NAME:…… INDEX NO:……

SCHOOL:…….. DATE:……

SIGN:……..

231/2
BIOLOGY
PAPER 2
(THEORY)
JUNE/JULY - 2012
TIME: 2 HOURS

BUTERE DISTRICT JOINT EVALUATION – 2012

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

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BIOLOGY
PAPER 2
(THEORY)
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INSTRUCTIONS TO CANDIDATES

1. Answer ALL questions in section A in the spaces provided.
2. In section B answer question 6 (compulsory) and either question 7 or 8 on the foolscap provided.
3. Candidates will be penalized for not following instructions in this paper carefully.
4 All workings must be clearly shown where necessary.

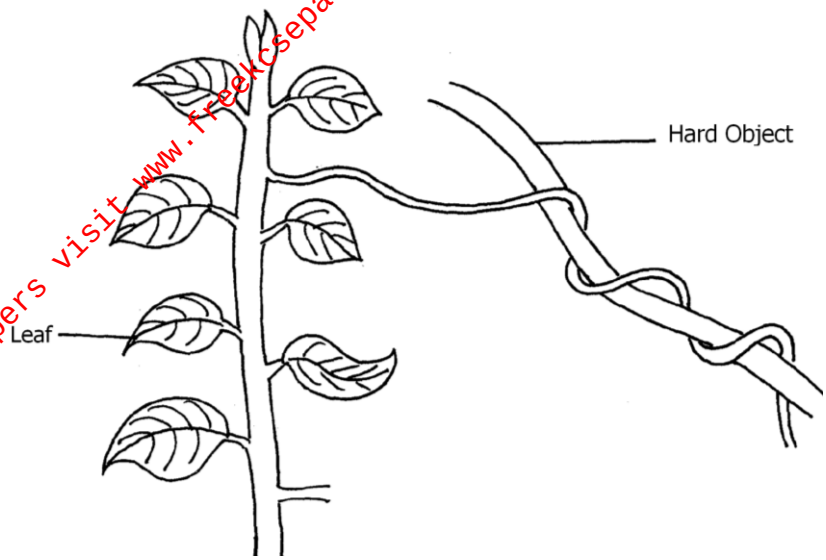
FOR EXAMINERS USE ONLY.

SECTION	QUESTIONS	MAXIMUM SCORE	CANDIDATE'S SCORE
A	**1** **2** **3** **4** **5**	**08** **08** **08** **08** **08**	
B	**6** **7** **8**		
TOTAL		**80**	

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

SECTION A (40 MARKS)

1. The figure below illustrate a response in plants.



(a) State the type of response illustrated (1mk)

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(b) Explain how the response occurs. (4mks)

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(c) State two importance of phototactic response in termites. (2mks)

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(d) State hormone used in agriculture that breaks breaking seed dormancy. (1mk)

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2. (a) (i) Define sex linkage. (1mk)

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(ii) In a marriage of Jane and Otieno who are both normal for hemophiliac condition, gave birth to four children Susan, Grace, Tom and Peter. Tom the second born child was hemophilic. Later in life Tom married Alice who was normal. Their first born child was hemophiliac.

Let H represent gene for normal condition.

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(b) (i) What was the genotype of Alice. (1mk)

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(ii) Work out the phenotypic ratio of F2. (5mks)

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(c) How does the police force use knowledge on genetics. (1mk)

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(d) What is the name given to points of contact in a pair of homologous chromosomes. (1mk)

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3. A student observed feeding relationship while on a tour in a coastal Island.

Eagles feed on small fish.

Small fish feed on sea grass

Insect larvae and molluscs feed on sea grass.

Insect larvae fed on by small fish, while crabs feed on insect larvae and molluscs.

(a) From the above information , construct a food web. (3mks)

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(b) In which trophic level is small fish found. (1mk)

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(c) Extract a food chain where the Eagle is a tertiary consumer. (1mk)

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(d) Suppose all the crabs were poisoned, what would be the immediate effect in the ecosystem. Give a reason. (1mk)

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(e) Give a reason why pyramid of biomass is a better representation of energy flow in an eco system than pyramid of numbers. (1mk)

……..

4. A student wanted to observe human red blood cells under a light microscope. He put l0ml of solution X,Y and Z in three boiling test tubes. The solutions were of different concentration .In each of the test tubes he put three drops of blood sample. The experiment was left to stand for 30 minutes. He placed one drop of solution X on glass slide and observed under the microscope. The same procedure was repeated for solutions Y and Z.

He made the following observation.

Solution	**Observation**
X	Normal Cells
Y	Wrinkled Cells
Z	No cells observed

(a) What was the physiological process observed. (1mk)

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(b) Explain why red blood cells observed in solution Y were wrinkled. (3mks)

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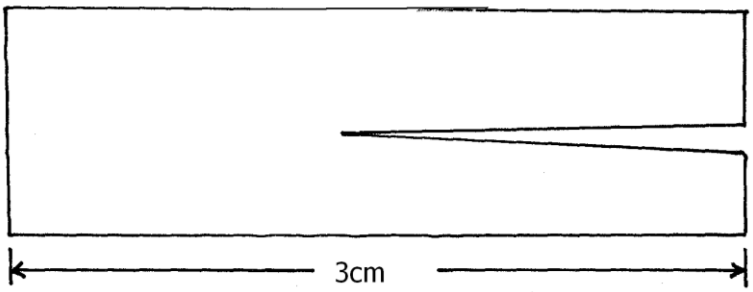
(c) A 3cm long piece of kale (sukuma wiki) stem was cut halfway along its length as shown below.



(i) If the piece was placed in solution Z for 30 minutes, its shape changed . Using a pencil draw a diagram in the space provided to show the expected change. (1mk)

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(ii) Explain the results obtained in C(i) above. (3mks)

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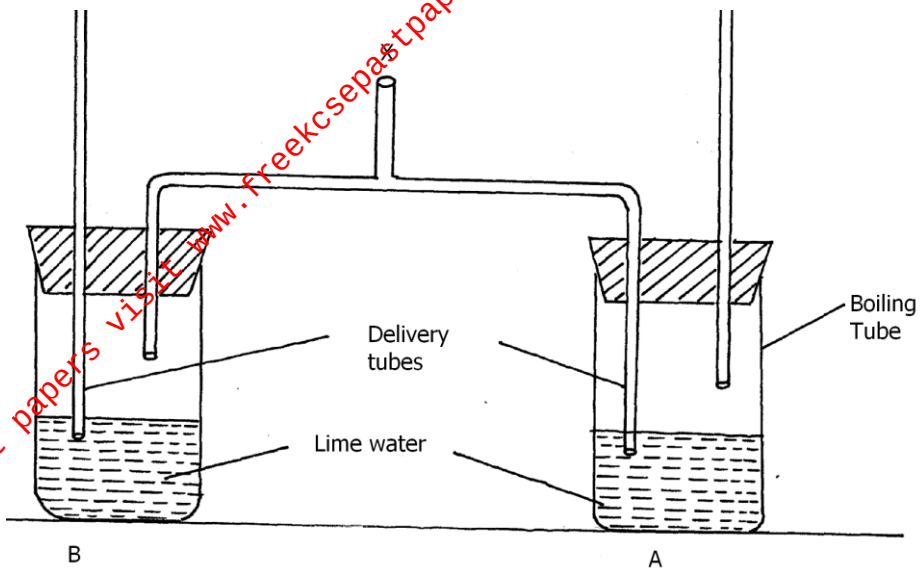
5. An experiment was set up as shown below.



(a) A student blew air in and out through point X. Using arrows indicate on the diagram how air gets in and out of the set up. (2mks)

(b) (i) In which of the test tube would lime water turn milky first. (1mk)

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(ii) Give a reason. (1mk)

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(c) What is the effect of lactic acid in the thigh muscles of an athlete after a short fast race. (2mks)

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(d) Identify the type of muscle in human being where formation and effect of lactic acid is not felt. (1mk)

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(e) What is the biological significance of boiling milk /ultra heat treated milk. (1mk)

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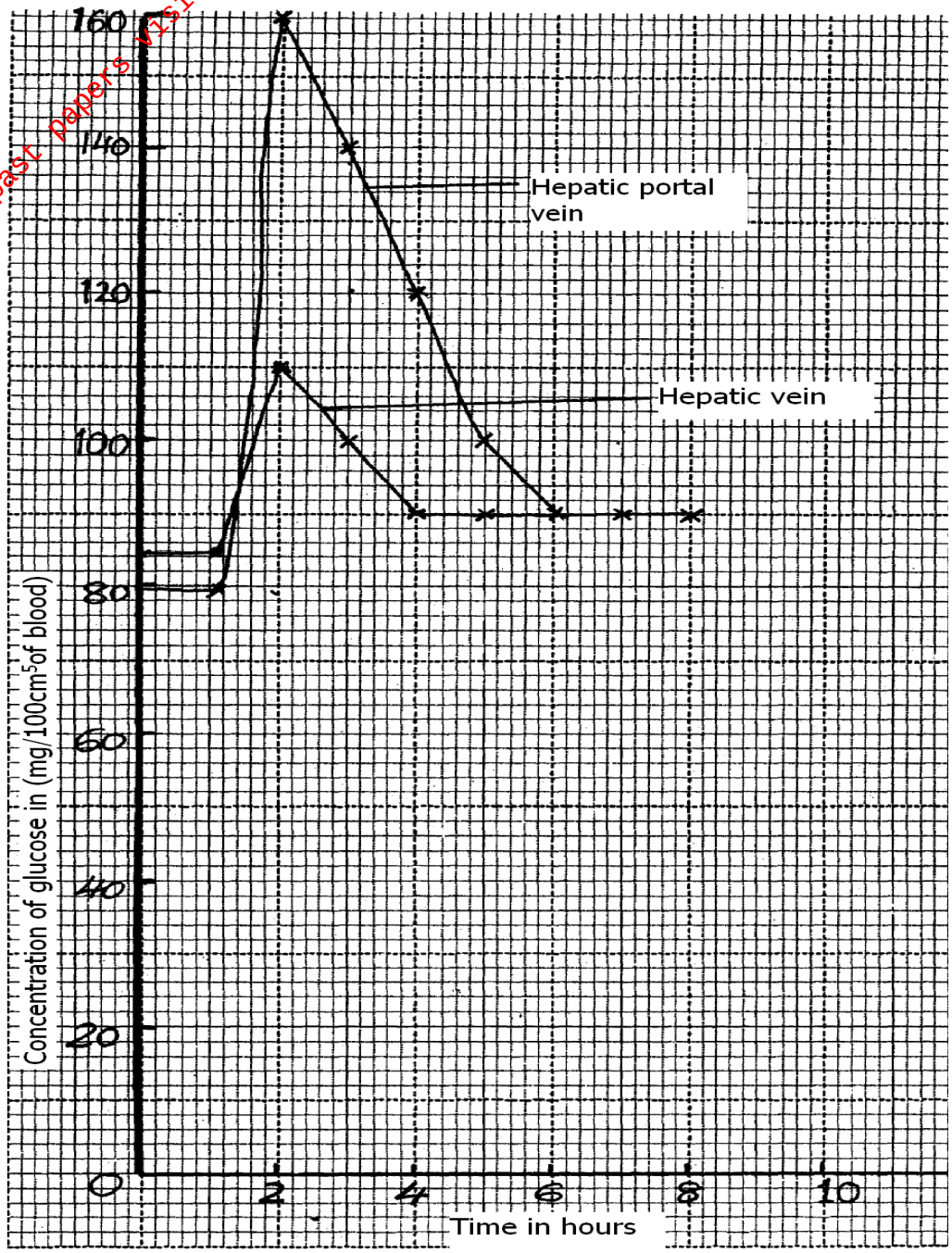
SECTION B

COMPULSORY QUESTIONS.

6. A man was starved for 24hours.He was then served with a balanced diet after which the concentration of glucose in the hepatic and hepatic portal veins were determined at interval of 1 hour for the next 8 hours after the meal.

The results were as shown in the graph below.



(a) From the graph state the normal concentration of glucose in man. (1mk)

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(b) Determine the concentration of glucose after 2 ½ hrs. (2mks)

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(c) Calculate the rate of glucose between 1 - 2 hours in hepatic portal vein. (2mks)

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(d) Account for the blood sugar level in hepatic portal vein and hepatic vein between; (4mks)

(i) 0- 1hour

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(ii) 2 - 4 hours. (6mks)

(e) A patient was found to produce urine that tasted sweet. Name the disease he was likely to be suffering from. (1mk)

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(f) How would you test for the disease in your school laboratory. (3mks)

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(g) What advice would you give to a patient whose blood contains abnormal high levels of urea. (1mk)

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ANSWER EITHER QUESTION 7 OR 8 IN THE SPACES PROVIDED AFTER THE QUESTIONS.

7. Describe how human skin is adapted to its function. (20mks)

8. (a) Describe the adaptation of floating water lily leaf to its photosynthetic function. (10mks)

(b) Describe the activities that take place in the chloroplast of growing plants. (10mks)

End