Name: …… **Index no ……..….....**

School: ……...…. **Candidate's sign ……....**

Date: ……

231/2
BIOLOGY
THEORY
PAPER 2
JULY /AUGUST 2011
TIME: 2 HOURS

BUSIA DISTRICT JOINT EVALUATION TEST

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

Biology
Paper 2

INSTRUCTIONS TO CANDIDATES:

- *Write **your name** and **index number** in the spaces provided.*
- *Answer **all** the questions in Section **A** in the spaces provided.*
- *In section **B** answer questions **6** (**compulsory**) and either question **7** or **8** in the spaces provided*

For Examiner's Use Only:

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

This paper consists of 8 printed pages. Candidates should check to ascertain that all papers are printed as indicated and that no questions are missing

SECTION A (40MARKS)

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

1. In human beigns the phenotypes and genotypes with respect to the condition of sickle anaemia are as follows

Phenotype	Genotype
Unaffected	SS
Sickle cell trait	Ss
Sickle cell anaemia	ss

a) Carry out a genetic cross to predict the outcome of a man and a woman with the sickle cell trait. (4mks)

b) What are the phenotypic and genotypic ratios. (2mks)

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c) Name the **two** possible sets of chromosomes that can be found in a normal cell. (2mks)

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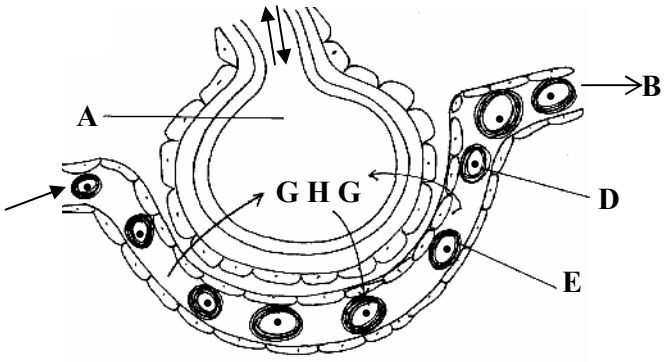
2. The diagram below represents a unit of gaseous exchange in man. Study it carefully and answer the questions that follow.



a) Name the blood vessel that brings blood to the lungs and the vessel which takes blood away from the lungs. (2mks)

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b) Name the structure above. (1mk)

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c) Label **A** and **E.** (2mks)

A……

E……

d) In what form is carbon (IV) oxide transported in structure labeled **E**. (1mk)

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e) Name the gas **G**. (1mk)

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3. Gastrin is a hormone produced by mammals.

(a) (i) Where is the hormone produced? (1mk)

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(ii) What is the function of gastrin? (1mk)

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(b) What stimulateds the production of gastrin. (1mk)

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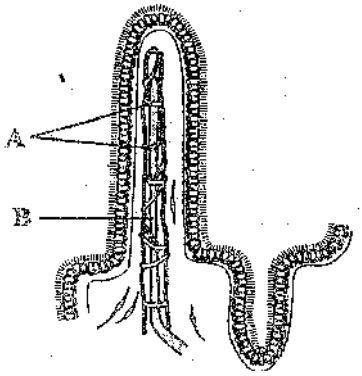
(c) The diagram below shows part of the human intestine.



(i) Identify the parts labeled **A** and **B** (1mk)

A……

B…… (1mk)

(ii) To which circulatory system does the part labeled **B** belong. (1mk)

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d) State any **two** adaptations of the human large intestine to its function. (2mks)

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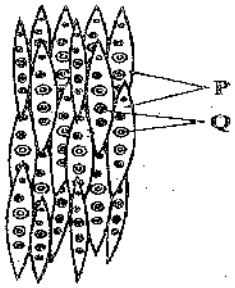
4 The diagram below represents part of a xylem tissue.



a) (i) Name the parts labeled **P** and **Q** (2mks)

P ……

Q ……

(ii) Give the function of the part labeled **P**. (1mks)

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b) State the function of the phloem tissue. (1mk)

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c) (i) State how the functioning of the phloem tissue is affected if the companion cell is destroyed. (1mk)

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(ii) Give a reason for your answer. (1mk)

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d) State any **two** structural differences between phloem and xylem tissues. (2mks)

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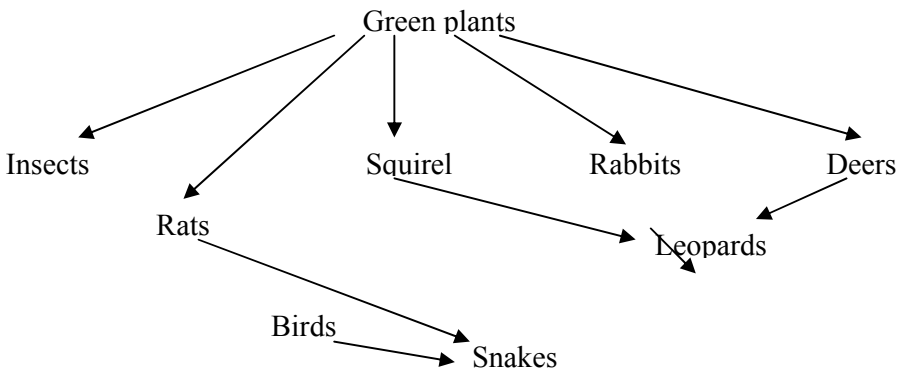
5 The diagram below represents a food web from Lake Nakuru national park.



a) With a reason, identify the organism with the largest biomass. (2mks)

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b) From the food web isolate a food chain ending with snakes as tertiary consumer. (1mk)

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c) (i) Name any **two** organisms not shown in the food web but would be present in the ecosystem. (1mk)

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(ii) What is the role of the organisms stated in (i) above in the ecosystem. (2mks)

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d) From the food web, snakes and leopards feed on rabbits. What name is given to this kind of competition. (1mk)

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e) Name an organisms that may be both secondary and tertiary consumer. (1mk)

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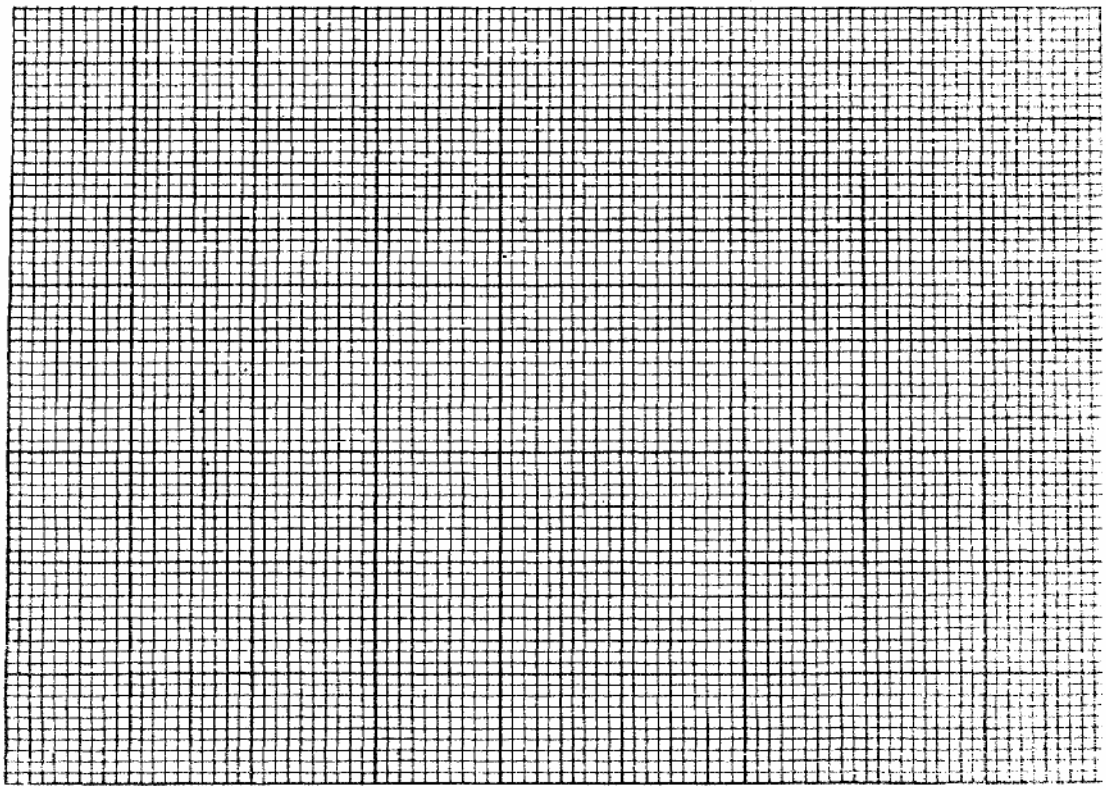
SECTION B (40MARKS)

Answer questions 6(compulsory) and either questions 7 or 8

6. In an experiment to determine the effect of exercise on the concentration of lactic acid in blood, the following data was obtained. Study the data and use it to answer the questions that follow.
The lactic acid concentration was measured before, during and after the exercise.

Time minutes	**0**	**10**	**20**	**25**	**30**	**40**	**50**	**60**	**70**	**80**	**90**	**100**
Lactic acid conc. (arbituary units)	**0.5**	**0.5**	**5**	**13**	**12**	**8**	**6**	**4**	**3**	**2**	**1**	**0.9**

a) Using a suitable scale, plot a graph of the concentration of lactic acid against time. (6mks)



b) From the graph you have drawn determine

(i) The period of exercise . Explain. (2mks)

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(ii) The time when oxygen debt occurred Explain. (2mks)

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(iii) The duration it took to pay back the oxygen debt.Explain (2msk)

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c) On the same set of axes plot a hypothetical curve for oxygen intake during the experiment period of 90 minutes. (2mks)

d) Why does lactic acid level usually continue to rise in the blood after exercise ceases. (2mks)

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e) Suggest the **two** importance of anaerobic respiration to animals. (2mks)

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d) What is oxygen debt? (2mks)

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7. What is the role of the liver in the maintance of a constant level of materials in the body. (20mks)

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8 (a) What is organic evolution? (2mks)

(b) Distinguish between homologous and analogous structure. (2mks)

(c) How does natural selection bring about adaptation of species to its environment. (16mks)