THE UNITED REPUBLIC OF TANZANIA

NATIONAL EXAMINATIONS COUNCIL

CERTIFICATE OF SECONDARY EDUCATION EXAMINATION

033/2A **BIOLOGY 2A**

(ACTUAL PRACTICAL A)

(For Both School and Private Candidates)

Time: 2:30 Hours **ANSWERS** **Year: 2011**

Instructions

1. This paper consists of two questions.

2. Answer all questions.

1. The solution prepared contained various food substances.

(a) Use the chemicals and reagents provided to identify the food substances present in solution S_1. Tabulate your work as shown in the following Table:

Food tested: Starch
Procedure: Add iodine solution to solution S_1
Observation: Blue-black coloration appears
Inference: Starch is present

Food tested: Reducing sugars
Procedure: Add Benedict's solution and heat the mixture in a water bath
Observation: Brick-red precipitate forms
Inference: Reducing sugars are present

Food tested: Protein
Procedure: Add Biuret solution to solution S_1 and shake gently
Observation: Violet coloration appears
Inference: Protein is present

Food tested: Lipid
Procedure: Mix solution S_1 with ethanol, shake, and add water
Observation: Milky white emulsion forms
Inference: Lipid is present

(b) State the function in the human body of each food identified in 1(a) above.
Starch: Provides long-term energy when broken down to glucose
Reducing sugars: Supply quick energy for metabolic activities
Protein: Essential for body growth, repair of tissues, and enzyme formation
Lipid: Serves as an energy reserve, insulation, and protection of organs

(c) Name two enzymes necessary for digestion of food substance(s) identified in (a) above.
Starch: Amylase and maltase
Reducing sugars: Sucrase and lactase
Protein: Pepsin and trypsin
Lipid: Lipase and phospholipase

(d) To each type of food identified above, name at least one source in which the food has been extracted.
Starch: Maize
Reducing sugars: Ripe banana
Protein: Eggs
Lipid: Groundnuts

2. Study specimen A, B and C then:

(a) Write the common names of specimen A, B and C.
Specimen A: Earthworm
Specimen B: Cow
Specimen C: Bean seed

(b) Classify specimen A and B to the phylum level.
Specimen A: Phylum Annelida
Specimen B: Phylum Chordata

(c) State the habitat and one economic importance of specimen A.
Habitat: Moist soil
Economic importance: Helps aerate the soil and decompose organic matter, improving soil fertility

(d) Outline four economic importance of specimen B.
- Provides milk used as food
- Source of meat for human consumption
- Provides manure used in farming
- Used as a draft animal for ploughing and transport

(e) Use the scalpel provided to cut specimen C longitudinally into two equal halves. Then, draw a neat, well labelled diagram of a specimen.
(The diagram should show cotyledon, plumule, radicle, hilum, and micropyle.)

(f) Name the division of specimen C.
Specimen C (bean seed) belongs to the Division Angiospermophyta.

(g) State the observable features you can use to place the specimen into its respective phylum/division.
Specimen C has two cotyledons, enclosed seeds within pods, and produces flowers—features that are typical of Division Angiospermophyta.