Name: …… **Index no** ……..…..

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

Date: ……

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

KISUMU WEST 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:

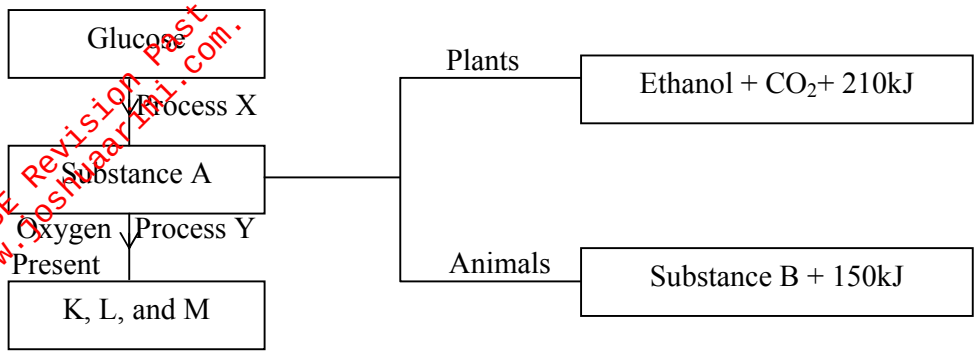
SECTION	QUESTIONS	MAXIMUM SCORE	CANDIDATES SCORE
A	1	8	
	2	8	
	3	8	
	4	8	
	5	8	
B	6	20	
	7	20	
	8	20	
	TOTAL	**80**	

This paper consists of 7 printed pages. Candidates should check to ascertain that all papers are printed as indicated and that no questions are missing

SECTION A (40 MARKS)

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

1.The diagram below represents a simple respiratory pathway in cells



a) Name the process marked **X** and **Y.** (2mks)

X……

Y ……

b) State **two** differences between process **X** and **Y.** (2mks)

……

……

c) State the name of substance B and condition under which it is formed. (2mks)

……

……

d) Explain how body size affects the rate of respiration in animals. (2mks)

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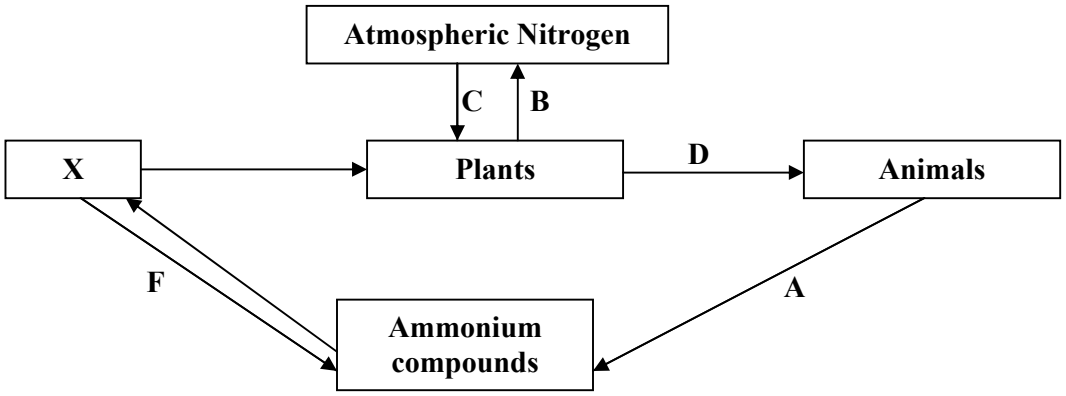
2. The flow chart below represents a part of the nitrogen cycle



a) Name the groups of organism responsible for processes **A** and **B.** (2mks)

A……

B……

b) Name the process **C** and **D.** (2mks)

C……

D……

c) Name the chemical compound **X.** (1mk)

……

d) Give the name of a symbolic micro-organism present in leguminous plants that carriers out process C (1mk)

……

e) Name the chemical compound synthesized by plants using nitrogen. (1mk)

……

f) State the effect of process **F.** (1mk)

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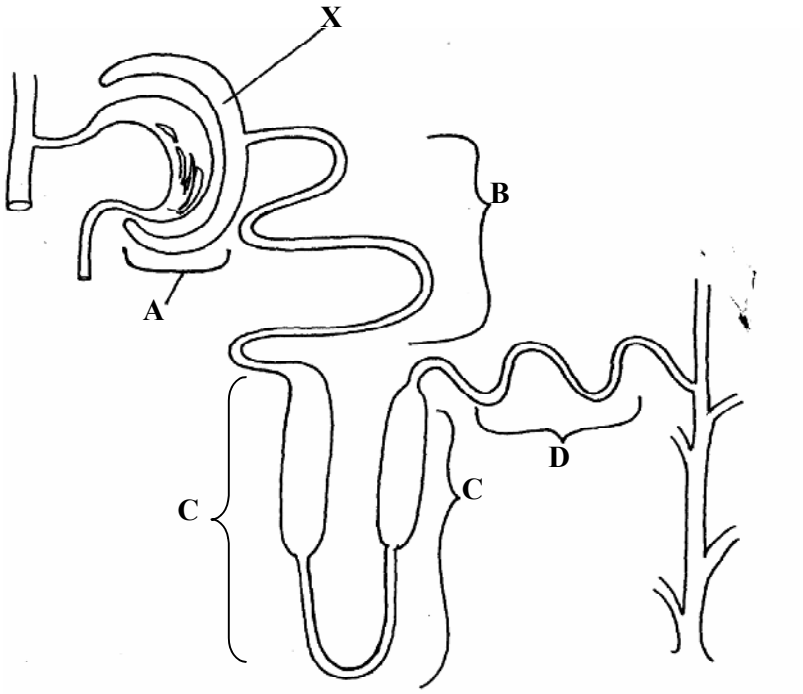
3. The diagram below represent the structure of a nephron. Study it and answer the questions that follow.



a) (i) State the physiological process by which solutes are selectively re-absorbed back into blood at the part labelled **B.** (1mk)

……

(ii) How is the part labeled B adapted to carry out the physiological process named in 3 **(a) (i)** above. (1mk)

……

b) In which part of the kidney is the part labelled **A** abundantly found. (1mk)

……

c) On the diagram above , indicate the direction of flow of blood using arrows at the part labelled **C.** (1mk)

……

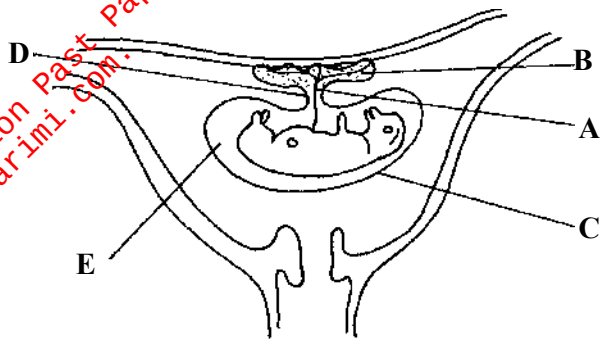
e) State the functions carried out by the following hormones in the functioning of the nephron.
(i)Aldosterone. (1mk)

……

(ii)Anti diuretic hormone. (1mk)

……

4. Study the diagram below and answer the questions which follow.



a) Name the parts labelled (3mks)

A……..

B……..

D……..

b) State the functions of part **B**. (3mks)

……

……

……

……

c) Removal of the ovaries after the 4th month of pregnancy does not terminate pregnancy. Explain (2mks)

……

……

5(a) A man marries a woman with blood group B and the couple has three children. The man disputes parentage of the second born child, who is blood group O. His dispute is incorrect given that he belongs to blood group A. Explain without using neither a genetic cross nor a punnet square. (2mks)

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b) Haemophilia is a sex linked trait in humans caused by a recessive gene located in the X chromosome. A man with normal blood cloting marries a woman who also has normal blood clotting in the event of a cut. On getting offsprings, one of their sons turned out to be a haemophiliac. By the use of letter H for normal blood clotting, illustrate the outcome of the haemophiliac son using a genetic cross. (4mks)

c) Other than haemophilia state **two** sex linked traits in human. (2mks)

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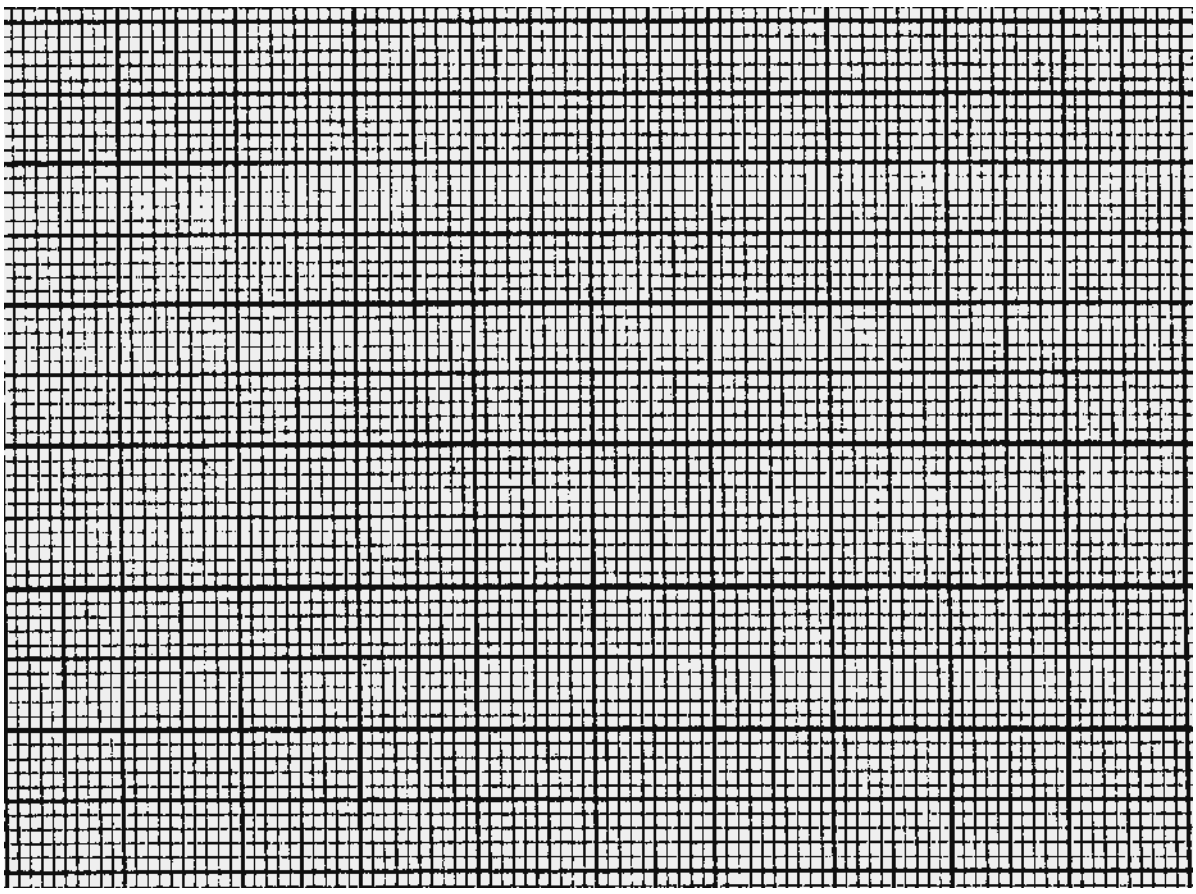
SECTION B (40MARKS)

Answer questions 6(compulsory) and either questions 7 or 8 in the spaces provided

6. The data below shows the rate of photosynthesis at different temperature in attached leaves of three East African plants, (Crotolaria, Gynandropsis and Amaranthus species) respectively which were grown outside with the same illustration while water and carbon (IV) oxide are not limiting factors in this experiment.
Rate of photosynthesis was expressed interms of carbon (IV) oxide uptake in $mg/mm^2/hr$ at various temperatures as tabulated below.

Temperature ^oC	**Rate of photosynthesis ($mg/mm^2/hr$)**		
	Gynandropsis sp	**Crotolaris sp**	**Amaranthus sp**
5	-	20	-
10	22	40	10
15	50	49	27
20	60	64	42
25	80	48	55
30	85	45	54
35	80	42	50
40	73	31	45
45	66	15	40
50	2	-	11

a) Represent the results graphically (rate of photosynthesis against temperature)



b) Using the graph in (a) above indicate optimum temperature for the Gynandropsis and Amaranthus species. (2mks)

Gynandropsis ……

Amaranthus ……

c) Give a reason why Gynandaropsis and Amaranthus could not function photosynthetically at $5^{o}C$. (1mk)

……

d) What are the possible ecological habitats for the following plants. (2mks)

(i) Amaranthus

……

(ii) Crotolaria

……

e) At what temperature was the amount of carbon (IV) oxide around the leaf of Gynandropsis highest? (1mk)

……

f) What raw material is required in the light stage of photosynthesis. (1mk)

……

g) Name the parts of chloroplasts in which the following stages of photosynthesis take place. (2mks)

(i) Light stage

……

(ii) Dark stage

……

h) State **one** structural similarity and difference between chloroplast and mitochondria. (2mks)

Similarity

……

Difference

……

i)What is the compensation point of photosynthesis? (1mk)

……

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7 (a) Explain why plants lack elaborate excretory organs like those found in animals. (3mks)

……

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(b) Name **five** methods of excretion in plants. (5mks)

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(c) State any **six** excretory products in plants and give economic uses. (12mks)

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8. Discuss the evidence of organic evolution. (20mks)

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