Name…… **Index No. …….**

School ……...

231/1
BIOLOGY
Paper 1
THEORY
July/August- 2007
Time: 1 ½ Hours

BONDO DISTRICT SECONDARY SCHOOLS EVALUATION EXAMINATIONS – 2007
Kenya Certificate of Secondary Education (K.C.S.E)

231/1
BIOLOGY
Paper 1
THEORY
July/August- 2007
Time: 1 ½ Hours

INSTRUCTIONS

- *Write your name, school and Index number in the spaces provided above.*
- *Answer all questions in the spaces provided.*

For Examiner's Use only

Question	Maximum Score	Candidates Score
1 – 27	80	

This paper consists of 12 printed pages.
Candidates should check the question paper to ensure that all pages are printed as indicated and no questions are missing

1. Explain how sunken stomata lower the rate of Transpiration. (2mks)

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2. a) Which structures make Angiospermaphyta more efficient in transport of water and mineral salts than the Gymnospermaphyta. (1mk)

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b) How are the structures named in (a) above adapted to that function? (3mks)

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3. Differentiate between guttation and transpiration. (2mks)

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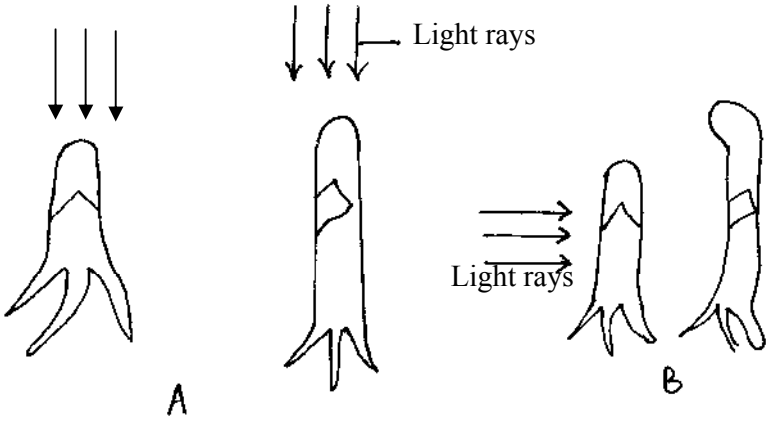
4. An experiment was carried out to investigate a growth response in a maize seedling as shown in the diagrams below.



a) State the type of response being investigated. (1mk)

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b) Explain the response exhibited by the shoot. (4mks)

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5. The oxidation of a certain substrate is represented by the chemical equation shown below.

$C_{57}H_{104}O_6 + 80O_2 \longrightarrow 57CO_2 + Energy$

a) Calculate the respiratory quotient (RQ) of the substrate. (2mks)

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b) Identify the above substrate. (1mk)

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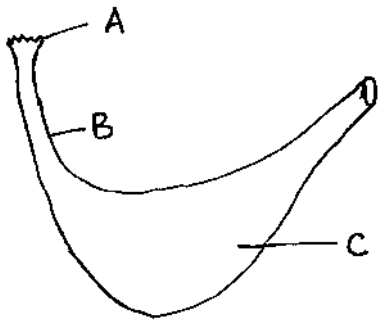
6. The following diagram represents apart of a flower.



a) Name the parts labelled B and C. (2mks)

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b) State the function of part A. (1mk)

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7. a) Name the process in human beings that may lead to addition or loss of one or more chromosomes. (1mk)

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b) State three benefits of polyploidy in plants to a farmer. (3mks)

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8. State the functions of each of the following organelles.

a) Nucleolus (1mk)

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b) Golgi apparatus (2mks)

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9. The paddles of whales and fins of fish adapt the animals to aquatic habitats.

a) Name the evolutionary process that may have given rise to the similar structures. (1mk)

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b) What name is given to such structures? (1mk)

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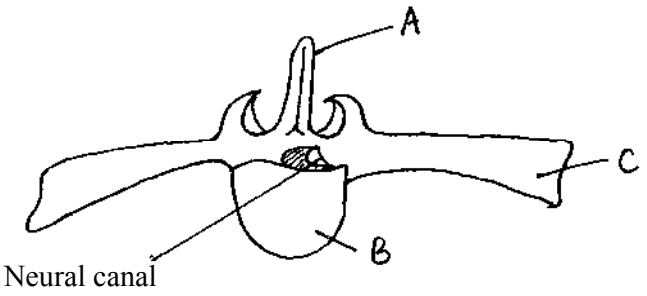
10. Study the diagram shown below of the anterior view of a lumbar vertebra of a mammal.



a) Name the parts labelled A and B. (2mks)

A …….

B ……..

b) State the function of part C. (1mk)

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11. What are the limitations of the use of the quadrat method in estimating population? (3mks)

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12. What are the functions of the following hormones in the female reproduction.

a) Follicle Stimulating Hormone (FSH) (1mk)

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b) Oxytocin (1mk)

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13. Name the respiratory surfaces of the following organisms:

(i) Spider ……. (1mk)

(ii) Mosquito larvae ……. (1mk)

(iii) Nile Perch ……. (1mk)

14. a) Give a reason why glucose does not normally appear in urine even though it is filtered in the mammalian Bowman's capsule. (2mks)

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b) Which hormones are involved in the salt-water balance in the human body. (2mks)

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15. Explain why the presence of carboxyhaemoglobin in the blood leads to death. (2mks)

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16. The relative rates of photosynthesis in a certain plant were determined at different temperatures. The results were as shown in the table below.

Temp. ^{0}C	**Relative rate of photosynthesis (mg/hr)**
25	20
30	70
35	100
40	25

Account for the rate of photosynthesis at

(i) 35^0 C (1mk)

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(ii) 40^0C (1mk)

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17. Explain how the following are adapted to their functions.

(a) Guard cell (3mks)

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(b) Spony mesophyll (1mk)

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18. a) Differentiate between incomplete and complete metamorphosis. Give example in each case. (2mks)

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b) State the functions of Ecdysone hormone. (2mks)

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19. Study the equation below and answer the questions that follow:

$$\text{Sucrose} \xrightarrow[\text{Heat}]{\text{Enzyme}} \text{Glucose} + \text{A}$$

a) Identify the product represented by A. (1mk)

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b) Name the region in the alimentary canal where this process occurs. (1mk)

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c) Name the enzyme responsible for the above reaction. (1mk)

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20. When preparing plant sections to be observed under the microscope:

a) Water is used to mount the tissues

b) Very thin sections of the plant should be cut

Give a reason why each of these steps are carried out. (2mks)

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21. Explain two ways in which the trachea of an insect is adapted to perform its functions. (2mks)

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22. Outline two ways in which bisexual flowers are adapted to cross-pollination. (2mks)

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23. Explain why blood from a donor whose blood group is A cannot be transfused into a recipient whose blood group is B. (2mks)

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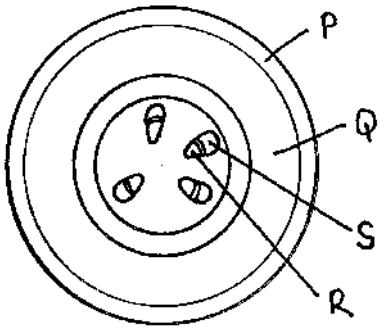
24. The diagram below shows a cross section of a dicotyledonous plant stem. Study it and answer the questions that follow.



a) Identify parts labelled P and Q. (2mks)

P …….

Q …….

b) State the function of part labelled S. (1mk)

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c) What differences would you expect to observe between this section and that of a root from the same plant? (2mks)

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25. State how the human beings sperm cell is adapted to its function. (3mks)

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26. a) Name the compound that stores energy released during oxidation of glucose. (1mk)

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b) A goat weighing 15.2kg requires 216KJ while a rat weighing 50g requires 2736KJ per day. Explain. (2mks)

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27. a) Explain why mosquitoes become resistant to insecticides with time. (2mks)

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b) Other than the example in (a) above, give two other examples of natural selection in action. (2mks)

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