P530/3
S.6 Biology
PRACTICAL
3 ¼ Hours

NAME…… **SIGNATURE……**

MOCK II EXAMINATIONS 2024
Biology practical
PAPER 3
TIME: 3HOUR 15 MINUTES

INSTRUCTIONS:

- **This paper consists of three questions**
- **Attempt all questions.**
- **Answers must be written in the spaces provided only**

FOR EXAMINER'S USE ONLY		
Question	**Marks**	**Examiners Signature**
1		
2		
3		
TOTAL		

1. You are provided with specimen K. Examine it carefully and answer the questions that follow.

(a) Identify the class and order of the specimen, giving reasons in each case. (4 marks)

(i) class

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Reason

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(ii) Order

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Reason

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(b) (i) Measure the body length of the specimen from the head to the very posterior end in millimeters (1 mark)

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(ii) Measure the length of the antenna in millimeters. (1 mark)

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(iii) Calculate the ratio of whole-body length to the length of the antenna. (1 mark)

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(iv) What is the importance of the ratio of the whole-body length to the antenna?
(2 mks)

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(c) Cut off the wings. Cut along the right lateral line of the thorax and abdomen. Turn the dorsal cuticle to the left, clear any fat tissue and display the alimentary canal fully. Cut off the structures for reproduction. Draw and label your dissection.
(25 mks)

2. You are provided with solution V_1 and V_2 of complex nature and different concentration.

(a) Cut and remove the following parts from your dissection in question 1 and place them on glass slides labeled: **W**- flight muscles, **X**-mandibles and **Y** – fore gut.

(i) Carry out the following procedures in Table 1 and record your observations and deductions. (10 mks)

	Experiment	Observations	Deduction
1.	To half of **W** in a test tube, add $2cm^3$ of V_1.		
2.	To the remaining half of **W** in a test tube add $2cm^3$ of V_2.		
3.	Repeat procedure in 1 above using **X** instead of **W.**		
4	Repeat procedure in 1 above using half of **Y** instead of **W.**		

(ii) What was investigated in experiment 1 and 2.? (1 mk)

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(iii) Explain the differences (if any) in results obtained for the different body parts from specimen K in: -

Experiment 1. (2 mks)

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Experiment 3. (2 mks)

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Experiment 4. (2 mks)

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(b) Boil the remaining fore gut from **Y** and subject the same quality of substance Z to excessive heat for 2 minutes. Allow to cool and carry out the procedures in Table 2 below, record your observations. (3 mks)

Experiment	**Observations**
To boiled fore gut add $2cm^3$ of V_1.	
To heated substance **Z** add $2cmn^3$ of V_2.	

(i) Giving a reason for your answer, suggest the nature of substance **Z**. (2 mks)

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(ii)Explain your result in table 2 above. (2 mks)

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3. You are provided with specimen U and specimen T. Examine them carefully according to the following questions.

(a) Cut specimen U longitudinally using razor blade. Describe its internal structure. (2 mks)

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(b) Remove one of the leaves of specimen U. Strip off a piece of the inner most layer and place it on a glass slide with a drop of water and cover with a cover slip.

(i) Describe the structure of a cell, clearly seen. (3 mks)

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(ii) Now examine under low power of a microscope, count and record the number of cells in the field of view from left to right. (1 mk)

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(iii) From top bottom. (1 mk)

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(c) (i) Remove the slide from the stage, measure the field of view using a transparent ruler and record y our result. (1 mk)

Field of view.....mm.

(ii) Convert the diameter of the field of view into micrometer (µm). Show your working. (2 mks)

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(d) Return the slide having the tissue onto the stage. Draw one cell from the tissue being observed under medium power of a microscope. (4 mks)

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(e) (i) Measure the length of your drawing in mm and record it. (1 mnk)

Length of drawing.....mm

(ii) Calculate the magnification of y our drawing. Show your working. (3 mks)

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(f) Mount a ~~small~~ ~~portion~~ of this layer the upper epidermis of specimen T in a drop of water and observe under the low power of a microscope.

(i) Suggest how the specimen is adapted in its habitat. (4 mks)

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(ii) Draw and label three adjacent cells of the thin epidermis of specimen T in (f) above as observed in medium power of a microscope. (5 marks)

END

S.6 BIO3 MOCK 2 EXAMINATION 2024 INSTRUCTIONS

Each candidate should be provided with

Freshly killed mature cockroach labelled **K**

Dissecting board

5 Microscope slides and cover slips

Razor blades and pins

20cm^3 of 2% Hydrogen peroxide labelled **V_1**

20cm^3 of 4% Hydrogen peroxide labelled **V_2**

6 Test tubes

1 dropper

Labels

2 measuring cylinders of 10ml

knife

Large onion bulb labelled **U**

Purple camelina leaf labelled **T**

2g of Manganese (IV) oxide powder labelled **Z**

Access to:

- Source of heat
- Distilled water
- Microscope