



NAME:.....ADM NO. ....class .....  
Class no. .... DATE: ..... SIGNATURE:.....

231/1

**BIOLOGY**

**Theory**

Paper 1

February, 2019

Time: 2 Hours

**OUR LADY OF LOURDES NYABURURU GIRLS**

Kenya Certificate of Secondary Education (K.C.S.E)

**Instructions To Candidates**

- Write your name, date, class, class number and admission number in the spaces provided above.
- Answer all the questions in the spaces provided.

FOR EXAMINER'S USE ONLY

SECTION	QUESTIONS	MAXIMUM SCORE	CANDIDATE'S SCORE
A	1-28	80	

This paper contains 10 pages.

1. Define the following branches of Biology.

(i) Ecology. (1 mark)

.....  
.....

(ii) Botany. (1 mark)

.....  
.....

2. The cell membrane is said to be polarized. State the meaning and significance of a polarized membrane.

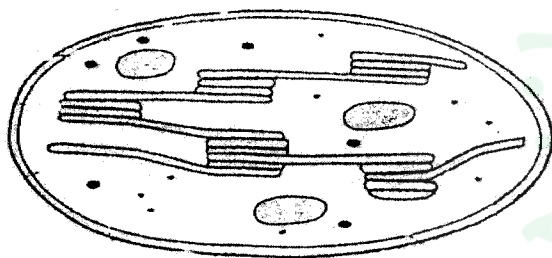
Meaning, (1 mark)

.....  
.....

Significance. (1 mark)

.....  
.....

3. The diagram below represents an organelle.



(a) State the function of the organelle. (1 mark)

.....  
.....

(b) Label on the diagram, the parts of the organelle where;

(i) Oxygen gas is produced as a byproduct. (1 mark)

(ii) Carbon (IV) oxide is fixed. (1 mark)

4. State the functions of bile salts. (2 marks)

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

5. Name **two** classes of phylum Arthropoda whose members have a cephalothorax. (2 marks)

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

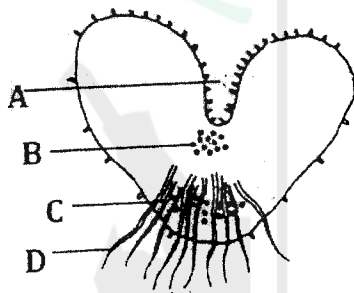
6. Name the distinguishing features of class Aves. (2 marks)

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

7. State **two** ways in which pteridophyta differ from spermatophyte. (2 marks)

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

8. The diagram below shows the gametophyte of a fern plant.



(i) Name the structure shown above. (1 mark)

.....

(ii) Name the part labelled B and D. (2 marks)

.....

9. (a) Define the term "Alternation of generation". (1 mark)

.....  
.....

(b) Name **two** plant divisions which exhibit alternation of generation. (2 marks)

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

(c) State the importance of gametophyte to a sporophyte. (1 mark)

.....  
.....

10. The equation below represents oxidation of a certain food substance.



(a) Calculate the respiratory quotient of the substance being oxidized. (2 marks)

.....  
.....

(b) Name the likely food substance being oxidized. (1 mark)

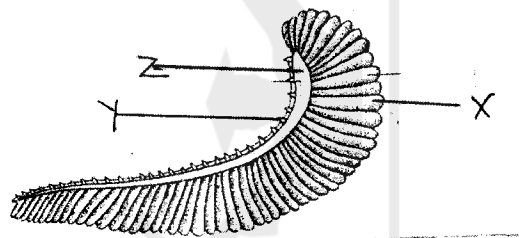
.....  
.....

(c) State **one** reason why respiratory quotient values are important to work out.

(1 mark)

.....

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



(a) Name the parts labelled.

(i) Y..... (1 mark)

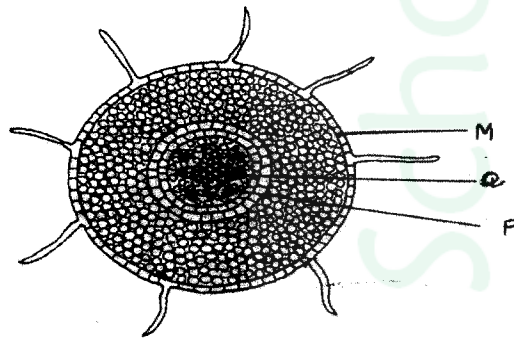
(ii) Z..... (1 mark)

(iii) X.....(1 mark)

(b) State an adaptation of each part labelled X in the diagram. (3mks)

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

12. Study the section below and answer the questions that follow.



(a) Identify the section. (1 mark)

.....  
.....

(b) Name the parts labelled M and Q. (2 marks)

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

13. Name the antigens that determine human blood (1mk)

.....  
.....

14. Explain what happens in prophase I of meiosis. (1 mark)

.....  
.....

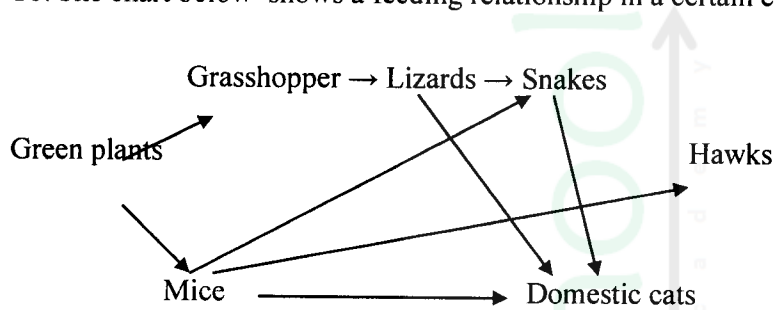
15. (a) Define homeostasis. (1 mark)

.....  
.....

(b) State **two** homeostatic functions of the liver. (2mks)

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

16. The chart below shows a feeding relationship in a certain ecosystem



(a) Construct two food chains ending with a tertiary consumer in each case (2 marks)

.....  
.....

(b) Which organisms has the largest variety of predators in the food web? (1 mark)

.....  
.....

17. Distinguish between androecium and gynoecium. (2 marks)

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

(b) State two factors that hinder self pollination. (2 marks)

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

18. Explain how water in the soil enters the root hairs of a plant. (3mks)

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

19. State two causes of seed dormancy. (2 marks)

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

20. State the functions of the following parts of a germinating seed.

a) Coleorhiza. (1 mark)

.....  
.....

(b) Coleoptile. (1 mark)

.....  
.....

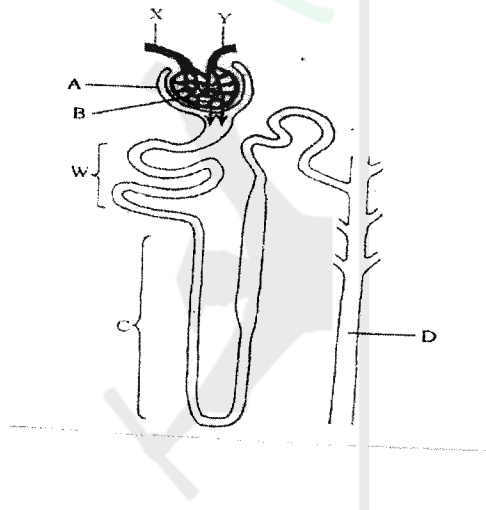
21. (a) Define the term species. (1 mark)

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

(b) Distinguish between classification and Taxonomy. (1 mark)

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

22. The diagram below represents the functional unit of a mammalian kidney. Study it and answer the questions that follow.



(a) Identify the structure. (1 mark)

- .....  
 .....
- (b) Select the letters representing two structures between which ultrafiltration takes place. (1 mark)
- .....  
 .....
23. (a) Describe the role of hypothalamus in thermoregulation. (2 marks)
- .....  
 .....
- (b) State the role of the following hormones in homeostasis.
- (i) Insulin. (1 mark)
- .....  
 .....
- (ii) Glucagon. (1 mark)
- .....  
 .....
24. (a) The figure below is a structural diagram of a portion from a nucleic acid strand.
- P --- S --- P --- S --- P --- S --- P --- S  
 C            G            U            C
- (a) Giving a reason, name the nucleic acid to which the portion belongs. (2 marks)
- Name .....
- Reason .....
- (b) Write down the sequence of bases of a complimentary strand to that shown above (1 mark)
- .....  
 .....
- (b) State the function of Deoxyribonucleic acid (DNA) molecule. (2 marks)
- .....  
 .....
25. Distinguish between continuous and discontinuous variation. (2 marks)

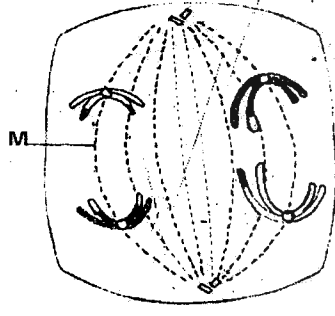


.....  
.....  
.....

26. Name three strengthening tissues found in plants. (3 marks)

.....  
.....

27. The diagram below represents a stage during cell division



(a) (i) Identify the stage of cell division (1 mark)

.....

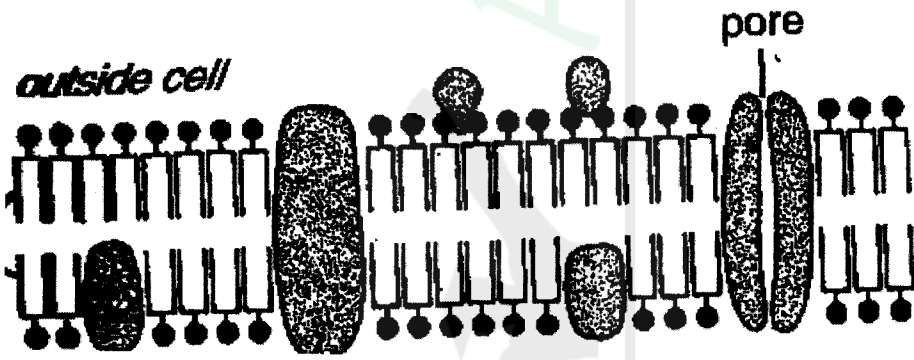
(ii) Give three reasons for your answer (a) (i) above (3marks)

.....

(b) Name the structure labeled M (1mark)

.....

28. Below is a diagram of a structure found in Eukaryotic cells? Study it and answer the questions that follow



a) Identify the structure (1mk)

.....

b) State two functions of the structure (2mks)

i.

.....  
.....

ii.

.....  
.....

c) (i) Name **one** organelle found in animal cells but absent in plant cells (1mk)

.....  
.....

ii) State **one** function of the organelle you have named in(c) above. (1mk)

.....

iii) State three properties of the structure in B above (3mks)

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

