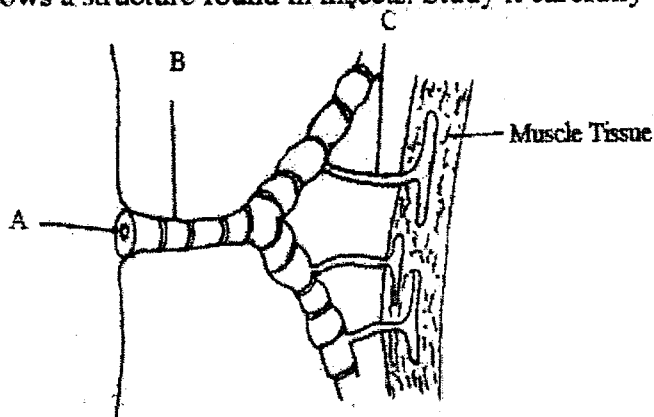
F _____

H _____

b) State the importance of the process represented by G in bodies of living organisms (2 marks)

c) Compare the composition of blood in vessel E and H. (3marks)

8. The diagram below shows a structure found in insects. Study it carefully to answer the questions that follow.



(a) Name the parts labeled A and B

A _____
B _____

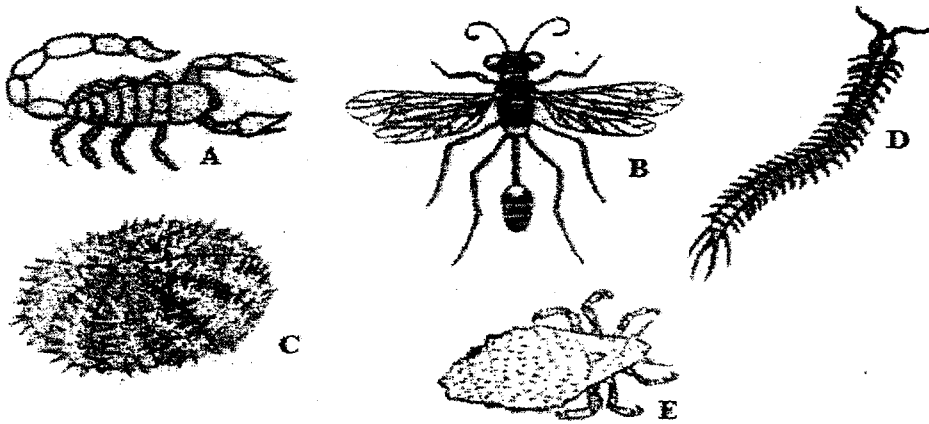
(b) State two ways in which part C is adapted to its function. (2 marks)

(c) Give a brief explanation to the following observations.

(i) Fish dies when taken out of water after sometime (2marks)

(ii) The danger associated with sleeping in a poorly ventilated room with a charcoal jiko. (2marks)

9. You are provided with photographs of animals. Study the photographs and the dichotomous key below to enable you identify the taxonomic group to which each animal belongs.



KEY

1. a) Jointed legs present go to 2
- b) Jointed legs absent..... go to 7
2. a) Three pairs of legs go to 3
- b) More than 3 pairs of legs..... go to 5
3. a) Wings present go to 4
- b) Wings absent Annelida
4. a) One pair of wings..... Diptera
- b) Two pairs of wings..... Hymenoptera
5. a) Four pairs of legs Arachnida
- b) More than ten pairs of legs go to 6
6. a) One pair of legs in each body segment..... Chilopoda
- b) Two pairs of legs in each body segment Diplopoda
7. a) Body partially enclosed in a shell..... Mollusca
- b) Body surface has spiny projection..... Echinodermata

a) Using the key, identify the following organisms to their taxonomic groups. In each case, give the sequence of steps which you followed in identifying them. (4 marks)

Animal	Identity	Steps followed
A		
B		
D		
E		

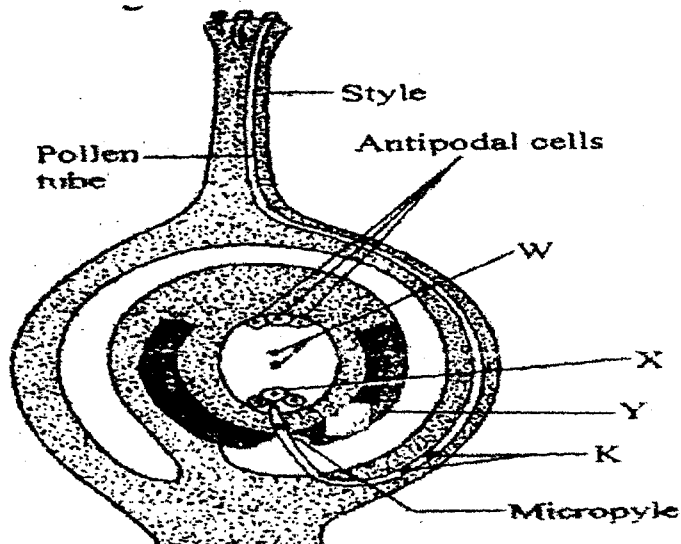
b) i) Using observable features only, state the class to which the animal labeled A and B on the photographs above belong (2 marks)

A _____
 B _____

(ii) State two observable features on B, that enabled you to arrive at that answer in (b (i) above.

 _____ (2marks)

11. The diagram below shows a cross section through the female part of a flower.



a) Name the structures labeled W, X and Y. (3marks)

W _____

X _____

Y _____

b) State *one* function of the pollen tube. (1mark)

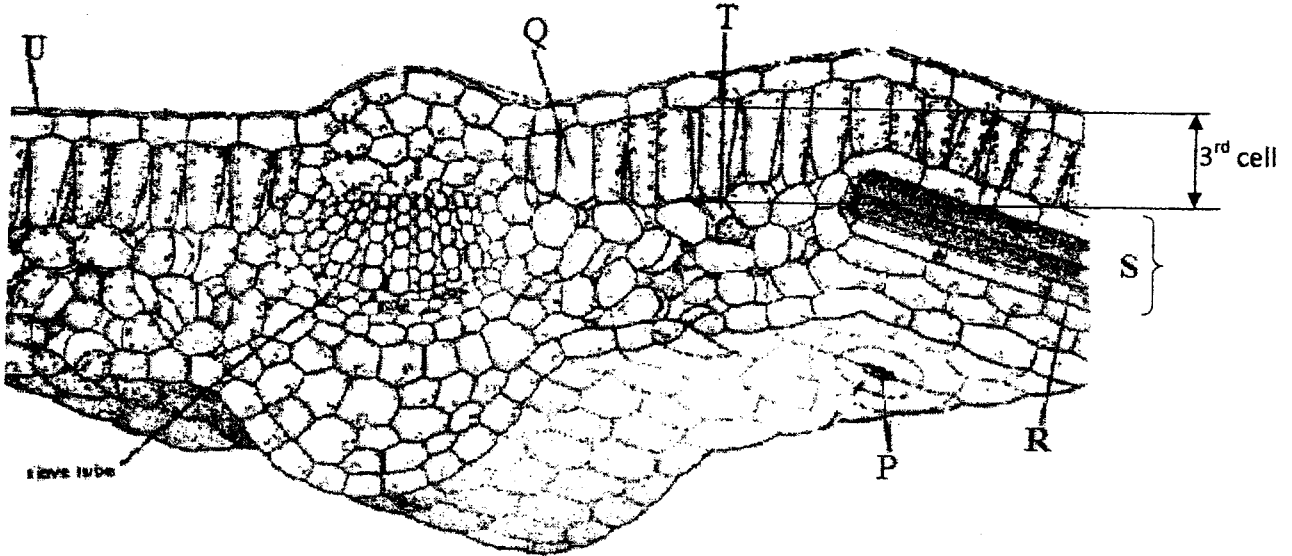
c) What happens to antipodal cells after fertilization? (1mark)

d) What does semi-permeable membrane represent in an animal cell (1mark)

e) (i) Name the structure labeled K. (1mark)

(ii) State the role played by the structure named in e (i) above. (1 mark)

12. The photomicrograph below shows the arrangement of different types of cells and tissues in a certain living organism. Study it carefully and answer the questions that follow.



a) (i) From what part of the plant was the photograph obtained? (1mark)

(ii) Name the parts labeled: - P, Q, R, T and U. (5marks)

- P _____
- Q _____
- R _____
- T _____
- U _____

(iii) Give two major components that make up structure S. (2marks)

(iv) State the function of the part labeled Q and an adaptation to its function. (2marks)

(v) Give an environmental factor which regulates the function of the part labeled P. (1mark)

b) Measure the length of the third (3rd) cell at the right side of structure labeled Q on the photograph whose magnification is X5000. What is the actual length of the cell in micrometers (μm)? Show your working. (2marks)

13 The table below shows how the quantities of sweat and urine vary with external temperature.

External temperature $^{\circ}\text{C}$	0	5	10	15	20	25	30	35
Urine cm^3/h	100	90	80	70	60	50	40	30
Sweat cm^3/h	5	6	10	15	30	60	120	200

(a) Using the same axes, draw graphs of quantities of urine and sweat produced against the external temperature. (6marks)

(b) At what temperatures are the amounts of sweat and urine produced equal? (1mark)

(c) Account for the amount of sweat produced as the temperature rises. (3marks)

(d) Explain the observation made on the amount of urine produced as temperature rises. (4marks)

(e) Explain how the following help in temperature regulation when it is cold.

(i) Hair (3marks)

(ii) Blood vessels (3marks)

14. Describe the digestion ^{of} a starchy meal along the human alimentary canal. (10marks)