

Name .....

Index No. ....

School .....

Candidates Sign: .....

Date: .....

231/2

**BIOLOGY**

Paper 2

(THEORY)

July / August – 2008

**Time: 2 Hours**

## BONDO – RARIEDA DISTRICTS SECONDARY SCHOOLS EVALUATION EXAMINATION - 2008

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

231/2

**BIOLOGY**

Paper 2

(THEORY)

July / August – 2008

**Time: 2 Hours****INSTRUCTIONS TO CANDIDATES**

- Write your name, school and index number in the spaces provided above.
- Sign and write the date of examination in the spaces provided above.
- This paper consists of TWO Sections: A and B.
- Answer ALL the questions in Section A in the spaces provided.
- In Section B answer question 6 (compulsory) and either question 7 or 8 in the spaces provided after question 8.

**FOR EXAMINERS USE ONLY**

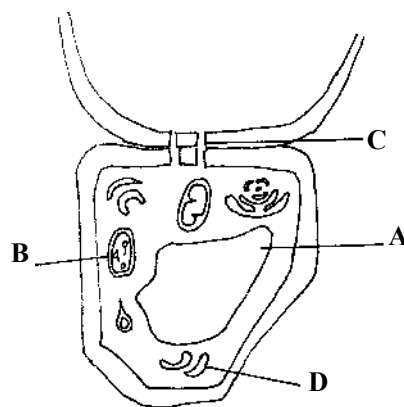
Section	Question	Maximum Score	Candidate's Score
A	1	8	
	2	8	
	3	8	
	4	8	
	5	8	
B	6	20	
	7	20	
	8	20	
TOTAL SCORE		80	

*This paper consists of 11 printed pages.  
Candidates should check the question paper to ensure that all the  
Pages are printed as indicated and no questions are missing.*

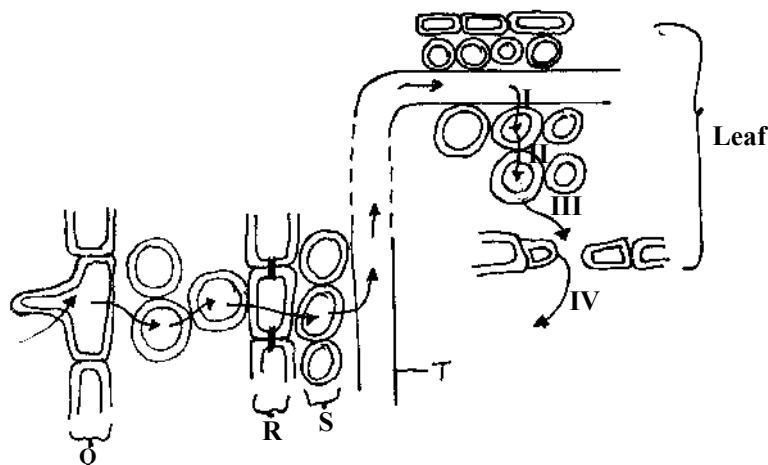
SECTION A (40 Marks)

Answer ALL questions in this section in the spaces provided.

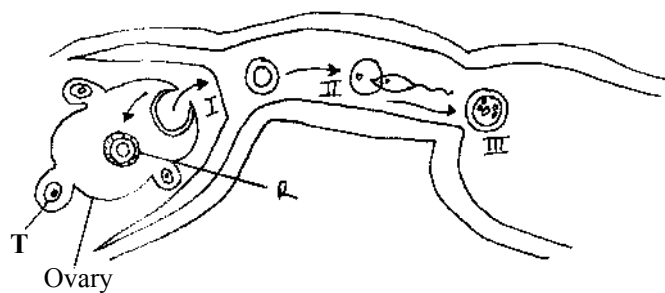
1. The diagram below represents a generalized cell structure as seen under an Electron microscope.



- Name structures labeled A, B and C. (3 mks)
  - How is structure labeled B adapted to its function. (2 mks)
  - What difference would be observed between electron micrograph obtained from a cheek cell of a frog and the one above. (2 mks)
  - Explain the function of structure labeled D. (1 mk)
2. The diagram below represents a scheme diagram of movement of water from soil through leaves of a flowering plant into the atmosphere.



- (i) Name parts labeled Q, R and S. (3 mks)
  - (ii) How is structure labeled R adapted to its function. (2 mks)
  - On the diagram draw alternative site for water loss through leaf. (1 mk)
  - Identify process (III) (1 mk)
  - How is structure T adapted to its function. (1 mk)
3. The diagram below shows some of the processes that take place in a female reproductive system.



a) Name process labeled; (1 mk)

I:

b) Name structures labeled; (2 mks)

T:

R:

c) Identify hormones responsible for formation of structures:- (2 mks)

T:

R:

d) Explain what leads to process at II. (3 mks)

4. Broad and thin lips in humans are characteristics that are inherited, when a homozygous broad lipped man is crossed with a homozygous thin lipped woman; all the children in the family are broad lipped.

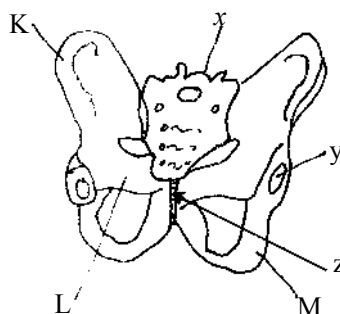
In a particular family, a woman that is heterozygous for broad lips is married to a man whose parents were both thin lipped, using letter B to represent genes for lips.

a) Work out the genotypic ratio of the children in that family. (6 mks)

b) What is the phenotypic ratio of the children in (a) above. (1 mk)

c) Differentiate between gene mapping and sequencing of gene. (1 mk)

5. The diagram below represents a diagram of a limb girdle.



a) Identify parts labeled K, L and M. (3 mks)

b) (i) Identify part labeled x (1 mk)

(ii) How is part labeled x adapted to its function. (1 mk)

c) Identify part labeled Z and hence state its significance. (1 mk)

d) Name part labelled y. (1 mk)

e) How is joint articulating at y adapted to its function. (1 mk)

## SECTION B (40 Marks)

Answer question 6(compulsory) in the spaces provided and either question 7 or 8 in the spaces provided after question 8.

6. In an experiment to investigate the effect of heat on germination of seeds, 12 bags each containing 60 pea seeds were placed in a water bath maintained at  $85^{\circ}\text{C}$ . After every two minutes a bag was removed and seeds contained in it planted. The number that germinated was recorded. The procedure used for pea seeds was repeated for wattle seeds. The results were as shown in the table below.

Number of seeds that germinated		
Time(min)	Pea seeds	Wattle seeds
0	60	0
2	60	0
4	48	0
6	42	2
8	34	28
10	10	36
12	2	40
14	0	44
16	0	46
18	0	48
20	0	49
22	0	47

- a) Using a suitable scale and on same axes, draw graphs of number of seeds that germinated against time in hot water for each plant. (6 mks)
- b) (i) At what time would number of seed that germinated for each plant be same. (1 mk)  
(ii) How many wattle seeds would have germinated if the 13<sup>th</sup> bag was available and was removed and seeds contained in it planted at 24 minutes. (1 mk)
- c) Explain why the ability of pea seeds to germinate declined with time of exposure to heat. (2 mks)
- d) Explain why the ability of the wattle seeds to germinate improved with time of exposure to heat. (2 mks)
- e) Account for the shape of the graph for the wattle seeds which germinated between 20 – 24 min. (2 mks)
- f) Some of the pea seeds were allowed to germinate and placed in a large airtight flask and left for four days.  
(i) Suggest the expected changes in the composition of gases in the flask on the fifth day. (2 mks)  
(ii) Give reasons for your answer in (f) (i) above. (1 mk)
- g) Name three factors other than those investigated in a) above which would affect dormancy. (3 mks)
7. a) Name two processes by which flowering plants excrete products, and for each process, state two waste products that are eliminated. (6 mks)  
b) Explain the roles of the  
(i) Liver  
(ii) Kidneys in eliminating excess amino acids from the human body. (14 mks)
8. Describe the structure and function of various parts of the mammalian skin. (20 mks)