Name ..... **Index Number** ..... / .....

Candidate's Signature ..... **Date** .....

231/2
BIOLOGY
PAPER 2 (THEORY)
JULY/ AUGUST 2013
TIME: 2HOURS

KIKUYU DISTRICT INTERSCHOOLS EVALUATION

KENYA CERTIFICATE OF SECONDARY EDUCATION

231/2
BIOLOGY
PAPER 2 (THEORY)
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Instructions to candidates

1. This paper consist of two Sections; A and B
2. Answer all the questions in Section A in spaces provided.
3. In Section B answer question 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's Score
A	1	08	
	2	08	
	3	08	
	4	08	
	5	08	
B	6	20	
	7	20	
	8	20	
	TOTAL	80	

SECTION A (40 Marks)

Attempt all questions.

1. The diagram below shows the skull of an animal. Study it and answer the questions that follow.

a) Label A and B. (2 marks)

A ....

B: .....

b) Which are the adaptations shown above, concerning the animal's mode of feeding? (2 marks)

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c) Name **two** enzymes that are produced in precursor form in human digestive system. (2 marks)

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d) State the importance of enzyme above being produced in presursor form. (2 marks)

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2. A cross was made between two pure breeding varieties of plants.

One with red flowers and the other with white flowers.

The F1 generation had all plants with pink flowers.

When the F1 were selfed the F2 products were as follows:-

Red - 401

Pink - 819

White - 408

Using R for red color and W for white color.

a) Work out the F2 generation. (4 marks)

b) Calculate the phenotypic ratio of F2 generation. (2 marks)

c) Which type of dominance is exemplifie in the cross above? (1 mark)

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d) Give an example of a sex-linked characteristics transmitted on X-chromosome. (1 mark)

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3. a) One of the characteristics of a good respiratory surfaces is that it must be moist. Why is this so? (1 mark)

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b) Other than being moist, list other **two** characteristics of a respiratory surface. (2 marks)

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c) (i) Name the part of the brain in a man that controls breathing. (1 mark)

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(ii) Explain how the part named in (i) above controls breathing in a man. (4 marks)

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4. a) (i) Distinguish between primary and secondary growth. (2 marks)

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(ii) What are meristems. (1 mark)

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b) Give the location and function of the following meristematic tissue. (5 marks)

(i) Apical meristem

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(ii) Intercalary meristem

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(iii) Lateral meristem

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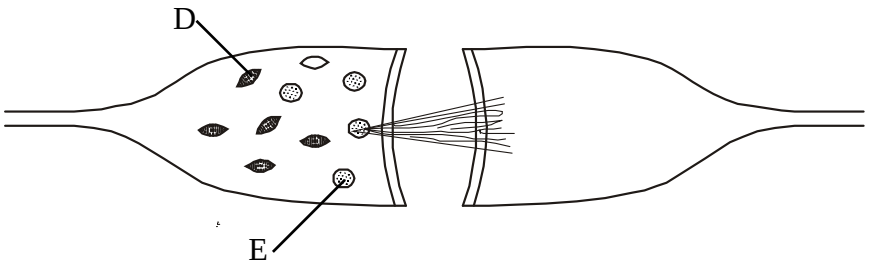
5. The diagram below shows a synapse.



a) Indicate the direction of the impulse on the diagram. (1 mark)

b) Label D and E (2 marks)

D

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E

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c) Compare a simple reflex action with a conditioned reflex action. (3 marks)

Simple reflex action	Conditioned reflex action

d) State the functions of hormones in animals. (2 marks)

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SECTION B (40 Marks)

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

6. An experiment was carried out to investigate heat production in j/r and heat loss in j/hr in a man at different environmental temperature (^{0}c). Heat production and heat loss were determined as air temperature changed. The results were shown in the table below.

Air temperature in ^{0}c	1 - 5	6 - 10	11 - 15	16 - 20	21 - 25	26 - 30	31 - 35	36 - 40
Heat produced (J/hr)	1420	1080	800	600	480	380	320	280
Heat lost (J/hr)	0	0	80	140	200	280	400	560

a) Using the same axes, draw graphs of heat production and heat lost in j/hr against air temperature in ^{0}c. (7 marks)

b) At what air temperature does the body lose as much heat as it produces? (1 mark)

c) (i) Explain the relationship between heat loss and heat production at 40^{0}c (3 marks)

(ii) Explain why readings for this experiment were not taken for air temperatures above 40^{0}c (12 marks)

d) (i) Explain how sweating helps the body to lose excess heat. (2 marks)

(ii) State **three** ways in which mammals are adapted to live in regions below sub-zero^{0}c temperatures. (3 marks)

e) Explain the role of hypothalamus in temperature regulation. (2 marks)

7. a) Describe the systole and diastole of the mammalian heart. (13 marks)

b) Describe the mechanism of blood clotting. (7 marks)

8. a) Describe the location and appearance of chromosomes during mitosis. (13 marks)

b) State the roles of the following hormones in human female.

(i) Follicle stimulating hormone. (2 marks)

(ii) Luteinizing hormone. (3 marks)

(iii) Oxytocin (2 marks)