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: 2019**

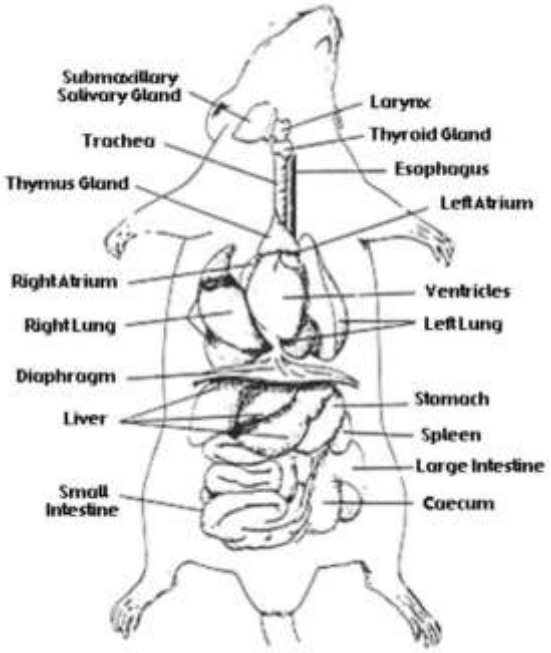
Instructions

1. This paper consists of three questions.

2. Answer all questions.

1. You have been provided with specimen S_1. Dissect specimen S_1 in a usual way and display the digestive system on the right side of the animal.
Leave your dissection properly displayed for assessment.

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



Labels should include: mouth, oesophagus, stomach, liver, pancreas, small intestine (duodenum and ileum), large intestine, rectum, and anus.

(b) State one role played by each part which makes up the following:
(i) Fore gut
- The fore gut includes the mouth, oesophagus, and stomach. Its role is ingestion, mechanical digestion, and initial breakdown of food using enzymes and gastric acid.

(ii) Mid gut
- The mid gut includes the small intestine (duodenum and ileum). Its role is chemical digestion using enzymes and absorption of nutrients into the bloodstream.

2. You have been provided with solutions S_2 and S_3.

(a) Identify the food substances present in each of the solutions S_2 and S_3 by using the chemicals and reagents provided only. Tabulate your work as shown in following table.

Food Tested	Procedure	Observation	Inference
S_2	Add iodine solution	Blue-black color appears	Starch present
S_3	Add Benedict's solution and heat	Brick-red precipitate forms	Reducing sugar present

(b) Which of an excess food substance identified in 2(a) is eliminated from the body?

Excess reducing sugar (glucose) is eliminated from the body through conversion to urea via the liver (if excess protein is also present) or by excretion in urine in diabetic conditions.

(c) Briefly explain the process responsible for the conversion of the food substance you named in 2(b) to a form that can be eliminated from the body.

Excess glucose is first converted into glycogen by insulin for storage. When beyond storage capacity, it is converted into fat. If glucose is not needed and insulin is deficient (as in diabetes), it is excreted through the kidneys into the urine.

3. You have been provided with specimens D_1, D_2 and D_3.

(a) Identify specimens D_1, D_2 and D_3 by their common names.

D_1 – Toad
D_2 – Lizard
D_3 – Snake

(b) State two adaptations shown by each of the specimens D_1 and D_2 to its habitat.

D_1 (Toad):
- Moist skin for gaseous exchange
- Webbed hind limbs for swimming

D_2 (Lizard):
- Scaly skin to prevent water loss in dry environments
- Clawed toes for climbing and gripping surfaces

(c) Classify each of the specimens D_1, D_2 and D_3 to Class level.

D_1 – Amphibia
D_2 – Reptilia
D_3 – Reptilia

(d) Study specimens D_2 and D_3 carefully then state why these specimens are said to belong to the same Kingdom but in different Class? Give two points in each.

They both belong to Kingdom Animalia because:
- They are multicellular and heterotrophic
- They possess specialized tissues and organs

They belong to different Classes because:
- D_2 (Lizard) has limbs, while D_3 (Snake) is limbless
- D_2 has external ears and movable eyelids, while D_3 lacks both features