NAME:…………………………………………..………INDEX ………………..…..DATE……..…

SCHOOL:……………………………………..……SIGNATURE……………………………

231/2
BIOLOGY
PAPER 2
JULY / AUGUST, 2010
2 HOURS

KISUMU NORTH AND EAST DISTRICTS JOINT TEST
Kenya Certificate of Secondary Education 2010

231/2
BIOLOGY
PAPER 2
JULY / AUGUST 2010

INSTRUCTIONS TO CANDIDATES:

- *Write your name, index numbers and the name of your school in the spaces provided above.*
- *This paper consists of two parts A and B.*
- *Answer all the questions in section A in the spaces provided.*
- *In section B, answer 6 (compulsory) and either question 7 or 8 in the spaces provided after question 8.*

For Examiner's Use Only.

Section	Question	Maximum score	Candidate score
A	1	8	
	2	8	
	3	8	
	4	8	
	5	8	
B	6	20	
	7	20	
	8	20	
TOTAL SCORE		**80**	

SECTION A (40marks)

Answer all the question in this section in the spaces provided.

1. a) Define the term cell physiology. (1mark)

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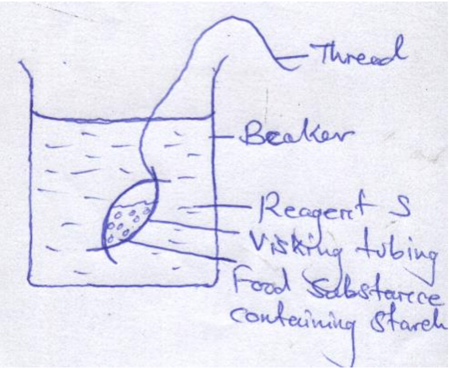
b) A group of students carried out an experiment to investigate a certain physiological process as shown in the diagram below.



After leaving the set up for 20 minutes, they observed that the food substance had changed to blue-black colour.

(i) Identify the reagent

S……………………………………………………………………… (1mark)

(ii) Which physiological process was being investigated? (1mark)

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c) Account for the observation made after 20 minutes. (3marks)

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d) State the parts in the human alimentary canal where starch is digested.

(2marks)

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2. Haemophilia is a sex linked disorder caused by a recessive gene. A man who is haemophilic marries a woman who is heterozygous for the disorder. Using letter H to represent the dominant gene.

   a) Work out the genotypes of the children from the above marriage. (4marks)

   b) What is the probability that a baby boy born to the family is haemophilic? (1mark)

   c) (i) What is meant by the term sex-linked genes. (2marks)

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   (ii) Name two other sex-linked disorders a part from haemophilia. (2marks)

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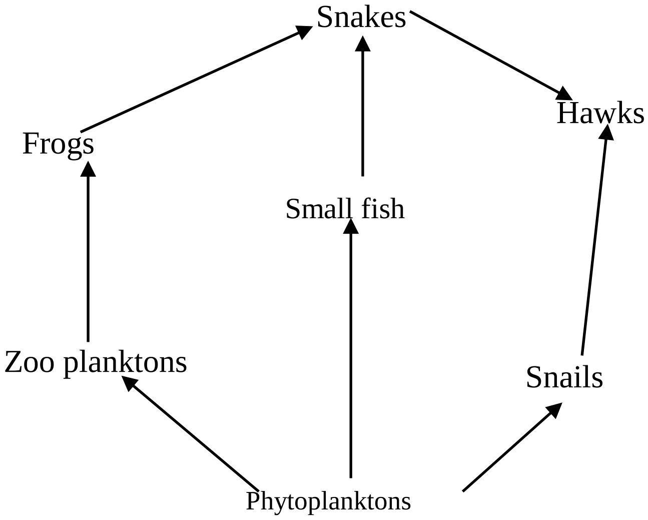
3. The diagram below represents a feeding relationship in an ecosystem.



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

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b) Name the organisms in the food web that:

(i)Are producers. ……………………………………………………………(1mark)

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(ii) Occupies the highest trophic level ……………………………… (1mark)

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

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

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

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

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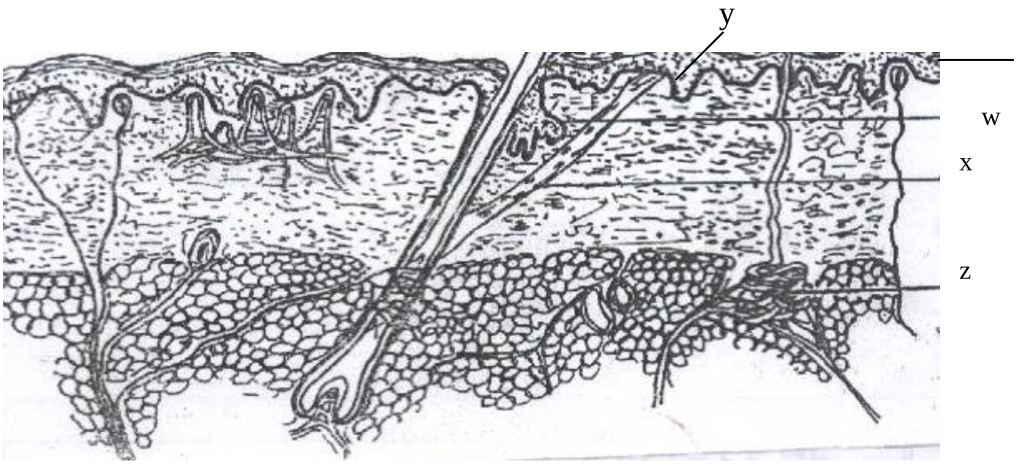
4. The diagram below shows a section through the mammalian skin.



a) Name the parts labeled W and X. (2mrks)

W…………………………………………………

X…………………………………………………

b) State the function of the parts labeled Y and Z. (2mrks)

Y…………………………………………………………………………………

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Z…………………………………………………………………………………

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c) Explain the changes that occur in the skin when it is cold. (4mrks)

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The results in the table below shows the effects of some conditions necessary for seed germination. In each experiment, all other environmental conditions were kept constant, except for the one being investigated.

Experiment	Treatment	% of germination
A	Seeds placed in a tightly closed container with pyrogallic acid.	0
B	(i) Seeds kept in light (ii) seeds kept in a dark cupboard	96 97
C	(i) Seeds kept in a refrigerator at 4^{0}C (ii) Seeds kept in an oven at 60^{0}C (iii) Seeds kept at 33^{0}C	0.5 0 92
D	(i) Dry seeds in closed containers. (ii) Moist seeds in closed container.	0 87

a) (i) What was the purpose of pyrogallic acid in experiment A? (1mark)

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(ii) State the aim of experiment. B (1mark)

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b) (i) Account for the results obtained in experiment set up C (3mrks).

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(ii) State why 100% germination was not achieved in experiment D (ii)(1mark)

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c) Of what biological significance is the condition necessary for germination been investigated by experiment A/D?

(2marks).

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SECTION B (40marks)

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

5. In an experiment to investigate certain processes in a given plant species, the rates of Carbon (iv) oxide released and intake were measured over a long period of time. The results of the investigation were as shown below.

Time of the day (hours)	6	8	10	12	14	16	18	20	22	24
Volume of Carbon (iv) oxide consumed (mm^3/ min	10	43	69	91	91	50	18	0	0	0
Volume of Carbon (iv) oxide released (mm^3/ min	38	22	10	3	3	6	31	48	48	48

a) On the same axes draw graphs of volume of Carbon (iv) oxide consumed and released against time. (7marks)

b) Name the chemical process changes represented by:

(i) Carbon (iv) oxide consumed. (1mark)

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(ii) Carbon (iv) oxide released. (1mark)

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c) Account for the shape of the curve for:

(i) Carbon (iv) oxide consumed. (3marks)

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(ii)Carbon (iv) oxide released. (3marks)

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d) (i) What is meant by compensation point. (1mark)

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(ii) From the graph, find the time of day when the plants attained compensation point. (2marks)

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e) Explain how temperature affects the rate of carbon (iv) oxide consumption in the plant. (2marks)

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6. Discuss the various evidences which show that evolution has taken place.(20mrks)
7. Describe how seeds and fruits are suited to their modes of dispersal. (20marks)

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