P530/3
BIOLOGY
PRACTICAL
JULY/AUG 2024
3 hours 15 minutes

ASSHU ANKOLE JOINT MOCK EXAMINATIONS 2024

Uganda Advanced Certificate of Education

BIOLOGY

PRACTICAL

PAPER 3

3 HOURS 15 MINUTES

INSTRUCTIONS TO CANDIDATES

- This paper consists of **three** questions.
- Answer **all** questions.
- Write the answers in the spaces provided. No additional sheet(s) of paper should be inserted
- You are not allowed to start working with in the first 15 minutes. You are advised to use this time to read through the paper and ensure that you have all the apparatus, chemicals and specimens you may require.

For Examiners' use only		
Question	**Marks**	**Examiner's signature**
1		
2		
3		
TOTAL		

1. You are provided with a freshly killed specimen Z

a) (i) Giving three reasons, state the phylum to which it belongs.

(04 marks)

Phylum

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Reasons

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(ii) Draw and label the ventral view of the posterior abdominal surface to show features of the class to which the specimen belongs. *(06 marks)*

b) (i) Open the Buccal cavity and describe how it is adopted for the survival of the specimen. *(06 marks)*

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(ii) Examine the ventral side of the right fore and right hind feet. State any **four** differences between the fore foot and hind foot.

(04 marks)

Table 1

Fore foot	**Hind foot**

c) (i) Dissect specimen Z to open the abdominal cavity. Carefully disentangle the alimentary canal without causing much bleeding. Stretch out the duodenum and ileum. Measure the length of the ileum and duodenum in millimeters and record your results in Table 2. Calculate the ratio of the ileum to duodenum. *(03 marks)*

Table 2

Part	Length (cm)	Ratio
Duodenum		
Ileum		

(ii) Explain the significance of the ratio. *(07 marks)*

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d) Proceed with dissection by removing unnecessary structures in order to display major blood vessels that return blood from the left side of the abdominal cavity back to the heart *(10 marks)*

2. You are provided with specimen A and sucrose solutions of different concentrations as shown in table 3. Carry out the tests on the specimen using the solutions according to the following instructions.

Instructions

1. Cut long strip out of A using a cork borer of 0.5cm in diameter. All strips should be cut along the same axis.
2. From the long strips, cut out six strips each measuring 3cm in length.
3. Place one strip in each of the sucrose solutions ensuring that the strip is immersed.
4. Leave the set up for 1 hour. (You may proceed with other work in meantime)
5. After 1 hour, remove one strip at a time and measure its final length.
   a) Record the measurements appropriately in table 3.
   b) Complete the table by working out the initial. Final length ratio for each piece. *(09 marks)*

Table 3

Molarity of sucrose solution	**Initial length (cm)**	**Final length (cm)**	**Initial : final length ratio**
0.0M	3.0		
0.1M	3.0		
0.25M	3.0		
0.5M	3.0		
0.75M	3.0		
1.0M	3.0		

c) (i) On the graph page provided, plot a graph of initial length: final length ratio against the molarity of sucrose solution. *(09 marks)*

(ii) From your graph, deduce how the osmotic pressure of tissue of A varied in the different sucrose solutions. **(06 marks)**

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d) (i) Peel the remaining specimen A, and from it cut a cube of 1.0cm x 1.0cm x 1.0cm and make on extract by grinding the cube in a mortar and adding $10cm^3$ of water then decant label the extract solution A. Carry out Buiret's, Benedict's and iodine tests on extract A and record your tests, observations and deductions in table 4. ***(16 marks)***

Table 4

Test	**Observation Deduction.**
Buiret's test	

Benedict's test	
Iodine test	

3. You are provided with specimens B, C, D, E and F. Cut the specimens transversely,
   a) looking at the sections, describe seed arrangement in each of the following specimens. ***(10 marks)***

   i) B.....

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   ii) C.....

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iii) D.....

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iv) E.....

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v) F.....

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b) (i) State three internal features common to both specimens E and F.

(03 marks)

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(ii) State three differences in internal structures of specimens E and F

(03 marks)

Table 5

Specimen E	**Specimen F**

c) Limiting yourself to internal structures, construct a dichotomous key to identity them. *(10 marks)*

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END

Each candidate should be provided with the following.

- A large freshly killed rat, labeled Z.
- $20cm^3$ of 20 volumes hydrogen peroxide labeled solution G.
- Two large sized fresh irish potatoes labeled A.
- 0.5 cork borer
- Un ripe Mature avocado labeled B
- Un ripe mature orange fruit, labeled C
- Cucumber fruit, labeled D.
- Green pepper fruit labeled E
- Un ripe pawpaw fruit labeled F
- 4 plastic beakers
- Stop cock
- Sucrose solutions of different concentrations 0.0M, 0.1M, 0.29M, 0.5M. 0.75Mand 1.0M
- Mortar and pestle
- Filter paper
- Glass rod
- Light microscope, slides cover slip
- Knife
- 10 test tubes
- Labels
- Stop clock
- Dissecting kit pins board and cotton wool,
- A piece of thread 0.2m long
- Ruler (30cm long)

Access to

- Distilled water
- Reagents for carrying-out food tests.
- Source of heat
- Hot water