NAME ..... INDEX NUMBER .....

SIGNATURE .....

DATE .....

231/2
BIOLOGY
PAPER 2
TIME: 2 HRS
JULY/AUGUST 2016

WESTLANDS SUB-COUNTY JOINT EXAMINATION

KENYA CERTIFICATE OF SECONDARY EDUCATION (K.C.S.E)

BIOLOGY
Paper 2
(Theory)
July/Augst 2016
Time: 2 hours

INSTRUCTIONS TO CANDIDATES

a) Write your name and index number in the spaces provided above.

b) Sign and write the date of the examinations in the spaces provided above.

c) There are 10 printed pages. Ensure all pages are printed.

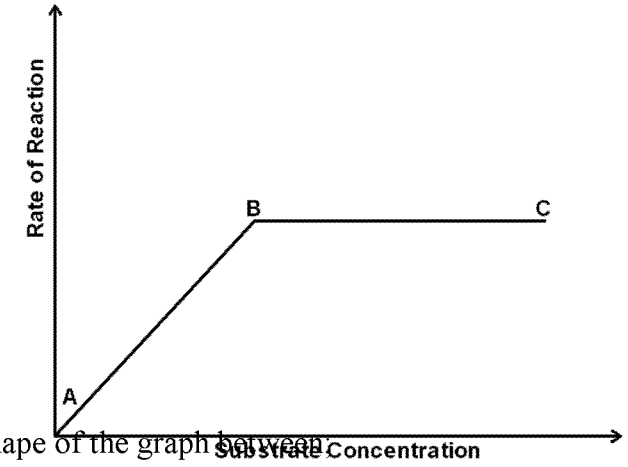
d) Answer all questions in section A in the spaces provided and question 6 (**Compulsory**) ,in section B and either question 7 or 8 in the spaces provided after question 8.

FOR EXAMINER'S USE ONLY

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

SECTION A (40 MARKS)
Answer ALL questions in the spaces provided.

1. The graph shows the effect of substrate concentrate on the rate of enzyme reaction.



a) Account for the shape of the graph between;

i) A and B (3 marks)

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ii) B and C (2 marks)

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b) How can the rate of reaction be increased after point B? (1 mark)

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c) State two properties of enzyme that make them be said to be efficient. (2 marks)

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2. a) State the causative agents of the following diseases;

i) Amoebic dysentery (1 mark)

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ii) Typhoid (1 mark)

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b) Name the cells in the human body that are infected by plasmodium. (1 mark)

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c) State three adaptations of Ascaris lumbricoides to its parasitic life. (3 marks)

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d) State two control measures for cholera. (2 marks)

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3. a) Define sex-linkage. (2 marks)

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b) Name two traits in humans that are linked to Y chromosome. (2 marks)

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c) In a family, a man who is haemophiliac has two sons. One of the sons is haemophiliac while the other son is normal. What is the probability of one of his daughter being haemophiliac? (Use punnet square to show your working) (4 marks)

4. a) Define the following terms.
i) Comparative anatomy (1 mark)

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ii) Vestigial structures (1 mark)

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iii) Adaptive radiation (2 marks)

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b) Explain; Charles Darwin's idea of "survival of the fittest". (2 marks)

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c) Lamarck's idea of "use and disuse". (2 marks)

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5. a) What is endocrine gland? (1 mark)

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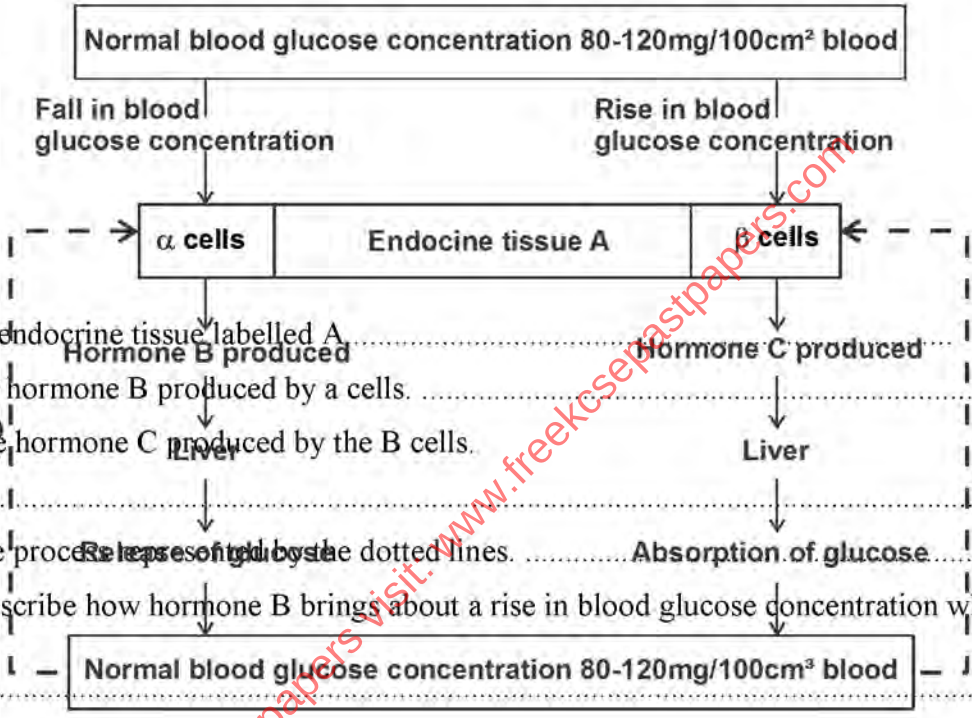
b) Study the flow diagram showing the role of the pancreas in controlling blood glucose concentration;



i) Name the endocrine tissue labelled A. ..... (1 mark)

ii) Name the hormone B produced by a cells. ..... (1 mark)

iii) Name the hormone C produced by the B cells. ..... (1 mark)

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iv) Name the process represented by the dotted lines. ..... (1 mark)

c) Briefly describe how hormone B brings about a rise in blood glucose concentration when it reaches the liner. (3 marks)

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SECTION B (40 MARKS)
Answer question 6 (compulsory) and either 7 or 8.

In an experiment to determine the effect of ringing on the concentration of sugar in the phloem. A ring of bark from the stem of a tree was cut and removed. The amount of sugar in grammes per 16cm^3 piece of bark above the ring was measured over a 24hr period. Sugar was measured over a 24hr period. Sugar was also measured in the back of a similar stem of the same species which was not ringed. The results are shown in the table below.

a) Using the same axis, plot graphs of the amount of sugar against time for both stems. (6 marks)

Time of the day	Amount of sugar in grammes per 1cm^3 piece of bark	
	Normal stem	Ringed stem
6.45am	0.78	0.78
9.45am	0.80	0.91
12.45pm	1.81	1.01
3.45pm	1.80	1.04
6.45pm	1.77	1.10
9.45pm	0.73	0.95
12.45am	0.65	0.88

b) At what time was the amount of sugar highest in the;

i) Ringed stem (1 mark)

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ii) Normal stem (1 mark)

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c) How much sugar would be in the ringed stem if it was measured at 3:45am (1 mark)

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d) Give a reason why there was sugar in the stem of both trees at 6:45am (2 marks)

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e) Account for the shape of the graph for the tree with the ringed stem between;

i) 6:45 and 3;45pm (3 marks)

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ii) 3:45pm and 12:45am (2 marks)

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f) Name the structures in the phloem that are involved in the translocations of sugars. (2 marks)

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g) Name two elements required for the formation of chlorophyll in plants. (2 marks)

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7. **a)** Define the following biological terms :
i) Excretion (1 mark)
ii) Secretion (1 mark)

b) Explain how mammalian skin is adapted to perform the following functions :
i) Thermoregulation (10 marks)
ii) Protection (8 marks)

8. **a)** Explain why water, oxygen, optimum temperature and enzymes are necessary during germination of seed in plants. (10 marks)

b) Explain the role of the following plant hormones in growth and development.
i) Gibberellins (5 marks)
ii) Cytokinin (5 marks)

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