

Name.....

Index No...../.....

School.....

Candidate's Signature.....

Date

231/2

BIOLOGY

THEORY

Paper 2

July/August 2010

2 Hours

BUNGOMA JOINT EVALUATION TEST - 2010
Kenya Certificate of Secondary Education (K.C.S.E)

231/2
BIOLOGY

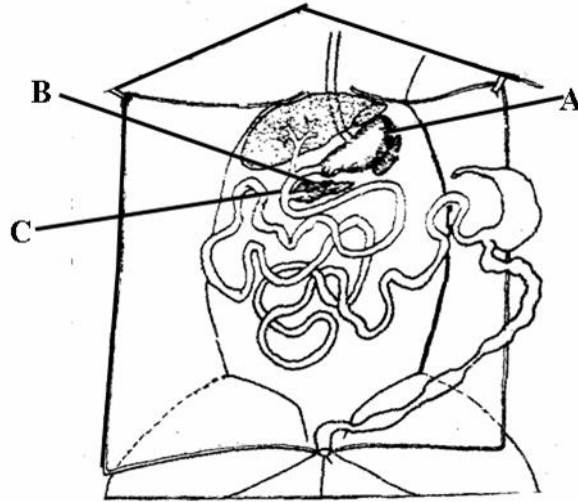
- Write your name and Index Number in the spaces provided above.
- This paper consists of **two** sections. Section **A** and Section **B**.
- Answer **ALL** questions in section **A** in the spaces provided. In section **B** answer question **6** (compulsory) and either question **7** or **8** in the spaces provided after question 6

For Examiner's use only.

Section	Question	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 Papers are printed as indicated and no questions are missing

1. The diagram below shows the mammalian digestive system. Study it carefully and answer the questions that follow.



- a) i) Name the parts labeled A and B. (2mks)
- A.....
- B.....
- ii) How is the structure labeled A in the diagram adapted to carry out its function? (2mks)

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- b) i) Name the hormone secreted by the walls of part labeled C (1mk)
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- ii) Explain the role of the hormone in b (i) above in digestion. (3mks)

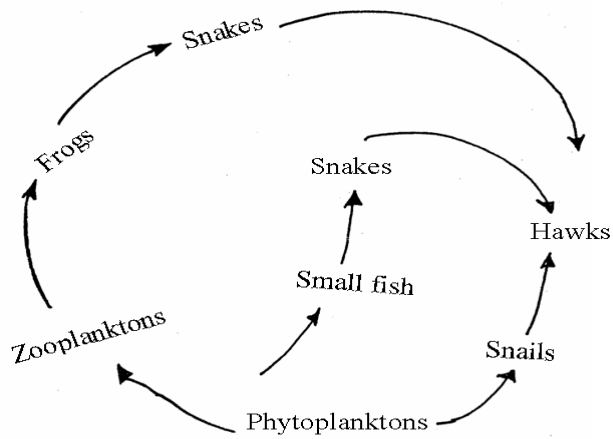
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2. The diagram below represents a feeding relationship in an ecosystem.



a) Name the type of ecosystem represented by the above food web. (1mk)

b) Name the organisms in the food web that

i) Are producers (1mk)

ii) Occupies the highest trophic level (1mk)

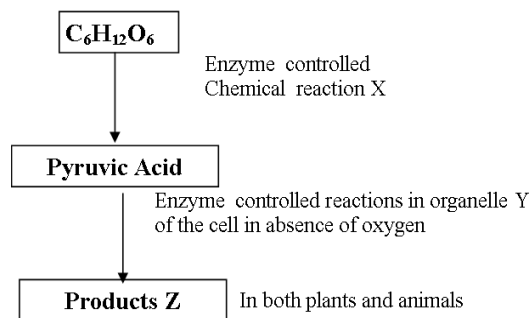
c) i) Write a food chain that ends with the hawk as quaternary consumer. (1mk)

ii) State **two** short term effects on the above ecosystem if all the small fish were killed. (2mks)

d) How does oil spills lead to death of fish. (1mk)

e) Name **one** other cause of water pollution apart from oil spills. (1mk)

3. Study the flow chart below of a process that takes place in both plants and animals.



a) Name the above process. (1mk)

b) i) In the above process name the chemical reaction represented by X. (1mk)

ii) Name the part of the cell where the enzyme controlled reactions in b(i) above takes place. (1mk)

c) Name the products Z in

i) Plants (1mk)

ii) Animals (1mk)

d) What would be the fate of pyruvic acid if oxygen supply is availed in the mitochondria of an animal cell (2mks)

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e) What is meant by the term oxygen debt? (1mk)

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4. a) Define multiple allelism and give an example. (2mks)

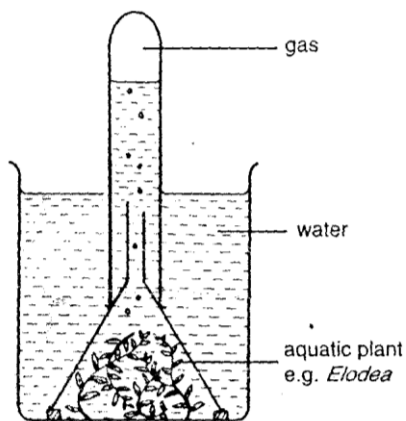
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b) In Drosophila melanogaster the gene for eye colour is sex linked. The gene for red eye is dominant. A cross was made between a homozygous red eye female and a white eyed male. Workout the phenotypic ration of the F1 generation. (Use R to represent the gene for red eyes.) (4mks)

c) Suggest two reasons to explain why Drosophila melanogaster is the most preferred organisms for studies in modern genetics. (2mks)

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5. An experimental set-up below was placed in the sun for some days. The rate of bubbles given off per unit time, from the cut end of the water plant (Elodea) was measured. The results obtained are shown in the table below.



Results

Day	Daylight condition	Average number of bubbles per minute
1	very cloudy and dull	3
2	less cloudy	8
3	quite sunny	15
4	very bright sunshine	25
5	cloudy and dull	4

a) i) Name the gas that was given off by the plant. (1mk)

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ii) Name the biological process that the gas in a(i) produces. (1mk)

b) What conclusion is drawn from the results obtained in this experiment? (1mk)

c) You are provided with an electric bulb, a metre rule and a light meter. Briefly describe how you would use this experimental set-up in the laboratory to demonstrate the effect of light intensity on the rate photosynthesis. (4mks)

d) Suggest one possible experimental error that may occur in this experiment. (1mk)

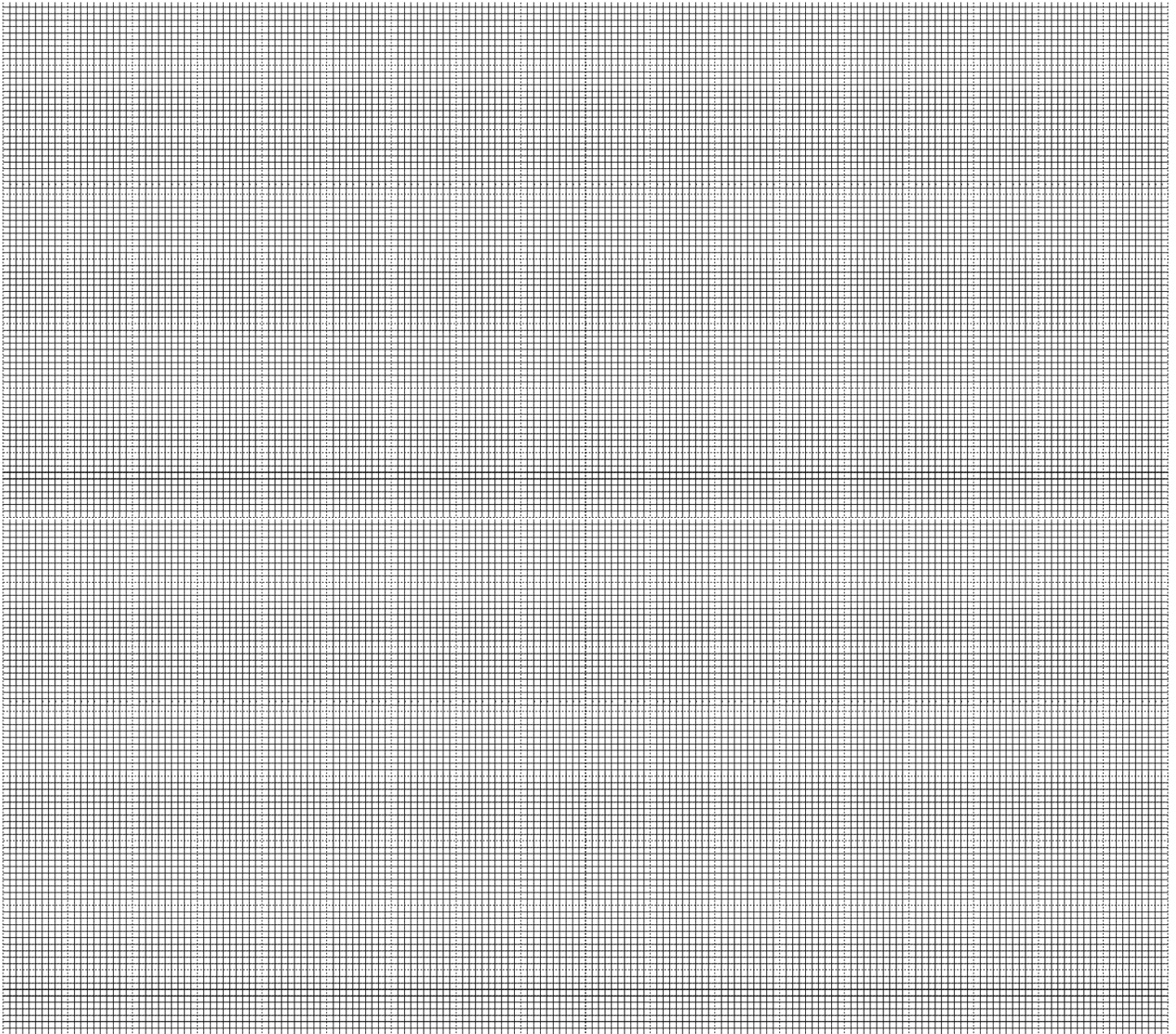
SECTION B: (40 MARKS)

Answer question 6 Compulsory and either question 7 and 8 in the spaces provided after question 8.

6. An experiment was carried out to investigate the effect of heat on germination of seeds. Ten bags each containing 60 pea seeds were placed in water-bath maintained at 85°C. After an interval of two minutes a bag was removed and seeds planted. The number that germinated was recorded. The procedure used for pea seeds was repeated for wattle seeds. The results were tabulated as in the table below.

Time (Minutes)	Number of seeds that germinated	
	Garden pea seeds	Wattle seeds
0 – 2	60	0
2 – 4	60	0
4 – 6	44	1
6 – 8	40	2
8 – 10	36	28
10 – 12	11	36
12 – 14	2	41
14 – 16	1	44
16 – 18	1	47
18 – 20	0	49
20 – 22	0	49

- a) Using a suitable scale and on the same axes, draw graphs of time in hot water against number of seeds that germinated for each plant. (7mks)



- b) i) After how many minutes would you expect 50% of wattle seeds exposed in hot water to germinate. (1mk)

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- ii) What was the minimum number of minutes after exposure of garden pea seeds to hot water was there no germination. (1mk)

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- c) From the graph, which of the **two** types of seeds was more sensitive to heat influence on germination. Why? (1mk)

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d) Explain why the ability for the:

i) Garden pea seeds to germinate declined with the time of exposure to heat. (3mks)

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ii) Wattle seeds to germinate increased with time of exposure to heat. (2mks)

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e) What results would be expected if the temperature of water was maintained at temperatures.

i) Above 85°C (1mk)

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ii) At 5°C (1mk)

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f) Apart from temperature state three internal factors necessary for seed germination.(3mks)

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7. a) Briefly describe the circulation of blood in a mammalian heart. (6mks)

b) Discuss the pumping mechanism of the heart. (14mks)

8. Describe the role played by growth hormones in growth and development in plants. (20mks)

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