NAME …… **INDEX NO** ……..……..

SCHOOL …… **SIGNATURE** ……...……...…….

DATE ……..……..

231/2
BIOLOGY
PAPER 2
(THEORY)
JULY/AUGUST, 2014
2 HOURS

MBOONI WEST SUB - COUNTY JOINT EVALUATION TEST, 2014

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

231/2
BIOLOGY
PAPER 2
(THEORY)
JULY/AUGUST, 2014
2 HOURS

INSTRUCTIONS TO CANDIDATES

- Write your name and Index Number in the spaces provided above.
- This paper consists of **two** sections. Section **A** and section **B.**
- Answer **ALL** 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.
- This paper consists of 10 Printed pages. Candidates should check the question paper to ensure that all the papers are printed as indicated and no questions are missing

For Examiners use only.

Section	Question	Maximum score	Candidates score
A	1	8	
	2	8	
	3	8	
	4	8	
	5	8	
B	6	20	
	7	20	
	8	20	
	Total score	80	

SECTION A. 40 MARKS

Answer all the Questions in this section.

1. a) What is meant by the following ecological terms.

i) Population. (1mark)

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ii) Community. (1 mark)

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iii) Ecosystem (1mark)

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b) What is the importance of the following in an ecosystem?

i) Decomposers (1 mark)

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ii) Predation. (1mark)

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c) Give a reason why two species in an ecosystem cannot occupy the same niche. (2marks)

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d) Name the bacteria found in the root nodules of leguminous plant. (1mark)

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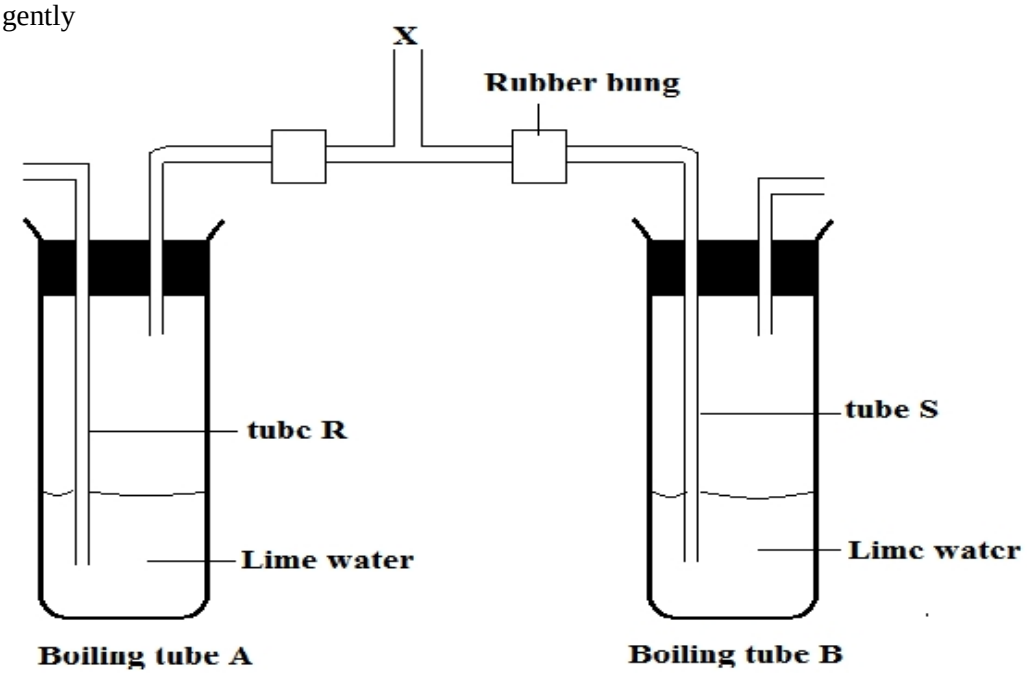
……..

2. The apparatus whose diagram is given below can be used to demonstrate results of a physiological process that occurs in a mammal. To use the apparatus, the experimenter places his mouth at the point marked X and breathes in and out gently



a) State the observations in the boiling tube when the experimenter

i) Breathes in

Boiling tube A (2 marks)

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Boiling tube B (1mark)

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ii) Breathes out?

Boiling tube A (1mark)

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Boiling tube B (1 mark)

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b) What conclusion can you draw from the results of this experiment (2 marks)

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c) What is the purpose of the boiling tube A? (1mark)

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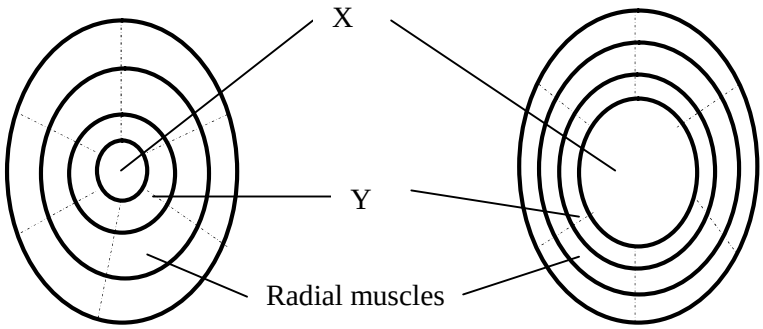
3. The diagram below shows how the iris and pupil of human eye appear under different conditions.



A B

a) Name the structures labeled X and Y (2 marks)

X

……

Y

……

b) i) State the condition that lead to the change in appearance shown in the diagram labeled B. (1mark)

……

……

ii) Describe the changes that lead to the appearance of the iris and pupil as shown in the diagram labeled B.

(4 marks)

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iii) What is the significance of the changes described in (b) (ii) above. (1 mark)

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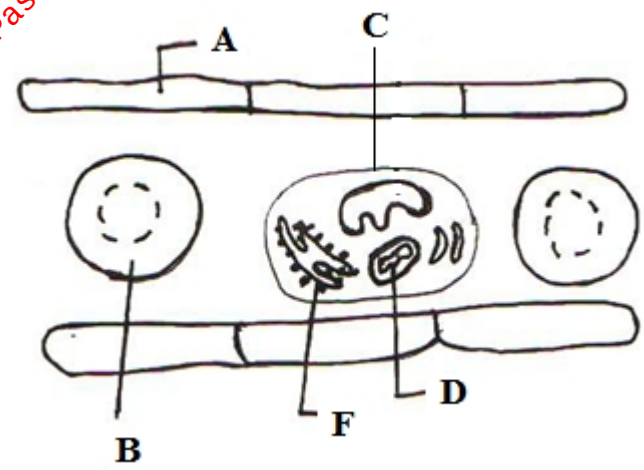
4.



a) Name cells A,B and C stating their functions. (6 marks)

Cell	Name	Function
A		
B		
C		

b) Name the organelle D and F (2marks)

D

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F

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……

5. In a plant breeding experiment, tall plants were crossed with dwarf plants. They produced 93 tall plants and 94 dwarf plants.

a) State the phenotypic ratio (1 mark)

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b) What were the genotypes of the offspring? Show your working. (4marks)

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c) What is a test cross? (1mark)

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d) What is a natural selection (2marks)

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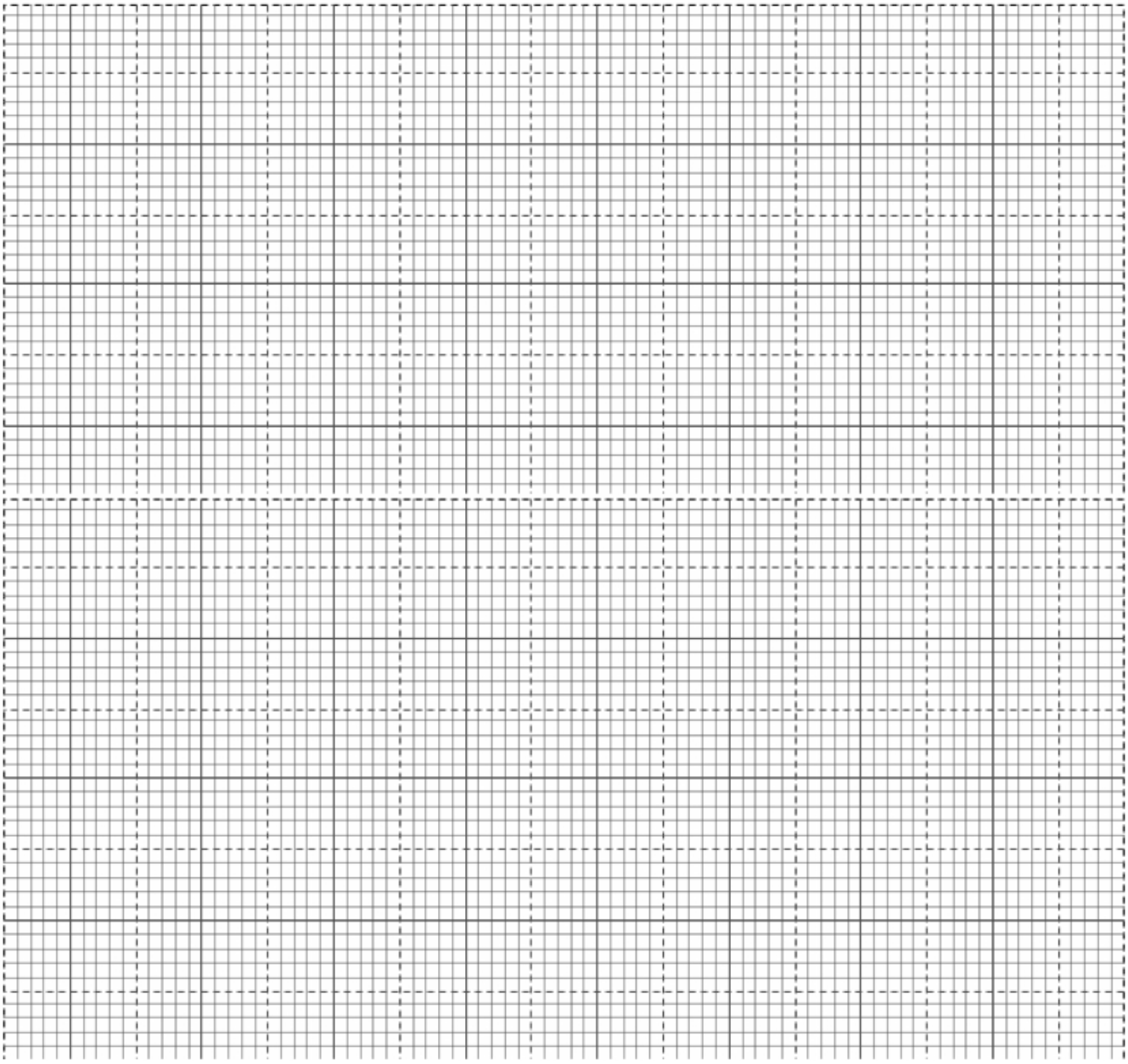
SECTION B (40 MARKS)

Answer question 6 (compulsory) and either 7 or 8

6. In an experiment to determine the effect of ringing on the concentration of sugar in the phloem, a ring of bark from the stem of a tree was cut and removed. The amount of sugar in grammes per $16cm^3$ piece of bark above the ring was measured over a 24 – hour period. Sugar was also measured in the bark of a similar stem of tree of same species which was not ringed. The results are shown in the table below.

Time of the day	Amount of sugar in grammes per 16 cm^3 piece of bark	
	Normal stem	Ringed stem
6.45 A.M	0.78	0.78
9.45 A.M	0.80	0.91
12.45 P.M	1.81	1.01
3.45 P.M	1.80	1.04
6.45 P.M	1.77	1.00
9.45 P.M	0.73	0.95
12.45 A.M	0.65	0.88

a) Using the same axis, plot graphs of the amount of sugar against time for both stems (6 marks)



b) At what time was the amount of sugar highest in the:

i) Ringed stem. (1mark)

……

……

ii) Normal stem. (1 mark)

……

……

c) How much sugar would be in the ringed stem if it was measured at 3: 45 am. (1mark)

……

……

d) Give a reason why there was sugar in the stem of both trees at 6:45am. (2marks)

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e) Account for the shape of the graph for the tree with the ringed stem between: (3 marks)

i) 6:45 and 3:45 am.

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ii) 3:45 pm and 12:45 am. (2 marks)

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f) Name the structures in the phloem that are involved in the translocation of sugars. (2 marks)

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7. (a) Explain the conditions necessary for germination in seeds. (12 marks)

(b) Describe the role of the following hormones in growth and development of plants.

i) Auxins (4 marks)

ii) Gibberellins (4 marks)

8. a) what is meant by the following terms

i) excretion

ii) secretion

iii) Egestion

iv) homeostasis

(b) Explain how the osmotic pressure in the human blood is maintained at normal level. (12 marks)

(c) Describe how the oxygen in the alveolus reaches the red cells. (4 marks)