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, 14th May 2018 a.m.**

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 have been provided with specimen A. Dissect the specimen in the usual way to fully displaying the visceral system. Deflect the gut to the left side of the animal. Leave your dissection properly displayed for assessment.

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

Your diagram should show the dissected frog or toad with:

- Heart
- Lungs
- Liver (with three lobes)
- Stomach
- Small intestine
- Large intestine
- Gall bladder
- Pancreas
- Spleen

The gut should be deflected to the left to clearly display these organs.

(b) Identify five parts involved in digestion of food from your diagram in part (a).

Answer:

1. Mouth
2. Stomach
3. Small intestine
4. Pancreas
5. Liver

(c) State the role of each part you listed in part (b).

Answer:

1. Mouth: Ingests food and performs mechanical breakdown with the help of the tongue and jaws.
2. Stomach: Stores food temporarily and carries out initial digestion, especially of proteins by gastric juices.
3. Small intestine: Completes digestion of food and absorbs nutrients into the bloodstream.
4. Pancreas: Produces digestive enzymes (amylase, lipase, protease) and hormones for regulating blood sugar.
5. Liver: Produces bile, which emulsifies fats to aid digestion in the small intestine.

(d) Classify the specimen A to its Order level.

Answer:
Kingdom: Animalia
Phylum: Chordata
Class: Amphibia
Order: Anura

(e) Briefly describe four adaptations of specimen A to its mode of life.

Answer:

1. Moist, smooth skin that allows cutaneous respiration in water and on land.
2. Webbed hind limbs adapted for efficient swimming.
3. Long, muscular hind limbs for jumping to escape predators and catch prey.
4. Bulging eyes that provide a wide field of vision above water while the body remains submerged.

2. You have been provided with solution B.

(a) Perform the biochemical test to identify the food substance(s) contained in solution B by using the chemical reagents provided. Tabulate your result as shown in table 1.

Table 1

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

(b) State one role of each food substance obtained from solution B in human body.

Answer:

- Starch: Provides energy after digestion into glucose.
- Reducing sugars: Provide quick, readily available energy.
- Protein: Builds, repairs body tissues, and forms enzymes and hormones.

- Lipid: Serves as a long-term energy store, insulates the body, and protects vital organs.

(c) Name three key common elements to all food substances identified in solution B.

Answer:

1. Carbon
2. Hydrogen
3. Oxygen

(d) From the food substances identified in solution B, which one is mostly required by children and elders? Give a reason to support your answer.

Answer:
Protein — because it is essential for growth in children and for repairing worn-out tissues in elders.

3. You are provided with two samples of specimen Z. Carefully examine them by using the following guidelines:

(a) Identify specimen Z by its common name.

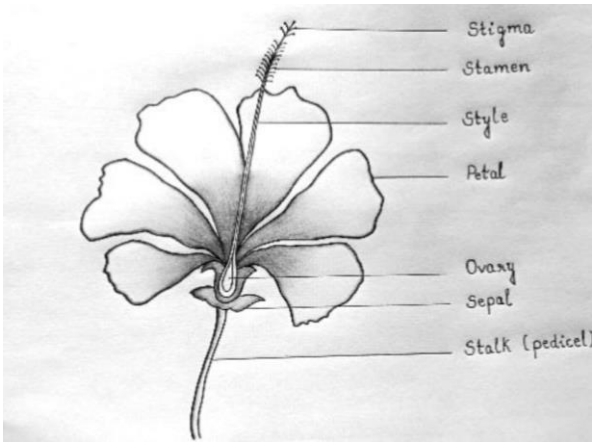
Answer: Hibiscus flower

(b) Classify the specimen Z to Class level.

Answer:
Kingdom: Plantae
Phylum: Angiospermophyta
Class: Dicotyledonae

(c) Remove all petals and sepals from specimen Z. Then, draw and label five remained parts of specimen Z.

Answer:



(d) Take another sample of specimen Z and carefully remove all the sepals, petals and the male part. Then, by using scalpel cut the cross section of a female part. Take one of the parts with the cut surface facing upwards and observe it using a hand lens, then draw a well labeled diagram.

Answer:
Describe the diagram as follows:

A cross section of the ovary showing:

- Ovary wall
- Ovules inside the ovary
- Locule (chamber within ovary)
- Placenta (where ovules attach)