

Name Adm No.

School Candidate's signature

Date

BIOLOGY

October/November 2016

Time 2 hours

FORM TWO JOINT EVALUATION
Kenya Certificate of Secondary Education
BIOLOGY

Paper - 231

October/November 2016

Time: 2 hours

INSTRUCTIONS TO CANDIDATES

- This paper consists of two sections A and B
- Answer ALL the questions in both sections in the spaces provided.
- Check the question paper to ascertain that all the pages are printed as indicated and that no questions are missing

This paper consists of 10 printed pages
Candidates should check the question paper to ensure that all the printed pages are printed as indicated and no questions are missing.

1. State the name given to the study of

a) The cell.

(1 mark)

b) External structures of organisms.

(1 mark)

2. State the functions of the following cell organelles.

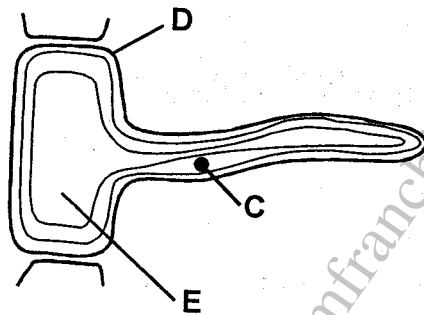
a) Lysosomes

(1 mark)

b) Golgi apparatus.

(1 mark)

3. The diagram below shows a specialised plant cell.



a) i) Name the cell.

(1 mark)

ii) Name the parts labelled D and E.

(2 marks)

b) State the function of the part labelled C.

(1 mark)

4. a) What is a single circulatory system.

(1 mark)

b) Name an organism which has single circulatory system

(1 mark)

5. The biological name of a housefly is *MUSCA domestica*.

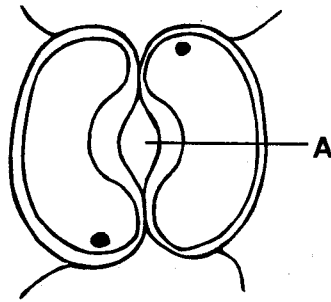
i) State one mistake in the way the scientific name is written.

(1 mark)

ii) Write the name in the correct manner following the rules of binomial nomenclature.

(1 mark)

6. The diagram below shows cells in plants.



a) Identify the cells shown above. (1 mark)

.....

b) State two adaptations of cells named in 6(a) above to their functions. (2 marks)

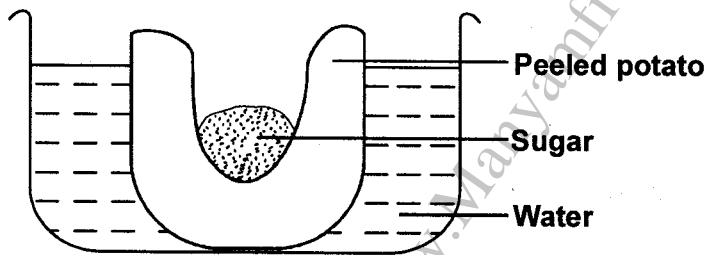
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c) State the two theories that explain the mechanism of opening and closing of part A above. (2 marks)

.....

.....

7. An experiment was set-up as shown below and left for one hour.



a) State the expected results at the end of one hour. (1 mark)

.....

b) Explain the observations made in this experiment. (4 marks)

.....

8. Study the dental formula given below. $i \frac{0}{4}; c \frac{0}{0}, pm \frac{3}{3}; m \frac{2}{3}$

a) Identify with reasons the mode of feeding of the animals whose dental formula is given above.

Mode.....(1 mark)

Reasons.....(1 mark)

b) Calculate the total number of teeth in the mouth of the above animal. (2 marks)

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9. The number of stomata on the lower and upper surfaces of two leaves from plants species X and Y were counted under the field of view of a light microscope. The results were as shown in the table below.

Leaf	Number of stomata	
	Upper surface	Lower surface
X	6	15
Y	22	25



a) Which of the two leaves would be expected to have a lower rate of transpiration. (1 mark)

.....

b) Give a reason for your answer in (a) above. (1 mark)

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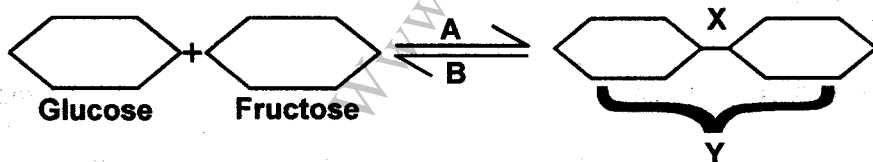
10.a) What is meant by the term binomial nomenclature. (1 mark)

.....

b) Give two reasons why classification is important. (2 marks)

.....

11. Study the reaction below and answer the questions that follow.



a) What biological processes are represented by A and B. (1 mark)

A.....

B..... (1 mark)

b) Identify the product Y. (1 mark)

.....

c) State the bond represented by X. (1 mark)

.....

12.a) Name a protein and vitamin involved in the blood clotting.

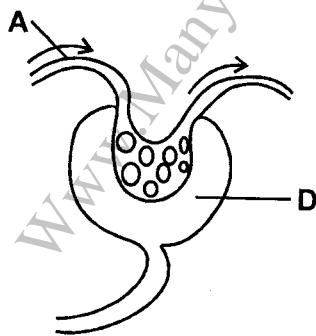
i) Protein (1 mark)

ii) Vitamin (1 mark)

b) Explain why blood is not normally used for transfusion after one month. (2 marks)

13. During a practical lesson two students estimated the field of view to be 3.5mm. Using the low power objective they observed spirogyra cells across the same field of view and counted 8 cells. Calculate the size of each cell and give your answer in micrometer. (3 marks)

14. The diagram shown below represents a part of the nephron. Use it to answer the questions that follow.



i) Name the part labelled A and D

A(1 mark)

D(1 mark)

ii) Name the process by which the fluid found in D is formed. (1 mark)

15. Name the products of anaerobic respiration in

i) Plants (1 mark)

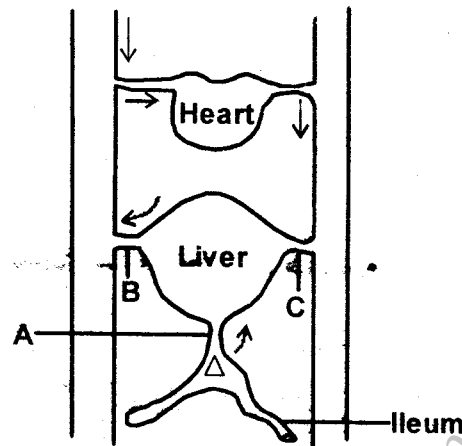
ii) Animals (1 mark)

b) What is oxygen debt.

(1 mark)

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.....

16. The diagram below represents parts of the mammalian circulatory system and some associated glands.



a) Name the blood vessels labelled A and B.

(2 marks)

.....
.....

b) Which of the blood vessels will have the highest sugar concentration under the following conditions.

i) After a heavy meal.

(1 mark)

.....

ii) During fasting.

(1 mark)

.....

17. State two conditions necessary for active transport to take place.

(2 marks)

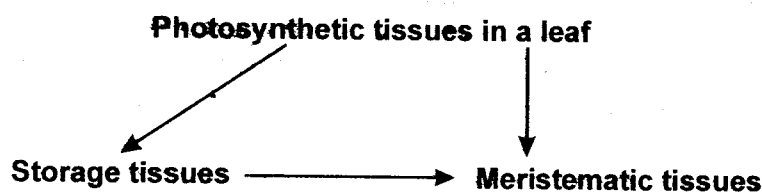
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18. State two structural adaptations of the arteries.

(2 marks)

.....
.....

19. The flow chart below shows the movement and fate of carbohydrate synthesized by green plants.



a) Name the type of carbohydrates that is

i) Transported from leaf to other parts of plant.

(1 mark)

ii) Found in storage tissues.

(1 mark)

b) Name two main photosynthetic tissues found in a leaf.

(2 marks)

20. The transport fluid (haemolymph) in insects does not transport oxygen to the tissues. Explain.

(2 marks)

21. Name the gaseous exchange structures in the following parts of a plant.

a) Stem.....(1 mark)

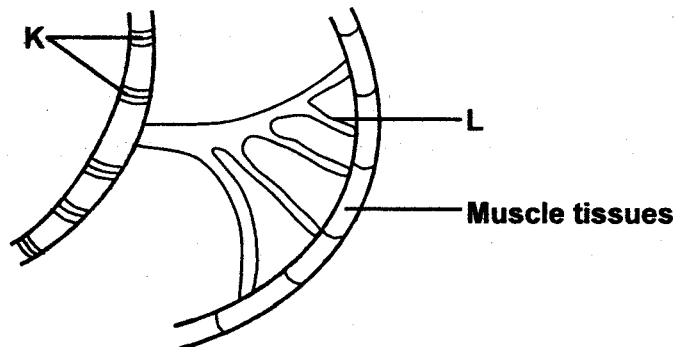
b) Root.....(1 mark)

c) Leaf.....(1 mark)

ii) In what form is carbon (IV) oxide transported in blood.

(2 marks)

22. The diagram below represents gaseous exchange system in a cockroach.



a) Name the structure labelled K and L

K.....(1 mark)

L.....(1 mark)

b) State the function of the structure labelled K.

(1 mark)

23. Name the causative agent for the following respiratory diseases.

a) Whooping cough.

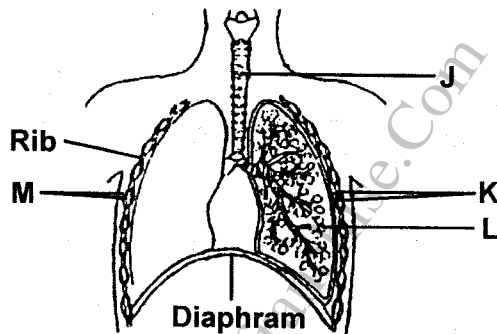
(1 mark)

b) Pneumonia.

(1 mark)

24. Give three factors which determine the amount of energy a human being requires in a day. (3 marks)

25. The diagram below represents some gaseous exchange structure in humans.



a) Name the structures labelled K, L and M.

(3 marks)

- K
- L
- M

b) How is the structure labelled J suited to its function.

(3 marks)

-
-
-

c) Name the process by which inhaled air moves from the structure labelled L into blood capillaries.

(1 mark)

-

26. Define the following terms.

a) Excretion.

(1 mark)

-

b) Egestion

(1 mark)

-

c) Homeostatis

(1 mark)

-

27. Give two reasons why animals have specialised organs for excretion as compared to plants.(2 marks)

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.....

28.

a) How are the mitochondria adapted to their functions? (2 marks)

.....

b) State two ways in which anaerobic respiration is applied in industries. (2 marks)

.....

29.a) Name a disease caused by lack of each of the following in human diet.

Vitamin D. (1 mark)

.....

Iodine (1 mark)

.....

b) State three adaptations of small intestine to its function. (3 marks)

.....

.....

.....

30.a) State three ways in which xylem vessels are adapted to their function. (3 marks)

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b) A person whose blood group is AB requires a blood transfusion. Name the blood groups of the donors. (2 marks)

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31. The diagram below shows a human tooth.



a) Identify the tooth.

(1 mark)

.....

b) State two adaptations of the tooth named in (a) above to its function)

(2 marks)

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