Name **Index No.**

231/2 **Candidates signature ....**

BIOLOGY **Date ..…….....**
Paper 2 (Theory)
July / August 2013

Time 2 hours

WESTLANDS FORM FOUR JOINT EVALUATION

Kenya Certificate of Secondary Education

BIOLOGY

Paper-231/2 July / August 2013 Time: 2 hours

INSTRUCTIONS TO CANDIDATES

This paper consists of TWO sections; A and B.
Answer all questions in section A in the spaces provided.
In section B answer questions d(Compulsory) and either question 7 or 8 in the spaces provided after question 8.

FOR EXAMINERS 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	
		80	

This paper consists of 8 printed pages

Candidates should check the question paper to ensure that all the printed pages are printed as indicated and no questions are missing.

SECTION A
- Answer ALL questions in this section in the spaces provided.

1. Foot deformity in human beings is controlled by one pair of mutant gene on the homologous chromosomes, the gene for deformity being dominant. Use letter D to represent the gene for deformity and d the gene for normal foot.

a) A marriage between a man with normal foot and a woman with deformity produce produces offspring with foot deformity. Explain. **(2 marks)**

b) Work out the phenotypic ratio of the children from a marriage between one of the daughters and a normal man. (5 marks)

Explain why the condition is extremely rare in the human population. (1 mark)

The diagram below represents a bone obtained from a mammal.

Name the bone. (1 mark)

Name the :

i) Bone which articulates with the bone named in (a) above at the cavity labelled K. (1 mark)

ii) Joint formed by the two bones. (1 mark)

State the function of the part labelled J. (1 mark)

d) Explain how the pelvic girdle is adapted to its functions. (4 marks)

3. a) What factors promote ultra filtration in the Bowman's capsule of a human kidney? (3 marks)

b) What is the importance of long loop of Henle in animals in arid areas? (1 mark)

c) Explain how the human body deals with excess amino acids. (4 marks)

4. a) State TWO characteristics of a population (2 marks)

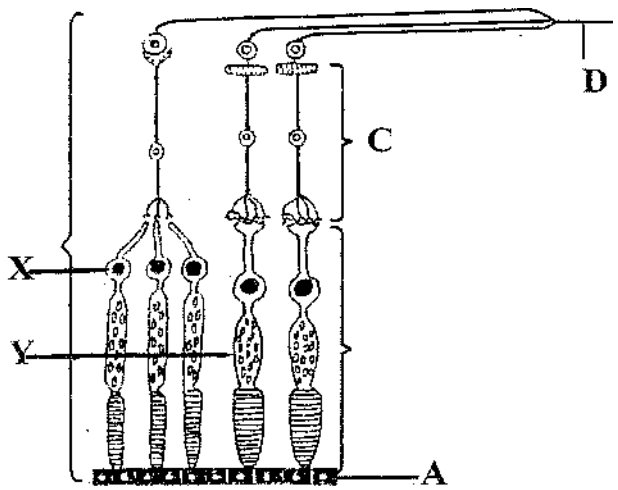
b) In grass field measuring 30m x 20m quadrats of lm² were laid at random and grasshoppers counted. The results are shown below.

Quadrat	Number of Grasshoppers
1	2
2	6
3	4

i) Calculate the total population of grasshopper in the grass field. (4 marks)

ii) Name one other method of estimating population in living organisms. **(1 mark)**

5. The diagram below shows a section of the retina of eye.



a) Name cells labelled X and Y (2 marks)

X

Y ....

c) State the adaptations of the parts labelled A to its function. (2 marks)

b) Explain the changes that occur in the cell Y when exposed to bright light. (4 marks)

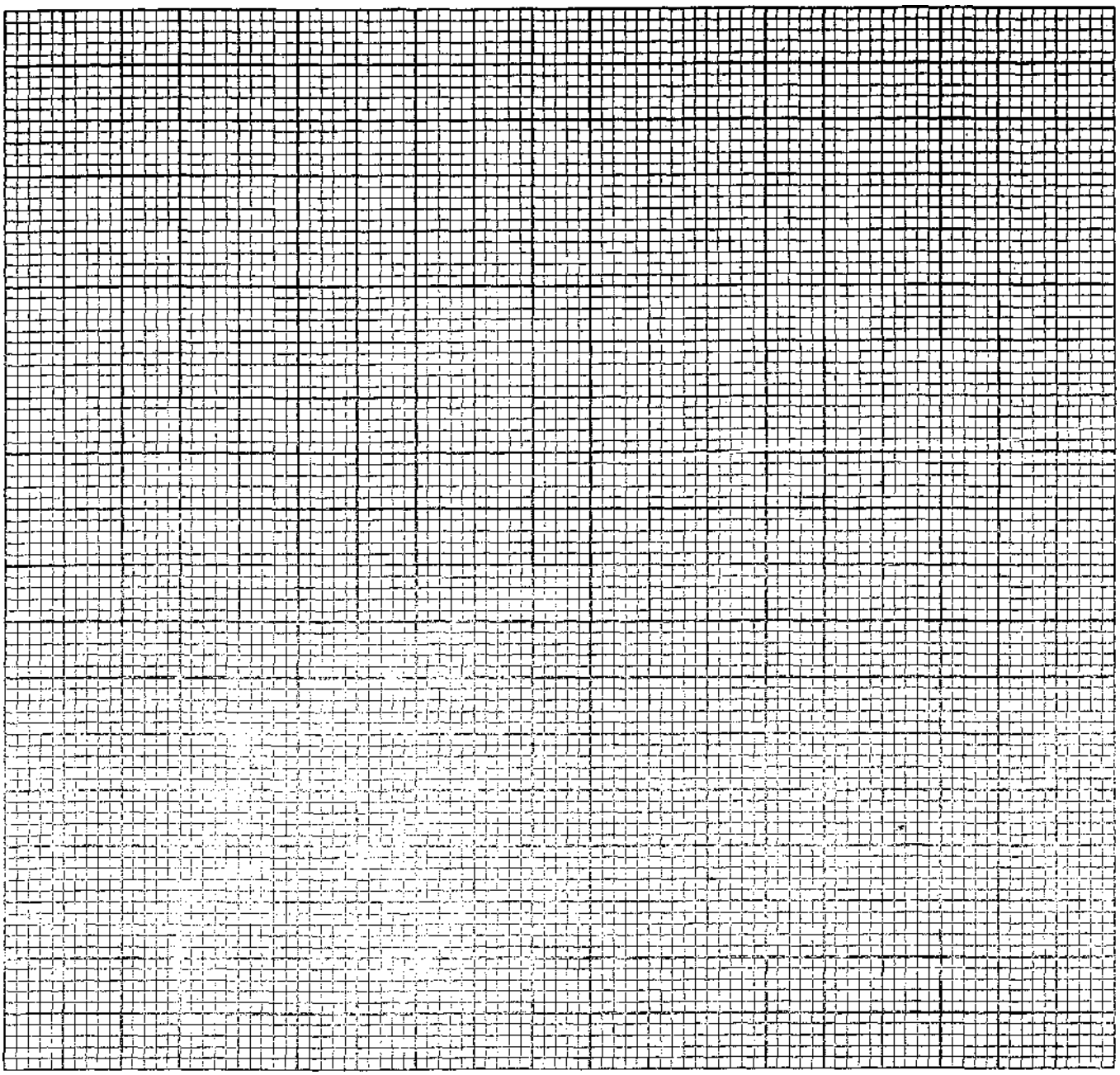
SECTION B

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

6. The diameter of the relaxed biceps muscles of several people were measured. Then each of them was asked to exert the maximum force of this muscle which was measured in Newtons. The table below gives the average of the results.

Di ameter of Keeps (cm)	**3**	**5**	fi	**7**	**8**	**§**
Maximum- Force |N)	**19.6**	**29.4**	**39,1**	**49.0'**	**68.6**	**98,0**

a) Draw a graph to show the diameter of biceps against the maximum force. (6 marks)



b) What is the best conclusion from these results? (1 mark)

c) State FOUR characteristics of biceps muscle. (4 marks) i) ....

ii)

iii)

iv)

d) i) Name two types of proteins in muscles. **(2 marks)**

ii) Name the supporting structures in insects and fish. (2 marks)

Insect ....

Fish ....

e) i) Explain the process of generating energy in the biceps during vigorous exercise or activity. (4 marks)

ii) What happens to <u>final</u> product of anaerobic respiration in animals when oxygen is made available. **(1 mark)**

7. a) Explain the structure and function of phloem tissue. (10 marks)

b) Explain the process of blood clotting in man. (10 marks)

8. a) State the functions of the ear. (2 marks)

b) Describe the adaptations of the mammalian ear to its functions. **(18 marks)**

ANSWERS: