

NAME..... INDEX NO.....

231/1  
BIOLOGY  
PAPER I  
JULY/AUGUST 2010  
TIME: 2 HOURS

**KENYA CERTIFICATE OF SECONDARY EDUCATION**  
**FORM FOUR EVALUATION EXAMINATION**

INSTRUCTIONS TO CANDIDATES  
Answer ALL the questions in the spaces provided.

**FOR EXAMINERS USE ONLY**

QUESTIONS	TOTAL MARKS	TOTAL SCORE
1 - 30	80	

1. State two functions of the cell sap. (2 marks)

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2. Briefly explain the role of the external ear (Pinna) in the hearing process. (2 marks)

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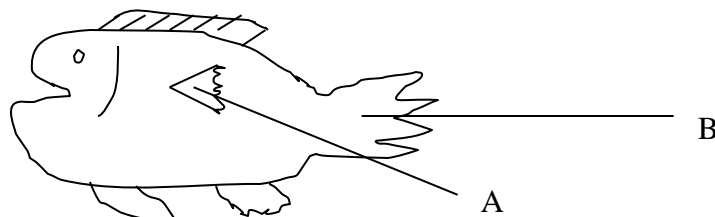
3. Distinguish between homologous and analogous structures. (2 marks)

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.....

4. An organelle magnified 4000 times by an electron microscope measured 2mm in diameter. Calculate its real diameter in micro-meters. (2 marks)

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5. The diagram below shows the external structure of Tilapia.



a) A part from swimming, state other functions of the fins labelled A & B

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b) State two functions of swim bladder in a fish. (2 marks)

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6. State two main differences between a millipede and centipede. (2 marks)

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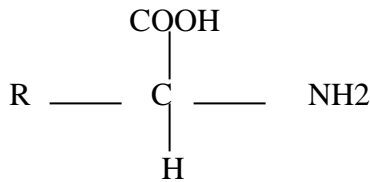
7. Which substance causes ripening and falling of fruits (1 mark)

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8. Explain the immediate reaction of the body bathed in cold water. (2 marks)

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9. Below is the general structure of an amino group



What do the following refer to?

COOH –.....

NH<sub>2</sub> –.....

10. State the functions of vascular bundles in plants. (2 marks)

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.....

11. State two methods by which fossils were formed. (2 marks)

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.....

12. State three ways of breaking seed dormancy

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.....

13. (i) What is a habitat?

.....  
.....

(ii) Differentiate between population and a community.

Population –.....  
.....

Community –.....  
.....

(iii) 600 flies were caught and marked. After 24 hrs 400 flies were caught out of which 120 had the marks.  
Estimate the population size of the flies in that house. (2 marks)

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14. (i) State three importance of DNA molecule.

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.....

(ii) What is DNA replication?

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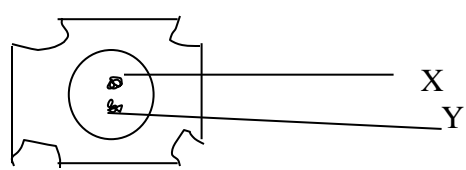
(iii) A DNA strand sequence had the following base sequence TAC GCT. What is the sequence of M- RNA strand copied from this DNA portion.

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15. Give THREE features that hinder self pollination and self fertilization. (3 marks)

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.....  
.....

16. The diagram below shows a mature pollen grain



State the function of the structure labelled. (2 marks)

...X.....  
.....

...Y.....

17. Differentiate between aerotaxis and rheotaxis

(2 marks)

Aerotaxis.....  
.....

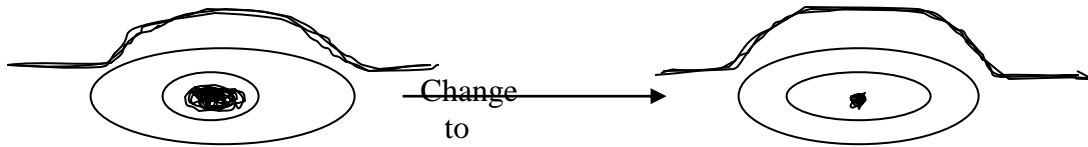
Rheotaxis.....

18. Which structure in the ear detects

a) Sound waves .....(1 mark)

b) Change in posture..... (1 mark)

19. The diagram below shows some changes in the external views of the mammalian eye. Study them and answer the question that follows.



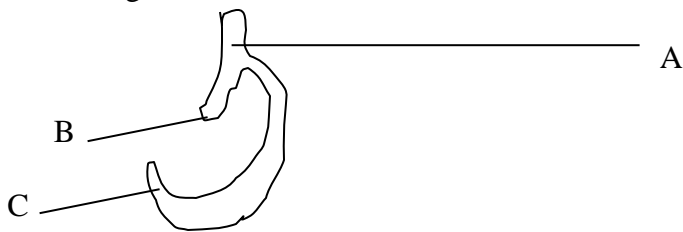
a) Name the stimulus that resulted into the change above (1 mark)

.....  
.....

b) Explain the events that led to the change above. (3 marks)

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

20. Below is a diagram of mammalian rib



(i) Label the part

a) .....

b) .....

(ii) Name the type of bone where part C articulates. (1 mark)

.....

21. What will happen to a small section of fresh pumpkin stem placed in hypotonic solution? (2 marks)

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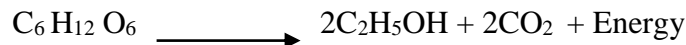
22. State two functions of secretion from sebaceous gland of mammalian skin. (2 marks)

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23. A person consumes a lot of sugar in tea. Briefly explain the feedback mechanism in order to bring the sugar level to norm.

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24. Given the equation of respiration:



a) Name the type of respiration taking place. (1 mk)

.....  
b) Calculate the respiratory quotient (RQ) , use the equation. (2 marks)

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.....

c) Give three (3) economic importance of the process in a above. (3 marks)

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25. (a) What do similarity of wings of bats and those of insects illustrate? (1 mark)

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.....

(b) Name three evidences that show that organic evolution has taken place. (3 marks)

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26. Name TWO sites in the mammalian body where red blood cells are manufactured. (2 marks)

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27. State three effects of drug abuse. (3 marks)

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28. State three adaptations of aquatic plants to photosynthesis. (3 marks)

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29. What causes diabetes inspidus? (1 mark)

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30. Differentiate between tendons and ligaments. (2 marks)

Tendons .....  
.....

Ligaments .....  
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