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

CANDIDATE'S SIGN ..... CLASS.....

231/2

PRE-MOCK

Kenya Certificate of Secondary Education

BIOLOGY PAPER 2,
231/2
TIME: 2 HOURS

INSTRUCTIONS TO CANDIDATES:

- *Write your **name** and **index number** in the spaces provided.*
- *Sign and write **date** of examination in the spaces provided above*
- *Answer **all** the questions in this paper in the spaces provided.*

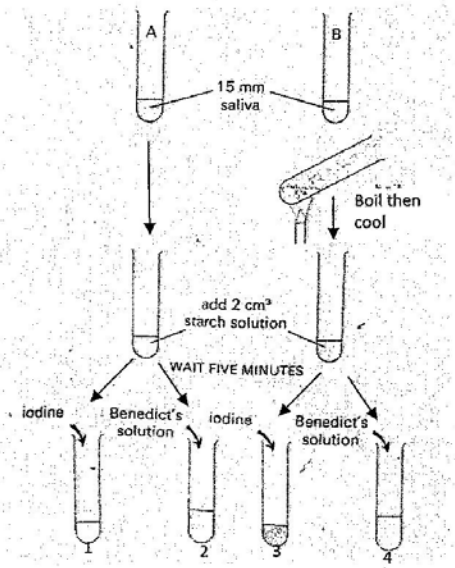
For Examiner's Use Only:

QUESTIONS	MAXIMUM SCORE	CANDIDATE'S SCORE
1	8	
2	8	
3	8	
4	8	
5	8	
6	20	
7 or 8	20	

This paper consists of 7 printed pages. Candidates should check to ascertain that all papers are printed as indicated and that no questions are missing

1. In an experiment to investigate action of saliva on starch, 20ml of saliva was collected in two test

Tubes A and B and treated as follows:



Contents of test tubes 2 and 4 were heat to boil after addition of Benedict's solution.

a) Record in the table below, the expected results and conclusions of the food tests. 4mks

Test tube	Observation	Conclusion
1		
2		
3		
4		

b) Account for the difference between the results obtained in test tubes 1 and 2. 2mks

ci) What was the effect of boiling saliva in test tube B? 1mk

ii)What one conclusion can you make from the whole procedure and results? 1mks

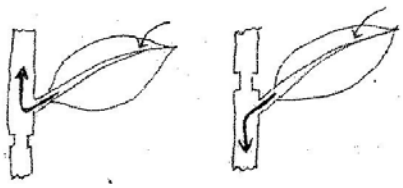
2. If a green leaf is supplied with radioactive carbon (iv) oxide, the radioactive carbon soon appears in the food transported in the phloem.

$6CO_2 + 6H_2O \longrightarrow C_6H_{12}O_6 + 6O_2$

If the bark of the tree is removed by ringing below the leaf, the food substance containing the radioactive moves up the stem only. When the ringing is done above the leaf, the radioactive carbon is traced in food moving down the stem only.ie

Radio active carbon (iv) oxide

Radio active carbon (iv) oxide



If oxygen supply to the phloem is cut off, translocation of food substance ceases.

a(i) Identify the food substance containing the radioactive carbon that is translocated through the phloem.

---------- 1mk

ii) Give two reasons why the food is translocated in the form named in a(i) above. 2mks

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b) Explain the effect of removing a complete ring of bark from the tree on the direction of translocation. 2mks

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c) Does removal of a complete ring of bark affect transport of water and mineral salts up the stem? Explain briefly. 1mk

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d) Explain the role of oxygen in translocation of food substances in the phloem. 2 mks

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3. Speciation occurs when a group of a certain population is completely isolated from the main stock

over a long period of time.

a) What is speciation? 1mk

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b) Describe any two forms of barrier that may isolate the population from the main stock. 2mks

i) ---

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ii) ---

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c) What is the advantage of natural selection? 2mks

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d) Use of a particular antibiotic over a long period of time to cure a certain bacterial disease makes the bacteria resistant and the antibiotic becomes less effective.

Explain how this happens. 3mks

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4. About 70% of human population can roll their tongues into a U-shape while about 30% cannot. This

trait is controlled by a pair of alleles R and r.

a) Using these symbols, write down the possible genotypes of the following group of people.

(i) Rollers ---------- 2mks

(ii) Non-rollers ---------- 1mk

b) Two parents heterozygous for this trait married and got a child.

What is the probability that the child was a non-roller? Show your working. 5mks

5. Study the data below that shows the number of organisms in a certain habitat and biomass of the organisms.

Species	Population size	Species biomass
Q	10000	40
R	1000	25
S	100	5
T	10	1000

a) Construct a food chain involving all the organisms. 1mk

bi) Which organism is likely to be the primary producer. 1mk

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ii) What is the role of primary producers in an ecosystem? 1mk

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c) Construct a pyramid of biomass (not to scale) from the food chain constructed in (a) above. 2mks

d i) What is the role of decomposers in any ecosystem? 2mks

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ii) Briefly explain why decomposers are not included in food chains and food webs. 1mk

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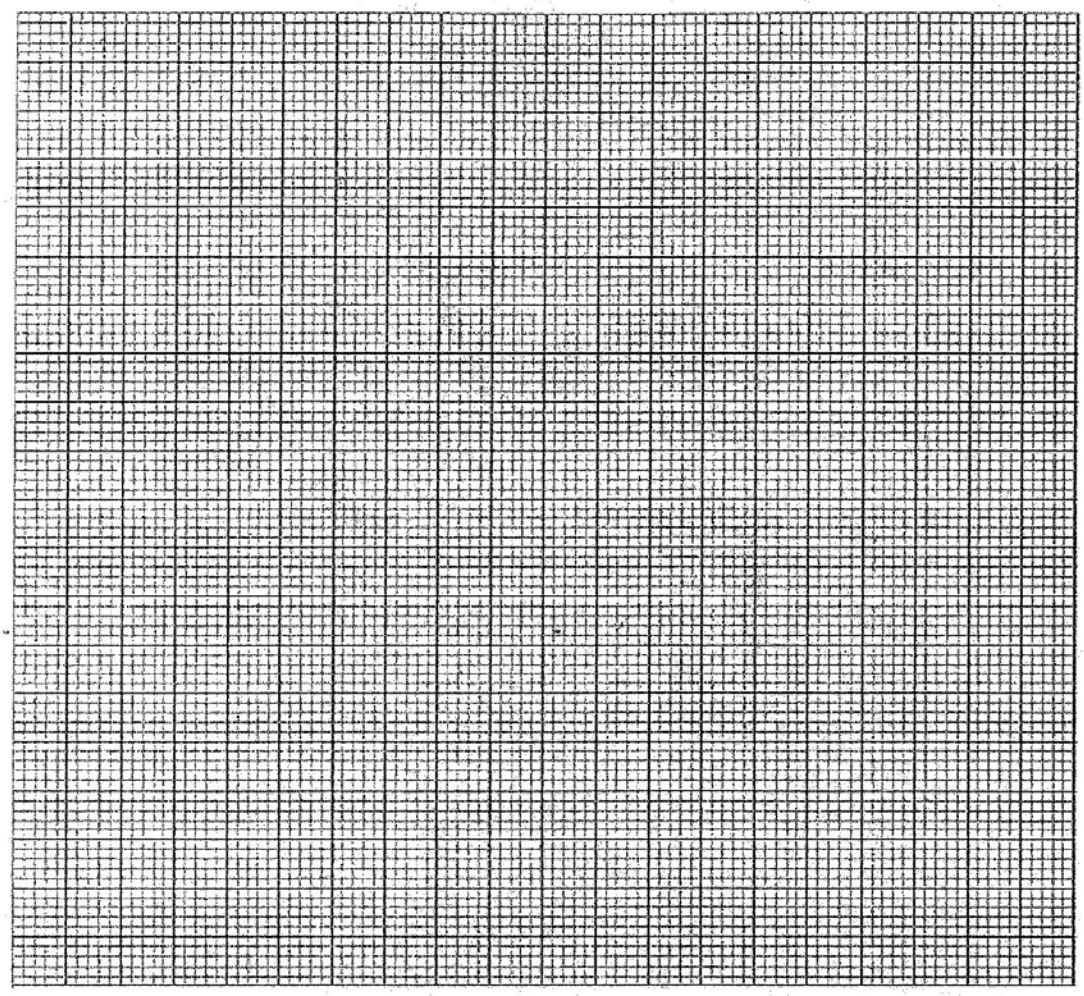
6. The following data shows percentage changes in dry mass of batches of seeds which were

germinated in the light.

Day	& Change in dry mass
0	0
5	-5
10	-11
15	-16.5
20	-12
25	+1
30	+18

a) Plot a line graph of percentage change in dry mass against time. 6mks.



b (i) According to your graph, on which day does the process of photosynthesis first cause an overall gain in dry mass? ---------- 1mk

ii) Explain how the process of photosynthesis causes the seedling to gain mass. 4mks

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c) Which organs on the plant shoot will have developed to enable the seedling to photosynthesize?

---------- 1mk

d) Explain why there is loss of mass during the first fifteen days of the experiment. 3mks

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e) Growth substances and enzymes are important in germination.

i) Name one growth substance and state its role in germination. 2mks

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ii) With an example, explain the role of enzymes in germination. 3mks

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7 a) Explain the causes of soil pollution. 14mks

b) Describe how soil pollution can be minimized 6mks

8. Describe how carbon (iv) oxide produced by respiratory liver cells reaches the alveoli cavities in the human lungs. 20mks

END