NAME: ..... INDEX NO:.....

SCHOOL: .....

BIOLOGY
PAPER 2
THEORY
JULY / AUGUST 2007
TIME 2 HOURS

BUNGOMA DISTRICT MOCK EXAMINATION
Kenya Certificate Of Secondary Education 2007

231 / 2
BIOLOGY
PAPER 2

INSTRUCTIONS TO CANDIDATES

- *Write your name and Index number in the space provided above.*
- *This paper has **two** sections **A** and **B**.*
- *Answer **ALL** the questions in section **A** in the spaces provided on the question paper.*
- *In section **B** answer question **6(compulsory)** and either question **7 or 8** in the spaces Provided after question **8.***

For Examiner's Use Only.

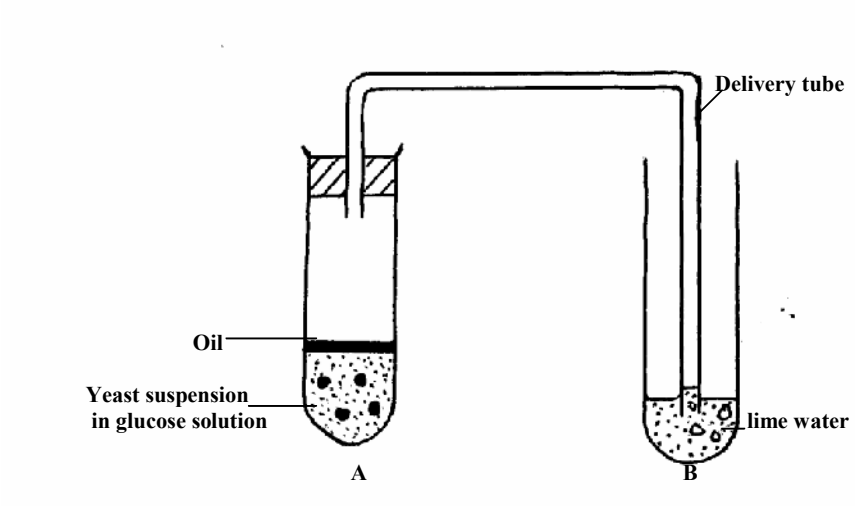
SECTION	QUESTIONS	MAXIMUM SCORE	CANDIDATES SCORE
	1	8	
	2	8	
	3	8	
	4	8	
	5	8	
	6	20	
	7	20	
	8	20	
TOTAL SCORE		80	

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

SECTION A (40 MARKS)

Answer ALL the questions in this section in the space provided.

1. The diagram below illustrates an experiment to demonstrate a certain biological process.



Before adding yeast suspension in tube **A**, the glucose solution was first boiled and cooled.

(a) **What** biological process was being demonstrated? (1mark)

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(b) (i) **What** observation would be made in tube **B** after 20 minutes of the experiment? (2marks)

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(ii) **Account** for the observations made in (b) (i) above (2marks)

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(c) **Write** down an equation to summarise the reaction taking place in tube **A**. (1mark)

(d) **State two** industrial applications of the chemical reaction taking place in tube **A**.

(2marks)

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2. Haemophilia is due to a recessive gene located on the X- chromosome. A phenotypically normal male married a normal female and one of sons was a haemophilic.

(a) **Work out** the genotype of the other children (use letter **H** to denote the gene for normal blood clotting) (4marks)

(b) **Explain** why in a human population there will be more cases of haemophilia in males than females. (2marks)

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(c) Apart from haemophilia, **name one** other genetic disorder of human blood caused by gene mutation (1mark)

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(d) **State** the importance of vitamin K in blood clotting. (1mark)

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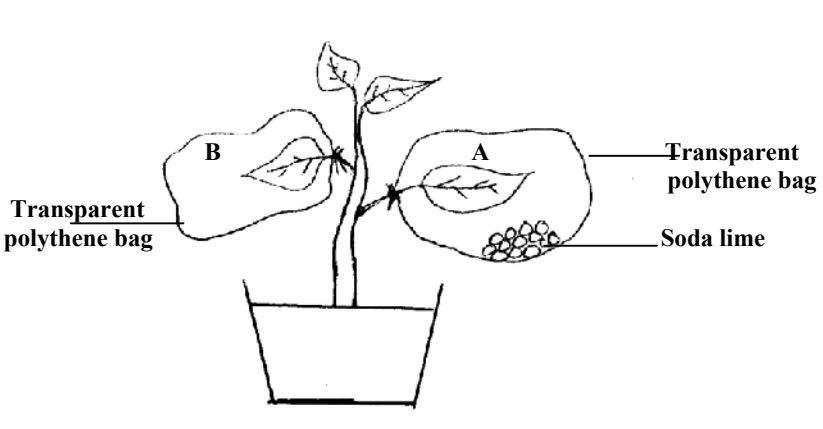
3. The diagram below represents an experimental set-up to investigate an aspect of photosynthesis.



The set up was placed in darkness for 24 hrs and then exposed to light for 5 hrs.

(a) **What** was the aim of the experiment? (1mark)

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(b) Leaves **A** and **B** were tested for starch.

(i) **What** would be the expected results? (2marks)

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(ii) **Give** reasons for your answer in (b) (i) above. (2marks)

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(c) **What** was the role of leaf **B** in the experiment? (1mark)

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(d) **Why** was the set – up placed in darkness for 24 hours? (1mark)

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(e) **Name** the organelle in a plant where photosynthesis takes place (1mark)

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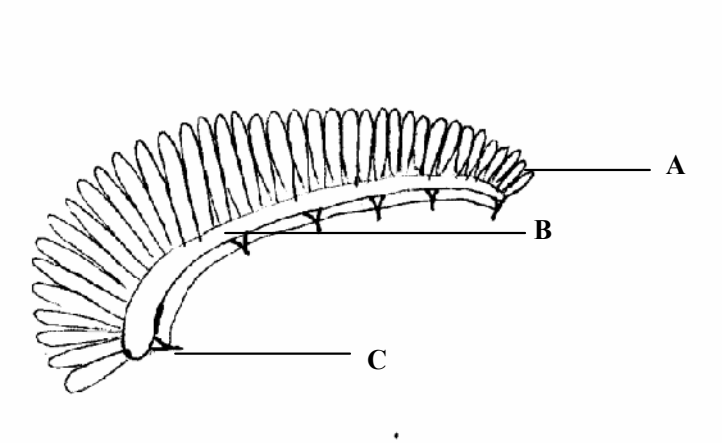
4. The diagram below represents the structure of a gill from a bony fish.



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

A: .....

B: .....

(b) **State** the function of the part labelled **C.** (1mark)

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(c) **Describe** the importance of counter flow system in the structure labelled **A**.

(2marks)

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(d) **Describe the mechanism** of gaseous exchange in a protozoa. (3marks)

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5. (a) **What** are halophytes? (1mark)

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(b) **How** are halophytes able to overcome the problem of water absorption? (2marks)

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(c) **Explain** the role of each of the following feature on xerophytes.

(i) Sunken stomata (2marks)

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(ii) Short life cycle (1mark)

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(iii) Succulent stems and leaves (1mark)

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(iv) Extensive superficial roots (1mark)

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SECTION B (40 marks)

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

6. In an experiment to investigate the effect of temperature on the activity of salivary amylase enzyme, test tubes containing 5 cm^3 of starch solution were placed in water baths maintained at different temperatures. After 30 minutes, 0.1cm^3 amylase solution was added into each of the tubes.

   At one minute intervals, a drop of the mixture in each tube was tested for presence of starch. The time taken for all the starch to be digested was taken and recorded. The results were as shown in the table below.

Temperature (^{0}c)	5	10	15	20	25	30	35	40	45
Time taken to digest all starch (mins)	80	60	48	26	18	9	3	14	75

(a) On the grid provided **plot** a graph of time taken to digest all the starch against temperature.

(6 marks)

(b) **What** was the optimum temperature range for this enzyme? (1mark)

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(c) **Account** for the results obtained at

(i) 5^0C (2marks)

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(ii) 45^0C (2marks)

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(d) Apart from temperature **name three** other factors that would affect the above reaction.(3marks)

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(e) **Name two** regions in a human body where digestion of starch occurs. (2marks)

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(f) (i) **Give three** metallic ions that act as enzyme co- factors in a human body. (2marks)

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(ii) **What** is the role played by enzyme co- factors in the physiology of human body? (1mark)

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(g) **Name** the major respiratory substrate in a mammalian body during severe starvation. (1mark)

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7. (a) **What** is pollution? (2marks)

(b) **Describe** the effects of the various pollutants in water and soil to living organisms.(18marks)

8. **How** is the fish adapted to movement in water? (20marks)