NAME:..... INDEX NO:.....

SCHOOL:..... CANDIDATE'S SIGN:.....

DATE:.....

231/2
BIOLOGY
PAPER 2
(THEORY)
JULY/AUGUST - 2014

TIME: 2 HOURS

MERU COUNTY JOINT EVALUATION EXAM - 2014

Kenya Certificate of Secondary Examination K.C.S.E

231/2
BIOLOGY
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(THEORY)
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INSTRUCTIONS TO CANDIDATES

a) This paper consists of two sections A and B.
b) Answer all the questions in sections A in the spaces provided.
c) In section B answer question 6 (compulsory) and other 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	
		20	
TOTAL SCORE		**80**	

This paper consists of 12 printed pages.
Candidates must check to ascertain that all pages are printed as indicated and that no question(s) is/are missing.

SECTION A (40 MARKS)

1. In a marriage between Jackline and Joseph who were normal parents, they got a son Peter. As Peter grew up, the parents noticed that he always picked up a red Jacket when going to School yet the School required a green Jacket. The parents tried to explain to Peter but he could not understand the mistake.

(a) Identify the genetic condition that Peter was suffering from. (1mk)

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(b) Using letter B for the normal condition,

(i) State the genotypes of the two parents

Jackline:.....

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Joseph:.....

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(ii) Determine the genotype of Peter. Show your working. (4mks)

(c) What is the probability that Peter's sister will be a carrier for the same genetic condition? (1mk)

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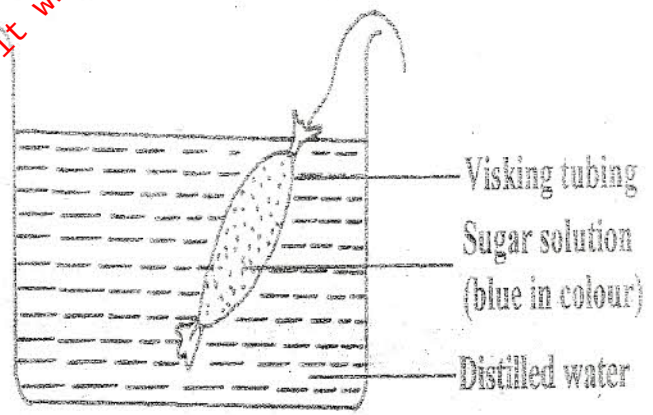
2. In an experiment, a visking tubing was filled with concentrated sugar solution containing methylene blue dye. Both ends were tied well to prevent leakage. It was then rinsed with distilled water and immersed in a beaker containing distilled water. The set up is shown below. After 6 hours, the water in the beaker turned blue, and the visking tubing was swollen with more solution.



(a) Name the process through which:

(i) Water in the beaker turned blue. (1mk)

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(ii) Visking tubing became swollen with solution. (1mk)

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(b) Explain why the visking tubing was swollen with solution at the end of the experiment. (3mks)

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(c) (i) What does the visking tubing represent in a living cell? (1mk)

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(ii) Name two factors that affect the functioning of the part labeled in c (i) above. (2mks)

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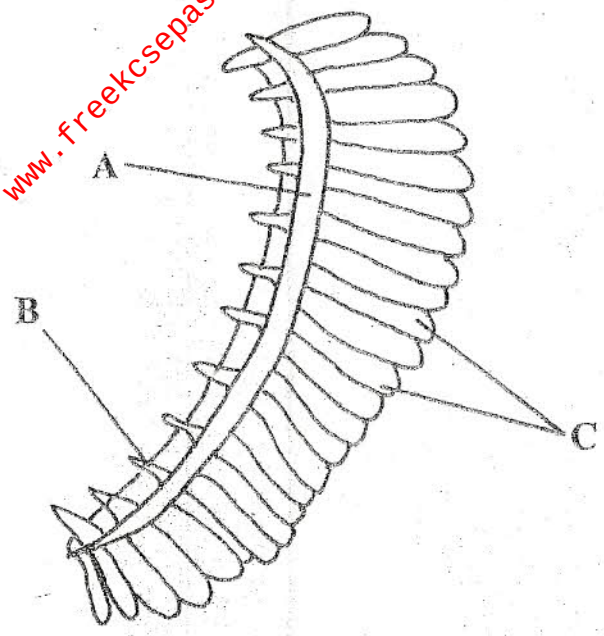
3. The diagram below illustrates the structure of a gill from bony fish.



(a) Name the structure labeled B. (1mk)

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(b) In what ways are the structures labeled C adapted for their function? (3mks)

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(c) (i) How do guard cells differ from other epidermal cells? (2mks)

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(ii) State two adaptations of lenticels to their functions. (2mks)

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4. (a) The number and distribution of stomata on three different leaves are shown in the table below.

Leaf	Number of stomata	
	Upper epidermis	Lower epidemis
W	400	0
X	160	210
Y	03	14

Suggest the possible habitat of the plants from which the leaves were obtained. (3mks)

W.....

X.....

Y.....

(b) State one modification found in the stomata of leaf C. (1mk)

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(c) Name the causative agents of the following diseases in humans. (2mks)

(i) Bilharzia

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(ii) Whooping cough

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(d) What is the disadvantage of using oil in aquatic habitats in control of Malaria? (2mks)

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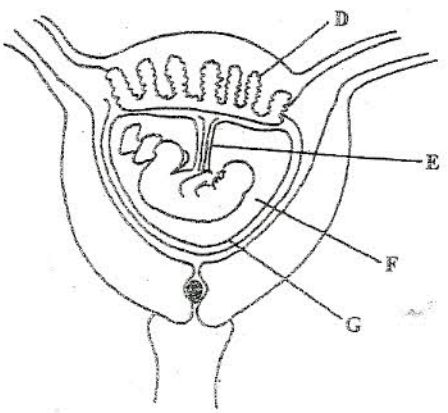
5. The diagram below represents human foetus in uterus.



(a) (i) Name the part labeled D. (1mk)

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(ii) Name two hormones produced by the structure named in a (i) above. (2mks)

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(b) State the differences in the composition of blood found in the vessels of the part labeled E. (2mks)

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(c) State two functions of the fluid labeled F. (2mks)

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(d) What term is given to the condition in which a blastocyst is implanted in the oviduct? (1mk)

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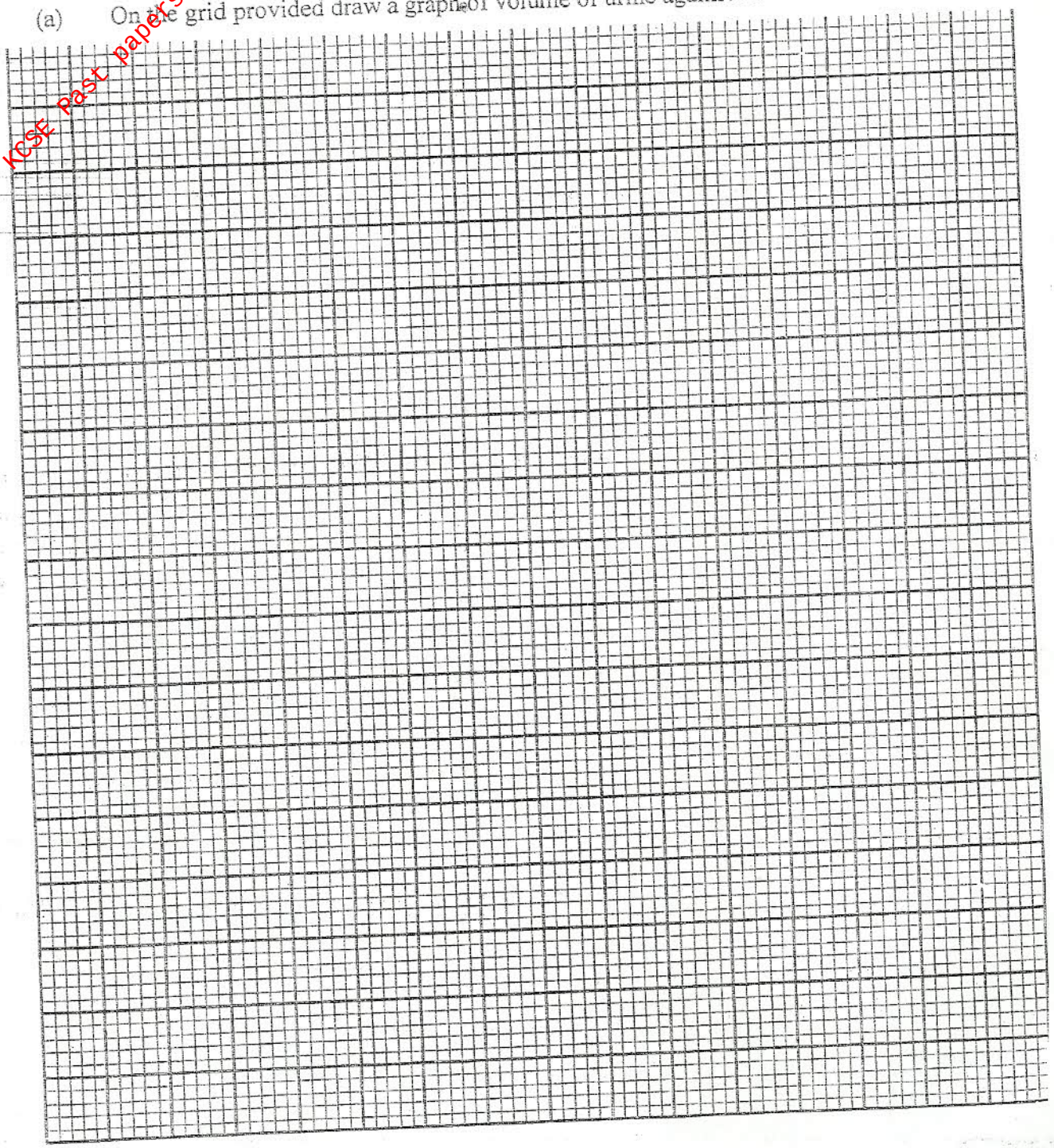
SECTION B (40 MARKS)

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

6. The table below shows the volume of urine collected from a subject before and after drinking 1,000cm^3 of distilled water. The subject's urine was collected immediately before the water was drunk and then at intervals of 30 minutes for several hours.

TIME (Minutes)	0	30	60	90	120	150	180	210	240
Volume of urine (cm^3)	100	175	325	200	150	100	75	100	90

(a) On the grid provided draw a graph of volume of urine against time. (6mks)



(b) Account for the change in volume of urine during the first hour. (4mks)

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(c) What was the volume of urine produced at the 80th Minute? (1mk)

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(d) At what time would 80cm^3 of urine be produced? (2mks)

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(e) If the subject was given 0.9% sodium chloride solution which is isotonic to blood plasma instead of 1000cm^3 of distilled water, state the difference in the volume of urine produced. (1mk)

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(f) State two structural modifications of nephrons found in desert mammals. (2mks)

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(g) A person's urine was found to contain glucose.

(i) Name the disease the person was likely to be suffering from. (1mks)

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(ii) Name the hormone that was deficient in the blood. (1mk)

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(iii) State two symptoms of the disease named in g (i) above. (2mks)

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7. (a) Explain the forces that are involved in movement of water and mineral salts in plants from the roots to the leaves. (12mks)

(b) How are fruits and seeds adapted for dispersal by animal? (8mks)

8. (a) Explain Darwins theory of mechanism of evolution. (10mks)

(b) Describe digestion of boiled lean meat from the mouth to the duodenum. (10mks)

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