Name…… Index No ……

ADM No……. Student's Signature …….. Date ……

231/3
BIOLOGY
Paper 3
(Practical)
August 2022
1¾ hrs.

LAIKIPIA EAST TERM 2 2022 FORM 4 EVALUATION EXAM
Kenya Certificate of Secondary Education (K.C.S.E)

Kenya Certificate of Secondary Education
BIOLOGY
Paper 3
(Practical)
July/August 2022
1¾ hrs.

Instructions

*(a) Write your **name, index** and **admission numbers** in the spaces provided at the top of this page.*
(b) Sign and write the date of examination in the spaces provided above.
*(c) Answer **ALL** the questions.*
(d) You are required to spend the first 15 minutes of the 1¾ hours allowed for this paper reading the whole paper carefully before commencing your work.
*(e) Answers **MUST** be written in the spaces provided in this question paper.*
*(f) Additional pages **MUST NOT** be inserted.*
(g) This paper consists of six (6) printed pages.
(h) Check the question paper to ascertain that all the pages are printed as indicated and that no questions are missing.

For Examiner's Use Only

Question	Maximum Score	Candidate's Score
1	14	
2	12	
3	12	
Total Score	**40**	

You are provided with a potato, a 10 ml measuring cylinder, dilute hydrogen peroxide solution and substances **F** (pH 4), **G** (pH 7) and **H** (pH 9). Cut the potato and remove a piece measuring 1 cm^3 from it.
Cut the 1 cm^3 piece into tiny pieces and crush (macerate) them on a clean white tile using a glass rod.
Divide the macerated potato into **three** equal portions for use in the procedure that follows:

I. Put 2 cm^3 of substance **F** (pH 4) into the 10 ml measuring cylinder.
Add **one** portion of the macerated potato into the measuring cylinder.
Read and record the volume of the mixture in the table provided below.
Add one drop of washing-up solution.
Add 1 cm^3 of dilute hydrogen peroxide solution to the mixture and immediately start a stop clock or watch. At the end of **two minutes**, read the mark to which the foam rises.
Record the reading in the table provided.
Clean and rinse the measuring cylinder with distilled water.

II. Put 2 cm^3 of substance **G** (pH 7) into the measuring cylinder.
Add the **second** portion of the macerated potato.
Read and record the volume of the mixture in the table.
Add one drop of washing-up solution.
Add 1 cm^3 of dilute hydrogen peroxide solution to the mixture and immediately start a stop clock or watch. At the end of **two minutes**, read the mark to which the foam rises.
Record the reading in the table.
Clean and rinse the measuring cylinder with distilled water.

III. Put 2 cm^3 of substance **H** (pH 9) into the measuring cylinder.
Add the **third** portion of the macerated potato.
Read and record the volume of the mixture in the table.
Add one drop of washing-up solution.
Add 1 cm^3 of dilute hydrogen peroxide solution to the mixture and immediately start a stop clock or watch. At the end of **two minutes**, read the mark to which the foam rises.
Record the reading in the table.

	F (pH 4)	G (pH 7)	H (pH 9)
Volume of solution + portion of potatoe			
Volume of solution + portion of potatoe + foam			
Volume of foam			

(9MKS)

Using the data obtained in the table, calculate the volume of the foam produced in each of the pH4.pH7, and pH9 substances. Record the volumes in the table.

Account for:

i. The observation made when hydrogen peroxide was added to the potatoes mixture (3mks)

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ii. The difference in the volume of foam produced in pH4 and pH9 substances. (2mks)

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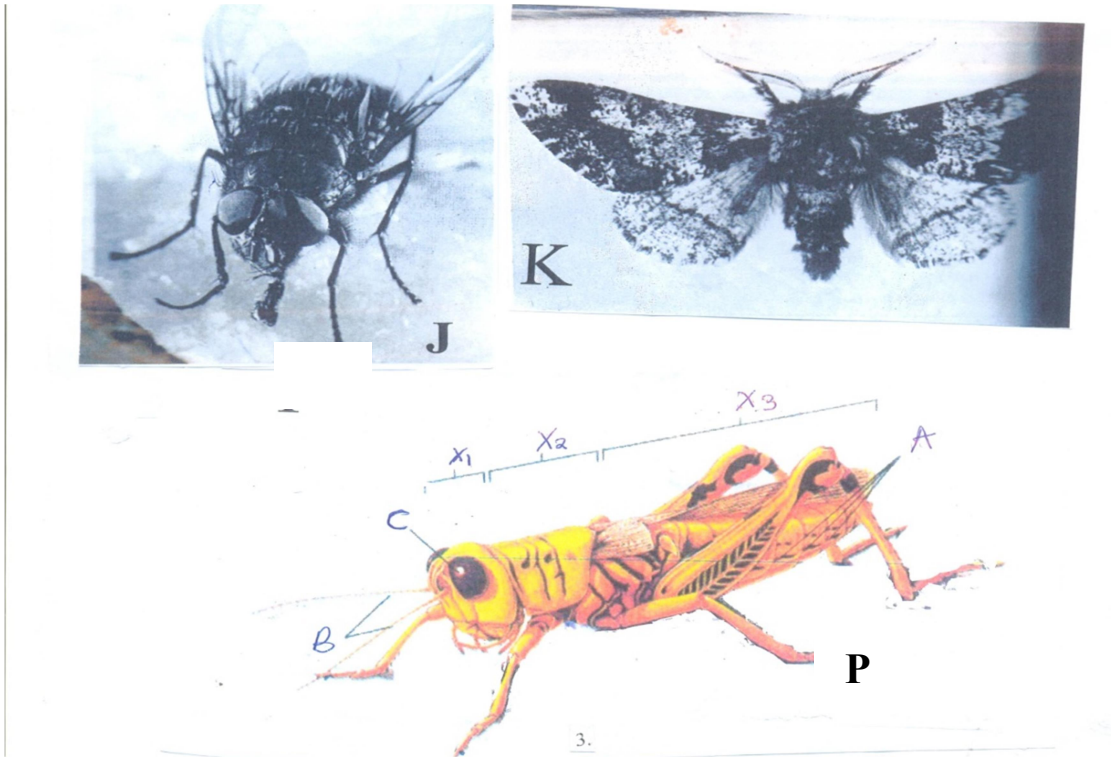
2. You are provided with photographs labeled J, K and P. Study the photographs below and use them to answer questions that follow:



(a) (i) Using observable features **only** name the phylum to which the specimens belong. (1mk)

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(ii) Give **two** reasons for your answer in a (i) above (2mks)

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(b) (i) Using specimen P, label parts marked X_1, X_2 and X_3. (3mks)

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(ii) Suggest the **class** to which specimen P belongs (1mk)

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(iii) Give **one** role of the parts labelled A and B (1mk)

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(c) State **one** economic importance of specimen J and K

Specimen J (1mk)

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Specimen K (1mk)

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(d) (i) Using **observable** features only state the type of locomotion exhibited by the specimens J, K and P (1mk)

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(ii) Give a **reason** for your answer in d (i) above (1mk)

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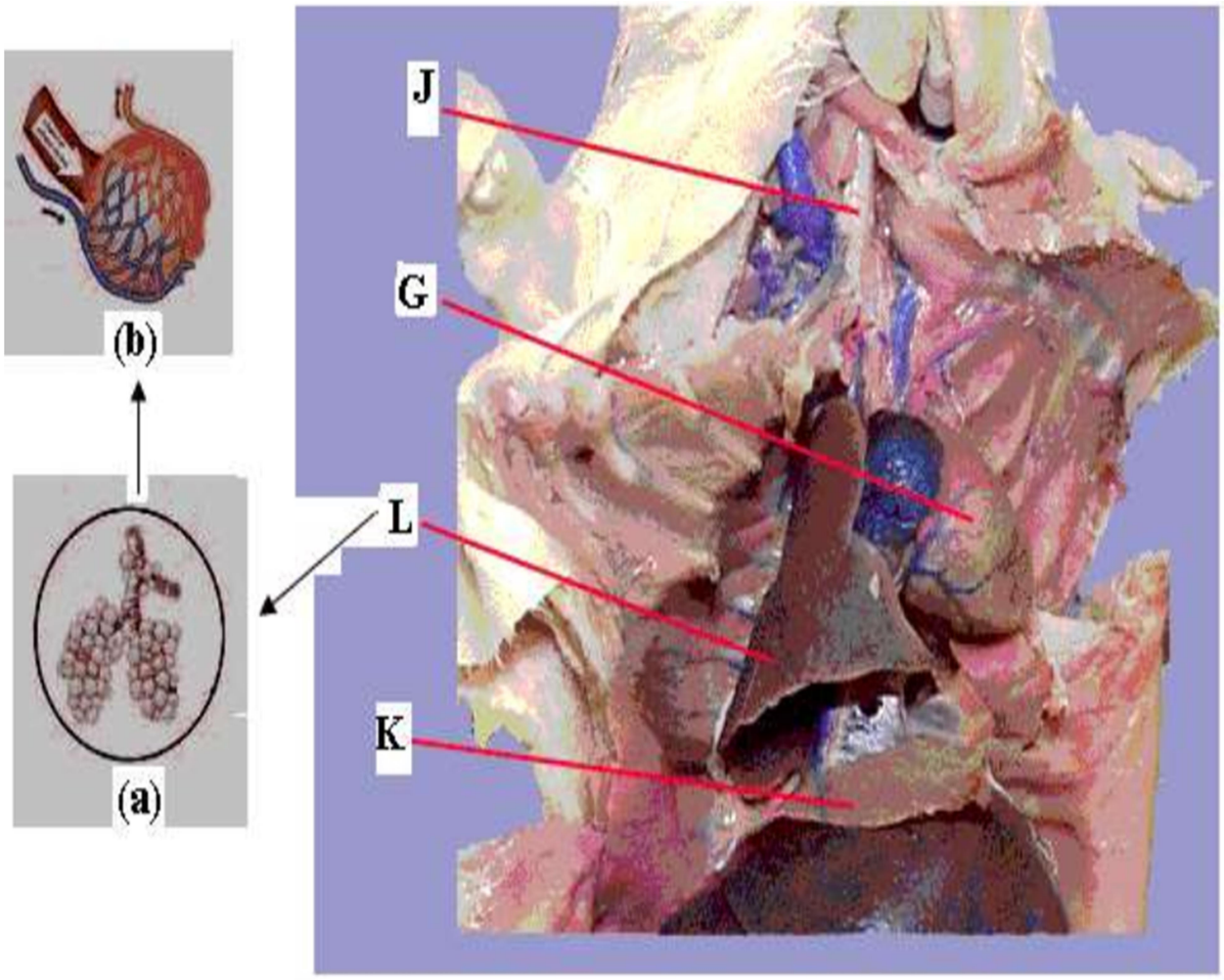
3. Study photograph labeled **V** which is a display of internal organs of a small mammal. Photograph **F** is an inset of internal structure of part labeled **L**. Study them carefully.

Photograph F **Photograph V**



(a) Name the part of the mammalian body where the organs shown in the photograph are found. (1 mark)

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(b) Identify the organ system that consists of parts **J** and **L** in the photographs. (1 mark)

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(c) (i) Name the parts labelled **J** and **K**. (2 marks)

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(ii) Give the function of the part labelled **G**. (1 mark)

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(d) State **two** adaptations of organ in **L** to its functions. (2 marks)

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(e) **F (a)** is an inset of the internal structure of part **L** showing the position of the functional units of **L**. One of these functional units is shown in the inset **F (b)**.

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(i) Identify the functional unit shown in inset **F(b)** and give its function. (2 marks)

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