NAME: ……INDEX NO:……
SCHOOL: ……SIGN:……
DATE: ……

231/2
BIOLOGY
PAPER 2
(THEORY)
JULY- 2024
TIME: 2HOURS.

MUSLIM SCHOOL JOINT EVALUATION TEST
Kenya Certificate of Secondary Examination (KCSE)
231/2
BIOLOGY
PAPER 2
INSTRUCTIONS TO CANDIDATES

- Write your **Name**, **School** and **Index** number in the spaces provided.
- Answer **all** questions in section **A** in the spaces provided. In Section **B**, answer question **6** (compulsory) and either **7** or **8** in the spaces provided after question **8**.
- Candidates should answer all the questions in **English**.

FOR EXAMINERS USE ONLY

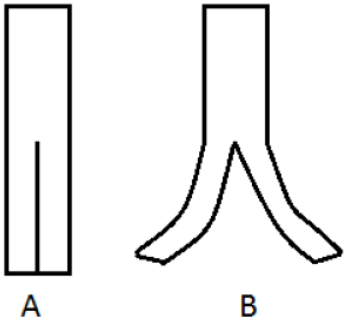
SECTION	QUESTION	MAXIMUM SCORE	CANDIDATES SCORE
SECTION A	1	8	
	2	8	
	3	8	
	4	8	
	5	8	
SECTION B	6	20	
	7	20	
	8	20	
TOTAL SCORE		**80**	

This paper consists of 8 printed pages Check the Question paper to ensure that all pages are printed as indicated and no question is missing.

SECTION A

(Answer ALL questions in this section)

1. In a biology lesson, some students obtained a young stem and split it half way along the length as shown in diagram A. They then placed it in solution Y for two hours before making observations. The results were as shown in diagram B.



a) What was the nature of solution Y? (1mk)

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b) Explain why the stem curved as shown in diagram B. (4mks)

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c) State **three** roles of active transport in organisms. (3mks)

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2. (a) In human, premature baldness is controlled by a gene on the **Y** chromosome. Using **B** to represent the gene for baldness, work out a cross between a bald man and his wife. (4 mks)

(b)(i) What is the probability of their daughters being bald? (1 mk)

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(ii) Give a reason for your answer. (1 mk)

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(c) Name **one** trait in human beings that is determined by multiple allele (1mk)

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(d) Name **one** genetic disorder affecting the human eye (1mk)

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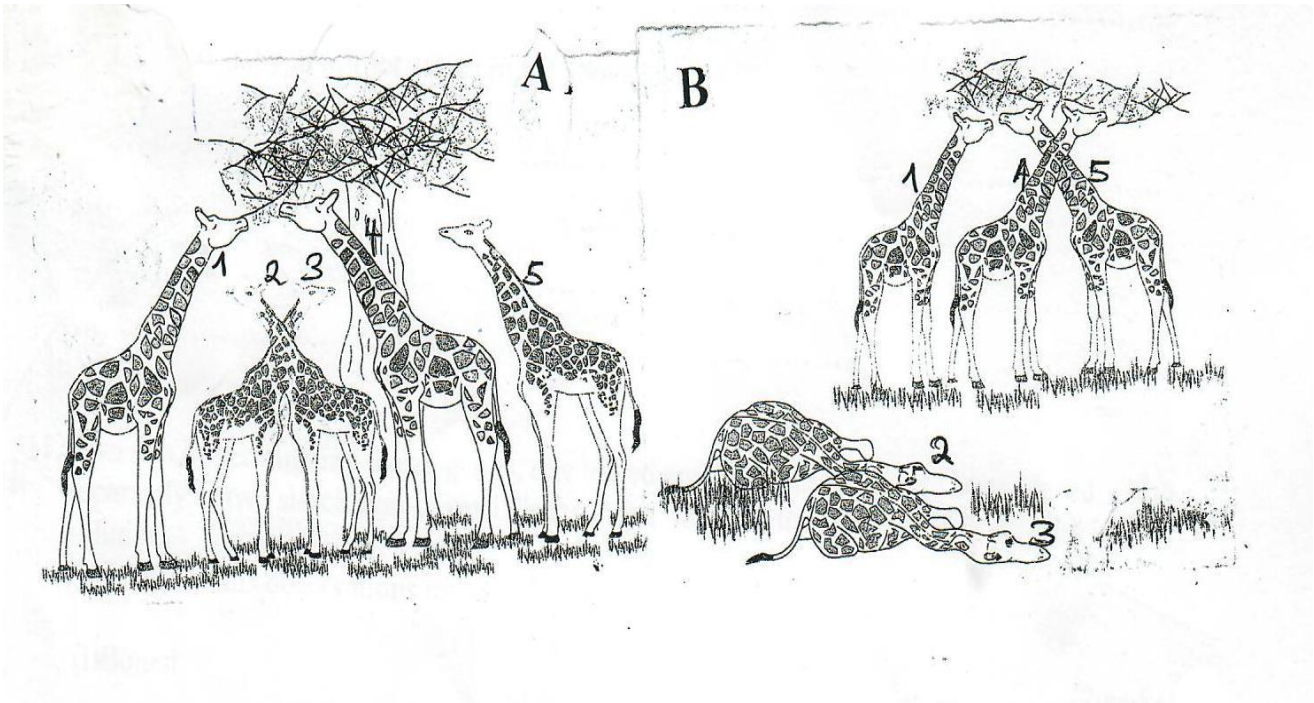
3. The picture below represents an evolutionary phenomenon. Study it and answer the questions below.



(a) What name is given to the above evolutionary phenomenon? (1 mk)

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(b) Account for your observation in pictures A and B Observation (2mks)

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Accounting (2 mks)

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(c) Explain how continental drift is an evidence for organic evolution (3 mks)

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4. The micrographs below is of a tissue showing mitosis. Examine it and answer the questions.

R **T**

a.) i. Identify the tissue from which the micrographs were obtained (1mark)

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ii. Give a reason for your answer in a) i above (1mark)

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Name the stages represented by **R** and **T**. (2marks)

R

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T

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b.) State two significance of mitosis to an organism. (2 marks)

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c.) Name two regions in higher plants where cells actively undergo mitosis (2marks)

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5. An analysis was done on the contents of faeces of a cow. The results are as shown in the table below.

Content	Percentage
Carbohydrates	12
Proteins	0.8
Fiber	14
Fats	1

(a) Name the other component that makes up the faeces of a cow and give its percentage. (1 mk)

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(b) Name the substance that contributes the fiber in the faeces. (1 mk)

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(c) Cow faeces are normally used as fertilizer that increases nitrates in the soil.

(i) State the component in the faeces that yield nitrates. (1 mk)

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(ii) Describe how the component named in (c)(i) above is converted into nitrates (4 mks)

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(d) Explain why the manure would be better if the cows urine was added to the faeces. (2 mks)

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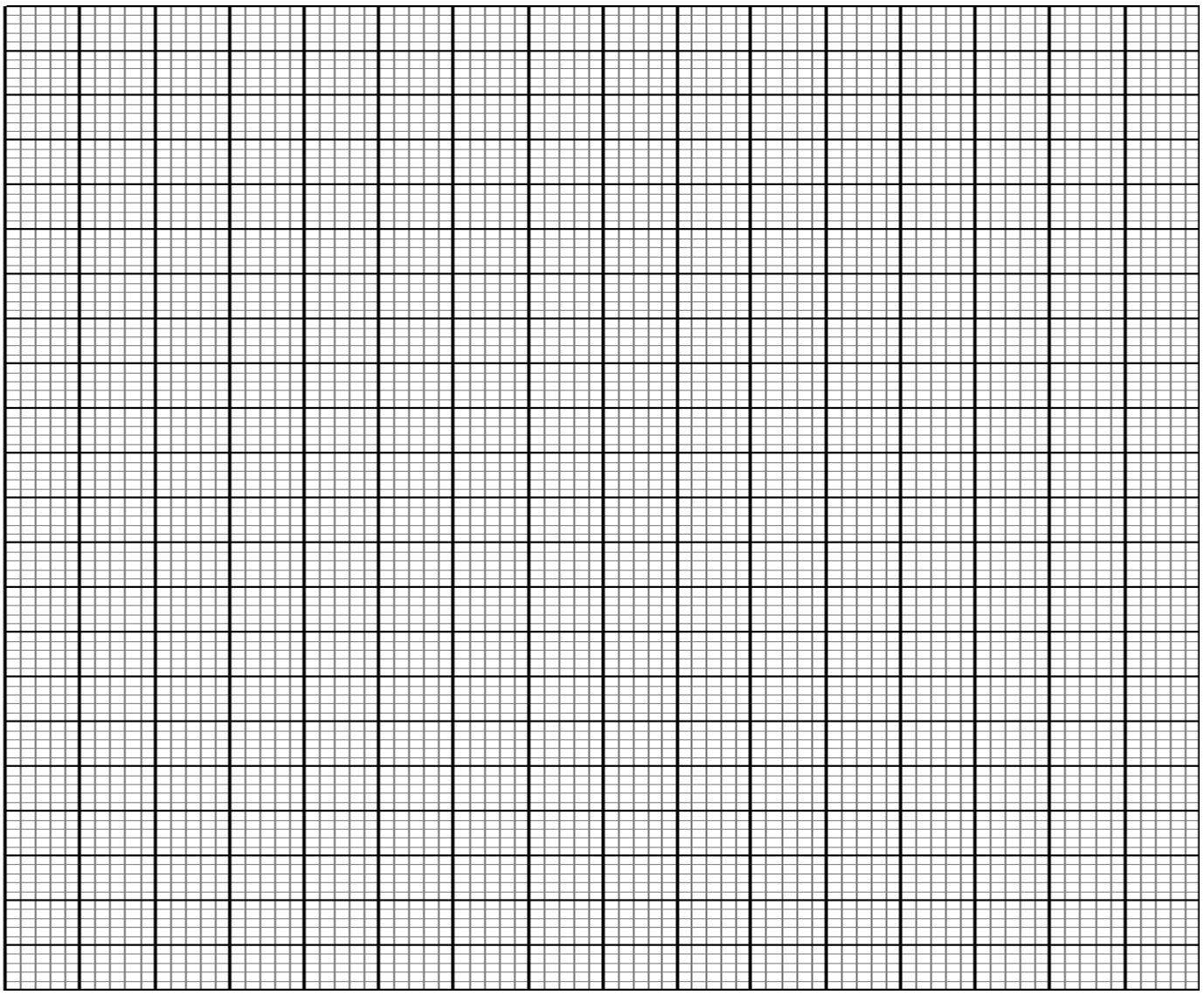
SECTION B (40 Marks)

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

6.The length of a grasshopper femur and internode of a seedling were recorded in a period of 24 weeks. The results are recorded in the table below.

Week	**1**	**3**	**5**	**7**	**10**	**13**	**16**	**18**	**20**	**24**
Average length of femur	**8.0**	**9.0**	**9.0**	**9.0**	**13.0**	**13.0**	**15.0**	**19.0**	**19.0**	**19.0**
Average length of internode(mm)	**5.0**	**6.5**	**10.5**	**16.5**	**24.5**	**27.5**	**32.5**	**34.5**	**36.0**	**37.5**

(a) Plot a graphs of length of femur and length internode against time on the same axis.(7mks)



(b) (i)What was the average length of internode in the 8^{th} week? (1mk)

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(ii)Suggest how average length of internodes was obtained. (2mks)

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(c) Name the type of growth curve shown by

(i) Grasshopper (1mk)

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(ii) Seedling (1mk)

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(d) Account for the change in length for fermur between

(i) 3^{rd} and 7^{th} week (2mks)

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(ii) 16^{th} and 20^{th} week (2mks)

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(e) (i) State what causes increase in length of internodes in the seedling. (1mk)

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(ii) Exhibits the growth pattern of the femur. (1mk)

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(iii) Name the hormone responsible for the growth pattern in grasshopper. (1mk)

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(iv) Work out the rate of growth of the seedling between week 7 to 10 (2mks)

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Essay QUESTIONS.

ANSWER EITHER QIESTION 7 OR 8 ONLY

7. (a). During a finance bill protest, tension was high and one of the police officer was furious and wanted to face and fight a very aggressive protester. Explain the physiological changes that occur in his body to prepare him for the fight. (14mks)

(b). (i) Identify each of the following responses described below.

(a). A person coughs whenever a foreign body irritates the respiratory tract (1mk)

(b). whenever a bell is rung, a dog is presented with a meal. After several days of practice, the dog salivates once the bell is rung even if food is not available (1mk)

(ii) State the difference between the two responses identified in (b) above (4mks)

8.(i) State **two** significances of transpiration. (2 marks)

(ii) Discuss the forces involved in movements of water from roots to the leaves. (8 marks)

(iii) Describe the mechanism of opening and closing of stomata using photosynthesis theory. (10 marks)

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