NAME ……..……INDEX No…….

END OF TERM ONE

SENIOR SIX

PRACTICAL EXAMINATION

P530/3

BIOLOGY PRACTICAL

TIME: 3HOURS AND 15 MINUTES

***INSTRUCTIONS*:**

- *Attempt all questions in this paper*
- *Untidy work will lead to loss of marks*

FOR EXAMINER'S USE	
QUESTION	**SCORE**
1.	
2.	
3.	
TOTAL SCORE	

Qn. 1 You are provided with freshly killed specimen **B.**

(a) (i) State the class to which specimen B belongs ***(0½ marks)***

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(ii) Examine specimen B and explain any **four** adaptive structural characteristics that qualify the life of organisms in the class in (i) above. ***(04 marks)***

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(b) Stretch out the limbs of the specimen and place it to lie on the square paper provided. Using a pencil, draw trace lines around the shape of the specimen on the square paper. Remove the specimen. Using a 1cm square unit, determine the total surface area of the following body regions, in square units.

(i) Briefly describe in formula how you determined the total surface area using the squared paper. ***(01 mark)***

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(ii) Complete the table 1 below ***(03 marks)***

Table (I)

Body region	***Total surface area in square units***
Head	
Trunk	
Limbs	

(iii) Explain the biological relevance of the surface area measurements in (b)(ii) above to the anatomical (structure) composition of the body. ***(06 marks)***

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(c) (i) Dissect the specimen to display the viscera. Cut out the alimentary canal and spread it on a white paper. Cut thin transverse sections from the **stomach, pylorus** and **duodenum.** Wash out the contents in water and place the sections on the paper. Using a ruler, measure in mm the diameter of the lumen and that of the whole section of each region.

Table (II) ***(04½ marks)***

Region of alimentary canal	**Stomach**		**Pylorus**		**Duodenum**	
	Whole section	Lumen	Whole section	Lumen	Whole section	Lumen
Diameter (mm)						
Ratio	Stomach lumen**:** pylorus lumen		Stomach lumen**:** duodenum lumen		Whole stomach**:** whole duodenum	

(ii) Explain the biological significance of the ratios in (c)(i) above. ***(06 marks)***

Stomach lumen **:** pylorus lumen

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Stomach lumen **:** duodenum lumen

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Whole stomach **:** whole duodenum

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(iii) Make a labeled drawing of left arterial blood circulatory and respiratory structures, excluding the mesenteries and their associated organs. ***(17 marks)***

Qn.2 You are provided with solutions **C, D, E** and extract **.** Extract **F** was obtained from the epicarp of a fruit.

(a) Carry out the following tests and record your observations and deductions

(i) Table (III) Iodine test ***(05 marks)***

Test	**Solution**	**Observation**	**Deduction**
	C		
	D		
	E		

(ii)Table (iv) Buiret test ***(06½ marks)***

Test	**Solution**	**Observation**	**Deduction**
	C		

	F		

(iii) Table (v) Benedict's test ***(10 marks)***

Test	**Solution**	**Observation**	**Deduction**
	C		
	D		
	E		
	F		

(b) (i) Prepare a water bath and maintain it between **30** and **40^{o}**c
Label six test tubes and contents as indicated in the table
Incubate the test tube contents in water bath for **40 minutes**
Observe and record the appearance of the mixtures before and after incubation

Table (VI) ***(07½ marks)***

Test tube No.	**Contents added**	**Original appearance of mixtures**	**Final appearance after incubation**	**Deduction**
1.	**2cm^3 of C + 2cm^3 of F**			
2.	**2cm^3 of D + 2cm^3 of F**			
3.	**2cm^3 of E + 2cm^3 of F**			
4.	**2cm^3 of C + 2cm^3 of 0.5M $HCl_{(aq)}$ + 2cm^3 of F**			
5.	**2cm^3 of C + 2cm^3 of 2.0M $HCL_{(aq)}$ + 2cm^3 of F**			

6.	**$2cm^3$ of D + $2cm^3$ of 0.5M $NaHCO_{3(aq)}$ + $2cm^3$ of F**			

(ii) Carryout Benedict's and Buiret tests on contents of the following test tubes

Table (VII) Benedict's test ***(02 marks)***

Test	Test tube	Observation	Deduction
	2		
	6		

Table (VIII) Buiret test ***(02 marks)***

Test	Test tube	Observation	Deduction
	1		

	4		

(c) Explain the results in (b) above. ***(05 marks)***

Q.3 You are provided with inflorescences **G, H, I, J** and **K**

(a) Describe the **bracts** in specimens G, H and I

Table (IX) ***(03 marks)***

Bract of specimen	**Descrition of the bract**
G	
H	
I	

(b) Cut a longitudinal section through a mature floret of G and exam its internal structure using a hand lens. Make a labeled drawing of the observable structural features in the longitudinal section of a floret of G. ***(07 marks)***

(c) (i) Carefully open the florets of each specimen. Where necessary, use low power magnification of a microscope and examine the essential parts of each specimen. Write **two** structural characteristics of the essential parts of each specimen.

Table (X) ***(05 marks)***

Specimen	**Descriptive characteristics**
G	
H	
I	
J	
K	

(ii) Use the characteristics in table above and construct a dichotomous for identity of the above specimens. ***(05 marks)***

END

CONFIDENTIAL FOR S.6 EOT ONE

Toad / frog ……..……..specimen B
One square paper/ graph paper
One unruled paper
Requirements for dissection
20mls of 5% egg albumen prepared from raw eggs……..solution C
20 mls of 1% starch ……..solution D
20mls of 1% sucrose…….…….solution E
20mls of pawpaw sap extract prepared from the epicarp of unripe 5 pawpaws and washed in 300mls of water and filtered to obtain extract F
8 test tubes
One thermometer
2 plastic beakers/ cups
Hot water
Benedict's solution
Dilute copper(ii)sulphate solution
Dilute sodium hydroxide solution
10mls of 0.5M HCl solution
10mls of 2.0M HCl solution
10mls of 0.5M $NaHCO_3$ solution
Labels
10mls measuring cylinder
Heat source
Bougainvillea inflorescence…….……..G
Banana inflorescence……..H
Black jack inflorescence…….…….I
Lantana camara inflorescence…….J
Commelina inflorescence……K
Hand lens
Razor blade
Microscopes and slides