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: 2014**

Instructions

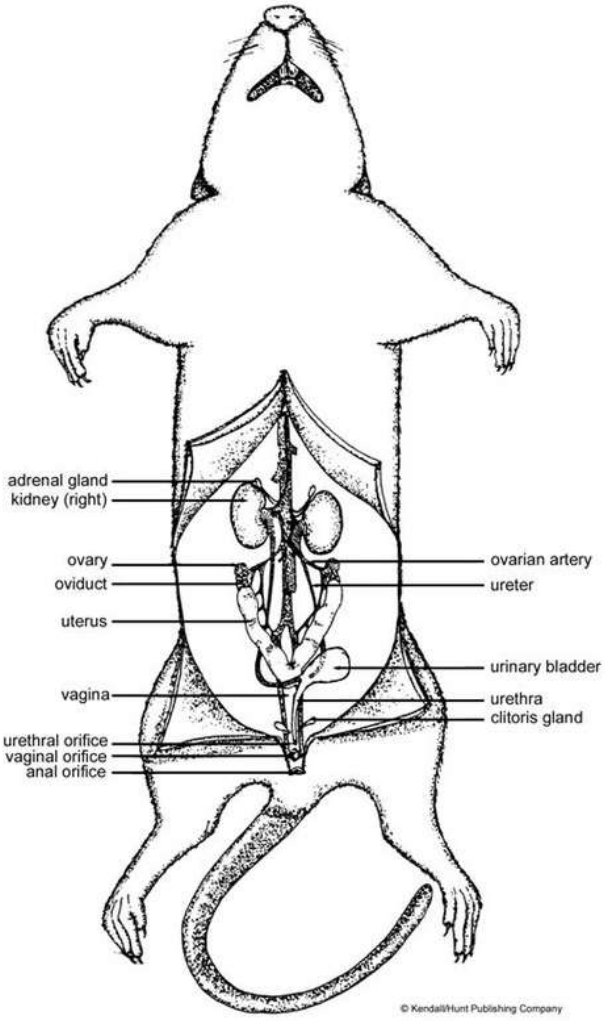
1. This paper consists of three questions.

2. Answer all questions.

1. Dissect specimen S_1 in the usual way. Carefully pin the alimentary canal to your right hand side. Clearly display the structures whose roles are:
(i) Digestion of food materials
(ii) Excretion
(iii) Reproduction

Leave your dissection properly displayed for assessment.

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



(b) Identify the sex of specimen S_1. Give reasons.

Sex: Male
Reason: Presence of testes and vas deferens, absence of ovaries or uterus
(If female: presence of ovaries and oviducts)

(c) State one role played by each part which makes up the fore gut.

Mouth – Ingestion and mechanical digestion
Oesophagus – Passage of food from mouth to stomach
Stomach – Initial protein digestion using gastric juices

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

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

Food Tested	Procedure	Observation	Inference
S_2	Add iodine solution	Blue-black color formed	Starch present
S_3	Add Biuret solution	Purple/violet color formed	Protein present

(b) Explain the basis of each test, which produced positive results in 2(a).

Iodine forms a blue-black complex with starch, indicating its presence.
Biuret solution reacts with peptide bonds in proteins to form a purple color.

(c) An excess of one food substance identified in 2(a) is stored in the body.
(i) Identify which of the food substances needs to be converted before storage?

Starch (broken down into glucose)

(ii) Name the organ and the hormone influencing the conversion of food substance to a form that can be stored.

Organ – Liver
Hormone – Insulin

(iii) State the form relevant for storage.

Glycogen

3. You have been provided with specimens E_1, E_2 and E_3.

(a) Identify specimens E_1, E_2 and E_3 by their common names.

E_1 – Moss
E_2 – Liverwort
E_3 – Fern

(b) State two adaptations shown by each specimen E_1 and E_2 to its habitat.

E_1 (Moss):
- Rhizoids for attachment to surfaces
- Ability to retain water in moist environments

E_2 (Liverwort):
- Flat thallus for absorbing water directly
- Gemma cups for asexual reproduction

(c) Classify the specimens E_1 and E_2 to Class level.

E_1 – Class Bryopsida
E_2 – Class Hepaticopsida

(d) Examine the underside of a frond of specimen E_3, then identify structures responsible for reproduction.

Sori – Clusters of sporangia (produce spores)

(e) Study specimens E_1 and E_3 carefully then state why these specimens are said to belong to the same Kingdom but not the same Division/Phylum.

Both belong to Kingdom Plantae.
E_1 (Moss) is non-vascular and belongs to Division Bryophyta.
E_3 (Fern) is vascular and belongs to Division Pteridophyta.
They differ in tissue structure, size, and mode of reproduction.