NAME ………………………………………………………….….. INDEX No. ……………………………

SCHOOL ……………………………… SIGNATURE …………... DATE …………..………

Biology
231/2
Paper 2
2 hours

CATHOLIC DIOCESE OF KAKAMEGA EVALUATION TEST
JULY/AUGUST, EXAM 2025

Instructions to Candidates

a) Write your name and Index number in the spaces provided above.

b) Sign and write the date of the examination in the spaces provided above

c) The paper consists of two sections A and B

d) Answer ALL the questions in section A in the spaces provided

e) 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**	**CANDIDIATE'S SCORE**
A	1	8	
	2	8	
	3	8	
	4	8	
	5	8	
B	6	20	
	7/8	20	
	TOTAL SCORE	**80**	
TOTAL SCORE		**80**	

This paper consists of 9 printed pages. Candidates should check carefully to ascertain that all the pages are printed as indicated and no questions are missing

SECTION A (40 MARKS)

Answer ALL the questions in this section.

1.In an investigation, equal amount of water was placed in three test tubes labelled G, H and J. Pond weeds of equal length were dropped in each test tube. The test tubes were then placed in identical conditions of light and Carbon (IV) oxide at different temperature for five minutes. After five minutes the bubbles produced in each test tube were counted for one minute. The results were as shown below.

TESTUBE	TEMPERATURE C	NUMBER OF BUBBLES
G	20	28
H	35	42
J	55	10

(i) Name one requirement for this process that is not mentioned in the investigation (1mk)

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(ii) Name the gas produced in this investigation (1mk)

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(iii) Account for the results in test tube H (2mks)

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(iv) Suggest the number of Bubbles if the experiment was to be carried out at 70^0 C, Give a reason for your answer (2 mks)

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(v) State two reasons why a pond weed was used in this experiment? (2 mks)

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2. In cats, the gene for fur colour is sex linked. Letter **G** represents the gene for ginger fur colour while letter **B** represents the gene for black fur colour in a given cat species. These genes are codominant.

Heterozygous females have ginger and black patches of fur and their phenotype is described as tortoise shell.

a) With reference to the information given above, what is meant by the term codominance. (1mk)

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b) Explain why male cats with tortoise-shell phenotype do not usually occur (2 mks)

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c) A tortoise shell female was crossed with a black male. Using a **Punnet square** determine the genotype and phenotypes of the offsprings. (5 mks)

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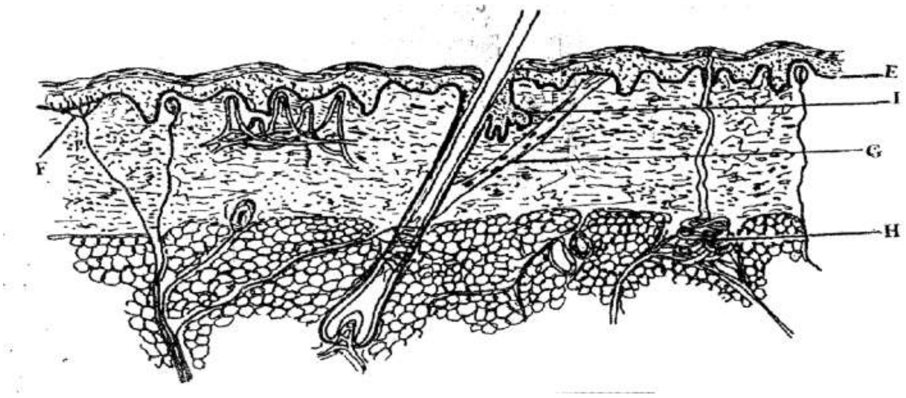
3. The diagram below shows a section through the mammalian skin.



a) Name the parts labeled E and F (2mks)

E …………………………………………………………………………………………………

F…………………………………………………………………………………………………

b) State the functions of the secretions produced by

i) Structure H (1mk)

…………………………………………………………………………………………

ii) Structure I (1mk)

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c)Explain how the structures listed below help in regulation of body temperature on a hot day.

i) Structure H (1mk)

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ii) Structure G (1mk)

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d)Apart from excretion and temperature regulation in man, state two other functions of the mammalian skin. (2mks)

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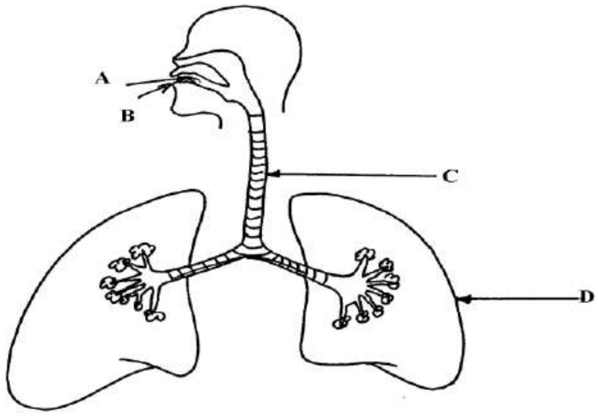
4. The diagram below represents a section of the human respiratory system:



(a) One can inhale through path A, or B. Giving reasons, state the more appropriate path. (3mks)

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(b) How is the part labelled C adapted for its function? (2mks)

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(c) State three characteristics of a respiratory surface (3mks)

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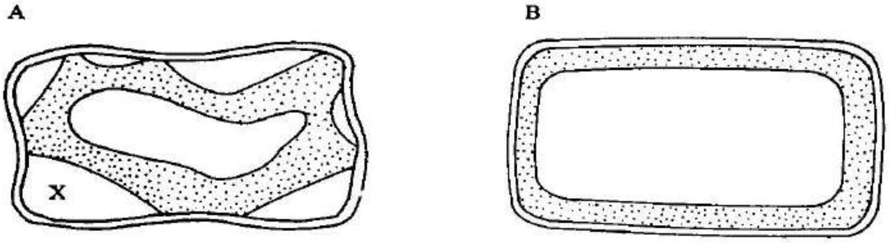
5. The diagrams below represent two plant cells A and B placed in two different solutions. Study the diagrams and answer questions that follow:



a) Identify the nature of solution into which each cell was placed. (2mks)

A ……………………………………………………………………………………………….

B ……………………………………………………………………………………………….

b) Name the physiological process responsible for the observed results. (1mk)

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c) Give the correct biological term used to describe cell A. (1mk)

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d). Describe what would happen if a red blood cell was placed in the solution in which cell B was placed. (2mks)

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e) Give two roles of the physiological process in 4 (b) above in plants (2mks)

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SECTION B (40MARKS)

Answer question 6 and either question 7 or 8 in this section

6. The following data was collected and recorded by environmental researchers during random field visit. It was noted that birds were feeding on both aphids and giant looper, the giant looper entirely feeds on aphids. Study the data and use it answer the questions that follow.

Organism	**Population**
Gallant soldier plant	60
Giant looper	100
Birds	20
Aphids	600

a) Draw a pyramid of numbers to represent the data (6mks)

b) Identify the type of pyramid above (1mk)

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c) i) Discuss the shape of the pyramid drawn (5 mks)

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ii) Draw a food web to represent the data above (2mks)

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d)Apart from the food web, name two other ways by which energy flow in the ecosystem is represented (2mks)

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e) A quadrat was used to estimate the population of a gallant soldier plant. Briefly describe how the method was used. (3mks)

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f) A part from quadrat method name any other method of population estimation (1mk)

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7. Describe the structure and function of the mammalian ear in relation to hearing and balance (20 mks)

8. a) Discus the economic importance of Kingdom Fungi (10 mks)

b) Describe alternation of generation in a fern plant (6mks)

c) State four features on a leaf that can be used in classification (4mks)

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