

NAME:**INDEX**

SIGNATURE:

**MOCK EXAMINATIONS
U.A.C.E
BIOLOGY PRACTICALS
P530/3**

3 HOURS

INSTRUCTIONS:

- Answer all questions.
- Your answers must be written in the spaces provided.
- Use well – sharpened pencil to make neat drawings.

FOR OFFICIAL USE

QUESTION	MARKS
1	
2	
3	
TOTAL	

Question 1: 65 minutes (38 marks)

You are provided with freshly killed toad labeled **E**

(a) Examine the skin in the trunk region from the dorsal and ventral side.

(i) State three differences observed: (03 marks)

Dorsal Side	Ventral side
1.	
2.	
3.	

(ii) Suggest explanations for the difference recorded in 1 – 3 above.

(iii) Difference in: - (03 marks)

- 1.
.....
- 2.
.....
- 3.
.....

(b) Pin the specimen with its back on the board. Dissect to clearly display the structures on the roof of the buccal cavity. Draw and label. (08 marks)

(c) By further dissection, display the blood vessels that carry blood:

- (i) to the parts of the alimentary canal located in the left of the abdomen plus their associated structure(s) and,
- (ii) from the hind limbs and kidneys back to the heart.

Draw and label with the heart deflected anteriorly.

(24 marks)

Question 2 60 minutes (32 marks)

You are provided with two solutions (**C₁** and **C₂**) of different concentrations and specimen **C**.

(a) Carefully remove three small strips of the lower epidermis from specimen **C** and place on to glass slides labeled **C₁**, **C₂** and **C₃**.

Mount Epidermal strips **C₁** and **C₂** in three drops of the respective solutions and strip **C₃** in three drops of distilled water. Leave to stand for 10 minutes before observing under a microscope.

(i) Draw part of the strip from **C₃** to include one stoma and label. (07 marks)

(ii) Compare the appearance of the stoma from **C₁** and **C₂** with that from **C₃** as drawn above. (02 marks)

C₁

.....
.....

C₂

.....
.....

(iii) Explain your answer for **C₁** in (a) (ii) above.

.....
.....
.....

(b) Prepare solutions **1 – 5** by mixing solutions **C₁** and **C₂** as follows:

- (i) Label tubes **1 – 5** and add **C₂** into the tubes as indicated in **Table 1**.
- (ii) Make up the contents of each tube to 10cm³ by adding **C₁**. Record the volume of **C₁** added into each tube in Table 1 below: (2½ marks)

TABLE: 1

Tubes	1	2	3	4	5
C ₂ (cm ³)	10	7.5	5.0	3.0	0.5
C ₁ (cm ³)					

(c) Carry out the procedures below: -

- (i) Cut five cylinders of length 6 cm each from plant material – **D** provided. Chop the first cylinder into ten smaller pieces of uniform size and transfer the pieces into solution – **1**
- (ii) Repeat the above procedure using the remaining cylinders and solutions **2, 3, 4** and **5**.
- (iii) Leave the set up to stand for 1 hour.
- (iv) After 1 hour, pour all the solution from Tube **1** into a small measuring cylinder and record the volume in **Table 2**.

(v) Repeat the above procedure for solutions from the remaining tubes. Tabulate your results are follows:

TABLE 2

Solutions	1	2	3	4	5
Final volume ($V_2\text{cm}^3$)					
Initial volume ($V_1\text{ cm}^3$)					
Change in volume i.e. ($V_2 - V_1$) cm^3					

(d) Giving explanations based on the results in TABLE,

(i) Arrange solutions 1 – 5 in order of increasing osmotic potential order

Order

.....

Explanation

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.....
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.....
.....

(ii) Suggest the solution(s) with most predictable results

Solution(s)

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Explanation

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.....
.....

(e) Explain the result in tube with solution 2.

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Question 3: (30 marks)

You are provided with specimens **P, Q, R, S** and **T**.

Examine the specimens using a hand lens or low power magnification of a microscope and answer the following questions.

(a) Give three structural differences and similarities between specimen **S** and **T**. (6 marks)

(i) Differences:

SPECMEN - S	SPECIMEN - T
1-	
2-	
3-	

(ii) Similarities

1.
2.
3.

(b) Describe three named parts observed in the head region of specimen **T**. (7 marks)

Structures	Descriptions
1-	
2-	
3-	

(c)(i) State four adaptive structural features for survival of specimen **P** in its habitat: - (4 marks)

- 1-
- 2-
- 3-
- 4-

(ii) Observe the last three segments at the end of one of the limbs of specimen **T** including the structures associated with the segments. Draw from inner view, but don't label. (7 marks)

(d)Using only the structures responsible for locomotion in the specimens, construct a dichotomous key to identify the specimens in the order **P, Q, R, S** and ending with **T**.
(NB. No marks will be awarded if the order is changed). (6 marks)

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END