

Name

Index No.....

School

Candidate's Signature

Date

231/2

BIOLOGY

PAPER 2

(THEORY)

JULY/AUGUST

TIME: 2 HOURS

KITUI WEST DISTRICT JOINT EVALUATION TEST - 2011

Kenya Certificate of Secondary Education

231/2

BIOLOGY

PAPER 2

(THEORY)

TIME: 2 HOURS

INSTRUCTIONS TO CANDIDATES

- Write your name and index number in the spaces provided.
- This paper consists of **TWO** sections **A** and **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.

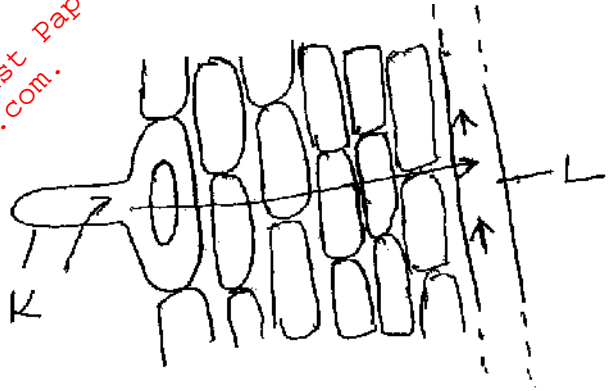
FOR EXAMINER'S USE ONLY

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	

This paper consists of 8 Printed pages.

Candidates should check to ensure that all pages are printed as indicated and no questions are missing

1. The figure below represent the pathway of water from the soil into the plant.



a) Name the structures labeled K and L. (2 Marks)

K

L

b) Explain how water from the soil reaches the structure labeled L. (4Marks)

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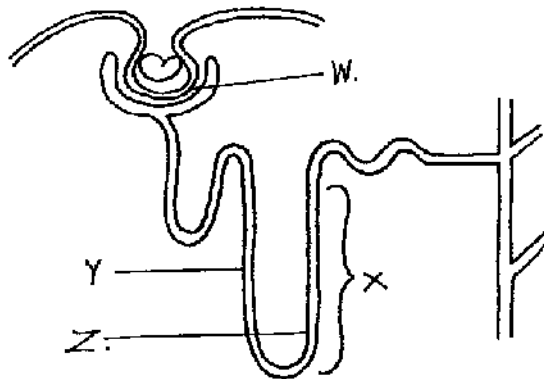
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c) Name the process by which mineral salts enter into the plant. (1Mark)

.....

2. The diagram below represents a nephron from a human kidney.



a) Name the part labeled X. (1Mark)

.....

b) Sodium chloride is actively pumped out of the part labeled Z into the medulla of the kidney. This sodium chloride moves back into part Y. Explain the effect of the sodium chloride concentration in the medulla of the kidney on the re-absorption of water from the collecting duct. (3Marks)

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.....c

c) Most of the glucose filtered into the glomerular filtrate is reabsorbed. From which part of the nephron does this re-absorption take place? (1Mark)

.....

d) How is re-absorption of the sodium chloride controlled? (2Marks)

.....

.....

e) Name the process that occurs in the part labeled W. (1Mark)

.....

3. In a snapdragon plant, a pure breed – red flowered plant was crossed with a pure breed white flowered plant. The F1 generation had all pink flowers. When the F1 generation was selfed, 1654 plants were obtained in the F2 generation.

a) (i) Identify the type of dominance demonstrated by the colour of the flowers. (1Mark)

.....

ii) Give a reason. (1Mark)

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b) Using letter R, to represent the gene for red colour and W for white colour, work out the possible genotypes of the F2 generation. (4Marks)

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c) Work out how many plants in the F2 had;

i) Pink flowers.

(1Mark)

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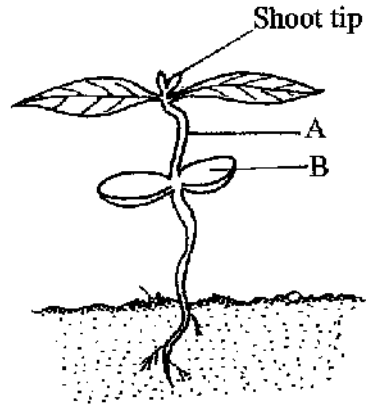
ii) Red flowers.

(1Mark)

.....

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4. The diagram below shows a germinating seedling.



a) (i) Name the parts labeled a and B and give one function for each.

(4Marks)

A

.....

.....

B

.....

.....

ii) State the type of germination exhibited by the germinating seedling.

(1Mark)

.....

b) State the importance of following environmental conditions that are necessary for seed germination.

(3Marks)

i) Oxygen

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ii) Water

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.....

iii) Temperature

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5. a) i) State three modes of transmission of H.I.V / A.I.D.S from an infected person. (3 Marks)

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ii) Suggest three effective ways of preventing H.I.V / A.I.D.S transmission to uninfected person. (3Marks)

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b) State the function of;

i) Seminiferous tubules. (1Mark)

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.....

ii) Oviduct. (1Mark)

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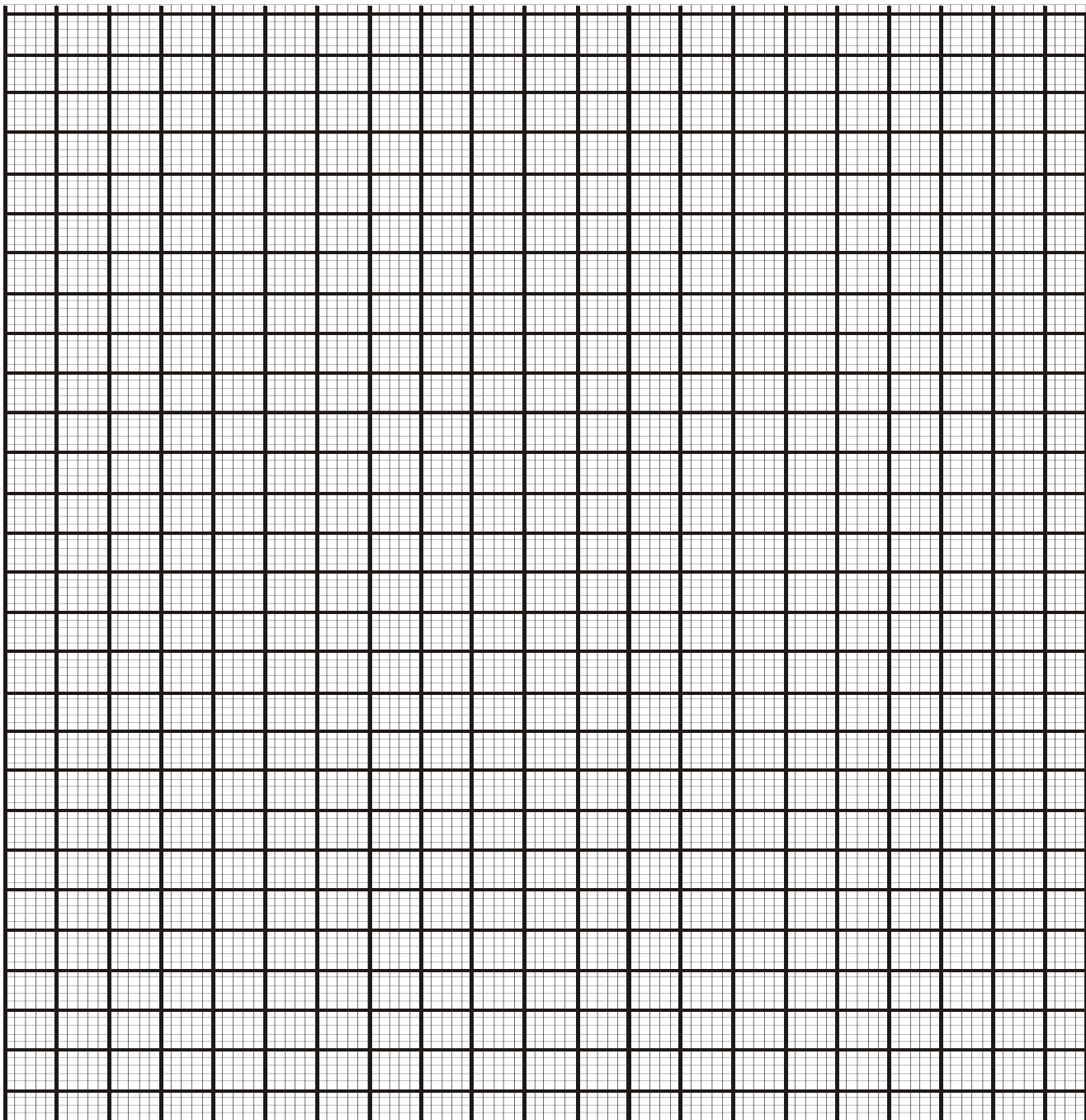
SECTION B (40 MARKS)

6. The relationship between oxygen concentration, potassium gain and sugar loss in isolated barley root was determined. The results obtained are given in the table below. (The sugar loss and potassium gain are expressed in arbitrary units).

Percentage oxygen concentration	0	5	10	15	20	100
Sugar loss	15	20	42	45	45	48
Potassium gain	5	55	70	73	75	70

- a) Plot on the same axes graphs of sugar loss and potassium gain against oxygen concentrations.

(8Marks)



b) i) Suggest the process by which potassium is taken in by the roots. (1Mark)

ii) Give reasons for your answer. (2Marks)

c) Account for the sugar loss and potassium gain at 100% oxygen concentration. (2Marks)

ii) Between 5% and 20% oxygen concentration. (2Marks)

d) Apart from oxygen concentration, suggest two other factors that affect the above process. (2Marks)

e) State two ways in which you can stop the above process from taking place. (2Marks)

7. Describe how the various parts of the mammalian eye are adapted to their functions. (20Marks)

8. a) Describe how desert plants conserve water. (12Marks)

b) Describe how hydrophytic plants are adapted to living in areas with abundant water. (8Marks)

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