THE UNITED REPUBLIC OF TANZANIA
NATIONAL EXAMINATIONS COUNCIL OF TANZANIA
DIPLOMA IN SECONDARY EDUCATTION EXAMINATION

733/2A **BIOLOGY 2A**

(ACTUAL PRACTICAL A)

Time: 3 Hours **ANSWERS** **Monday, 13th May 2024**

Instructions.

1. This paper consists of **three (3)** questions.
2. Answer **all** questions
3. Question number 1 carries 40 marks and the rest carry 30 marks.
4. Cellular phones are **note** allowed in the examination room.
5. Write your **examination Number** on every page of your answer booklet(s).

1. You are provided with specimen C. Carry out dissection to display the urinogenital system. Leave your specimen properly displayed for assessment.

(a) Draw a large diagram of your dissection and label the structures related to a displayed system.

A labeled diagram of a dissected frog or toad showing:

- Kidney
- Urinary bladder
- Ureter
- Testes (if male) or ovaries (if female)
- Fat bodies
- Cloaca

The diagram should show these structures in the abdominal cavity after careful dissection from ventral side.

(b) Identify the sex of the specimen.

Answer:
If testes are visible as cream-colored, oval bodies near the kidneys — it's a **male**.
If ovaries are visible as large, lobed, black or grayish sacs with eggs — it's a **female**.

(c) From the specimen, name the organ that is
(i) similar to that of human being and has a function of excreting nitrogenous waste.

Answer: Kidney

(ii) responsible for production of gametes.

Answer: Testes (in male) or Ovaries (in female)

(d) Classify specimen C to class level.

Answer:
Kingdom: Animalia
Phylum: Chordata
Class: Amphibia

2. You have been provided with solution X_1.

(a) Using the reagents provided, carry out an experiment to identify food substance(s) contained in Solution X_1. Present your report in a tabular form as follows:

Food Tested	Procedure	Observation	Inference
Starch	Add iodine solution to X_1	Blue-black colour appears	Starch present
Reducing sugars	Add Benedict's solution to X_1 and heat in a water bath	Colour changes from blue to green/yellow/orange/red	Reducing sugar present
Protein	Add Biuret solution to X_1	Purple/violet colour appears	Protein present
Lipid	Add ethanol to X_1, then add water and shake	White emulsion forms	Lipid present

(b) From the results obtained, answer the following questions:

(i) State the role of each food substance(s) identified from solution X_1 in human body.

Answer:

- Starch: Provides energy after being broken down into glucose.
- Reducing sugars: Provide quick and easily available energy.
- Protein: For growth, repair, and building body tissues.
- Lipid: Provides energy, insulates the body, and forms cell membranes.

(ii) What is the role of dilute HCl in this experiment?

Answer:
It is used to hydrolyze complex carbohydrates like starch into simpler reducing sugars before testing with Benedict's solution.

(iii) State the site of digestion for each food substance(s) identified from solution X_1.

- Starch: Mouth (salivary amylase) and small intestine (pancreatic amylase)
- Reducing sugars: Small intestine

- Protein: Stomach (pepsin) and small intestine (proteases)
- Lipid: Small intestine (by bile and lipase)

(iv) Identify any two natural food stuff from which solution X_1 could have been extracted.

Answer:

- Milk
- Groundnuts

3. With the aid of a hand lens, observe specimen J, K, L and M provided and then answer the following questions:

(a) Write the common names of each of the specimen J, K, L and M.

Answer:
Specimen J: Grasshopper
Specimen K: Housefly
Specimen L: Tapeworm
Specimen M: Roundworm

(b) In which class(s) do specimen J and K belong? Give two reasons that guide you to place them in the mentioned class(s).

Answer:
Specimen J: Class Insecta
Specimen K: Class Insecta

Reasons:

1. Both have three pairs of legs.
2. Both have segmented bodies divided into head, thorax, and abdomen.

(c) Observe the mouth structure of a specimen K and
(i) suggest the type of food the organism feeds on.

Answer:
Liquid food (juices, nectar, decaying matter)

(ii) state the mechanism by which the organism feeds on.

Answer:
By sucking or lapping using its proboscis.

(d) Draw diagrams of specimen L and M and label the structures responsible for reproduction and nutrient absorption.

For Tapeworm (L):

- Label scolex (head)

- Proglottids (segments)
- Reproductive organs (testes and ovaries in proglottids)
- Body wall (for nutrient absorption)

For Roundworm (M):

- Label mouth
- Intestine
- Reproductive organs (ovary/testis, uterus/sperm duct depending on sex)
- Anus

The structures for nutrient absorption:

- In tapeworm: Body wall
- In roundworm: Intestine

The structures for reproduction:

- In tapeworm: Reproductive organs within proglottids
- In roundworm: Ovary/testis