THE UNITED REPUBLIC OF TANZANIA

NATIONAL EXAMINATIONS COUNCIL

CERTIFICATE OF SECONDARY EDUCATION EXAMINATION

033/2C **BIOLOGY 2C**

(ACTUAL PRACTICAL C)

(For Both School and Private Candidates)

Time: 2:30 Hours **ANSWERS** **Year: 2010**

Instructions

1. This paper consists of two questions.

2. Answer all questions.

1(a) You have been provided with various food samples S_1 and S_2. Carry out experiments to identify the food substance(s) found in each sample. Tabulate your results as in Table 1 below:

Test for: Starch
Procedure: Add iodine solution to each sample
Observation: Blue-black coloration appears
Inference: Starch is present

Test for: Reducing sugars
Procedure: Add Benedict's solution to each sample and heat in a water bath
Observation: Brick-red precipitate forms
Inference: Reducing sugar is present

Test for: Proteins
Procedure: Add Biuret solution and shake gently
Observation: Purple coloration
Inference: Proteins are present

Test for: Lipids
Procedure: Mix with ethanol, shake, then add water
Observation: Milky white emulsion
Inference: Lipid is present

1(b)(i) What kind of disease in which young children suffer from a lack of a certain food substance found in S_2?
Kwashiorkor is the disease caused by lack of protein in the diet of young children.
1(b)(ii) What is the food substance referred in (b)(i)?
The food substance is protein.

1(b)(iii) Give three (3) examples of the sources containing the food substance mentioned in (b)(ii).
- Eggs
- Beans
- Meat

1(c) What are the functions of the food substances identified in S_1 and S_2 in the human body?
Starch: Provides long-term energy.
Reducing sugars: Provide quick energy for metabolism.
Proteins: Used for body growth, repair of tissues, and formation of enzymes and hormones.
Lipids: Store energy, offer insulation, and protect internal organs.

2(a)(i) Identify specimens A, B, C, D and E by their common names.
A: Grasshopper
B: Termite

C: Cockroach
D: Butterfly
E: Housefly

2(a)(ii) Mention the Phylum and class of each of the organisms.
A: Phylum Arthropoda, Class Insecta
B: Phylum Arthropoda, Class Insecta
C: Phylum Arthropoda, Class Insecta
D: Phylum Arthropoda, Class Insecta
E: Phylum Arthropoda, Class Insecta

2(a)(iii) Why are specimens A and E classified under the same class?
Both A and E are insects with three main body parts (head, thorax, abdomen), three pairs of legs, one pair of antennae, and compound eyes. They also have wings and go through metamorphosis.

2(a) What distinctive features place specimens A, B and C into their respective classes?
They all have exoskeletons, segmented bodies, jointed appendages, and undergo metamorphosis. Their three-part body structure and presence of antennae and compound eyes further classify them as insects.

2(b)(i) Identify the habitats of A, C and D.
A (Grasshopper): Grassy fields and farmlands
C (Cockroach): Dark, damp areas like kitchens and drains
D (Butterfly): Gardens, forests, and places with flowers

2(b)(ii) State the economic importance of specimen C.
Cockroaches can be pests by contaminating food and spreading disease, but they are also used in scientific research to study nervous and muscular systems.