THE UNITED REPUBLIC OF TANZANIA

NATIONAL EXAMINATIONS COUNCIL

ADVANCED CERTIFICATE OF SECONDARY EDUCATION EXAMINATION

133/3A **BIOLOGY 3A**

(ACTUAL PRACTICAL A)

(For Both School and Private Candidates)

Time: 2:30 Hours **ANSWERS** **Year: 2018**

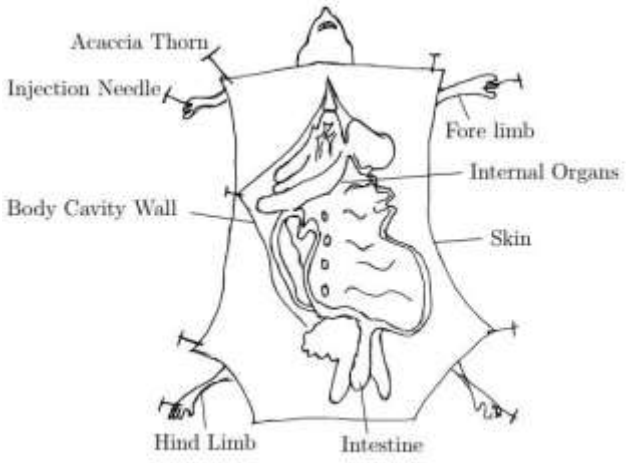
Instructions

1. This paper consists of three questions.

2. Answer all questions.

1. You have been provided with specimen K_1. Dissect the specimen K_1 in a usual way to display the digestive system and excretory system. Pin the ileum to your right side.

(a) Draw a large, neat and well labelled diagram of your dissection.



(b)(i) Name the structure in the specimen K_1 which is responsible for re-absorption of water molecules from undigested food materials.

Large intestine

(ii) How does the structure named in 1(b)(i) adapted to its function?

It has a large surface area, thin epithelial lining, and numerous villi to enhance absorption. It also contains cells specialized for active transport of salts and water.

(c) Explain how the centrally location of the gizzard in specimen K_1 help it to adapt its environment.

The central location of the gizzard ensures even distribution of muscular force during mechanical digestion. This aids efficient grinding of food and supports digestion without teeth, especially important in animals like birds.

2. You have been provided with solutions A and B.

(a) Using the chemicals and the reagents provided, carry out the biochemical experiment to identify the food substances contained in each solution A and B. Tabulate your results as shown in the following table.

Food Tested	Procedure	Observation	Inference
Solution A	Add iodine solution	Blue-black color forms	Starch present
Solution B	Add Benedict's solution and heat	Brick-red precipitate forms	Reducing sugar present

(b)(i) What is the role of the food substance(s) identified in solution A and B?

Starch – Provides long-term energy storage
Reducing sugars – Provide quick energy for metabolic activities

(ii) Briefly explain how the alimentary canal is adapted for absorption of the food substances identified in solution A and B.

The small intestine has numerous villi and microvilli to increase surface area for absorption. It also has a rich blood supply to transport absorbed sugars. Enzymes break starch into glucose for efficient absorption.

3. You have been provided with specimens G_2, G_3, G_4 and G_5.

(a)(i) Give two reasons why you agree or disagree that specimens G_2, G_3, G_4 and G_5 are members of the same Kingdom.

Agree:
- All are multicellular organisms.
- They exhibit locomotion and have specialized tissues and organs.

(ii) What are the observable differences between specimens G_2 and G_5 at Class level?

G_2 may have wings and three body parts (Insecta)
G_5 may have eight legs and no wings (Arachnida)

(b) State three adaptations of specimen G_4 to its life.

- Camouflage coloring for protection
- Clawed limbs for grasping or climbing
- Well-developed sense organs for hunting or detecting prey

(c) In what ways are specimens G_2 and G_5 important in the ecosystem?

G_2 (Insect) – Important in pollination, decomposition, and as food for other animals
G_5 (Arachnid) – Controls insect population by predation

(d) (i) Classify the specimen G_4 to class level.
Kingdom: Animalia
Phylum: Arthropoda
Class: Insecta
(ii) Where can we find the specimen G_5?
In dark corners, leaf litter, or under stones; mostly terrestrial environments such as soil, logs, or caves.