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: 2014**

Instructions

1. This paper consists of two questions.

2. Answer all questions.

1. You are provided with specimens X and Z.

(a)(i) Prepare separate solution from specimens X and Z. Label them as solution X and Z respectively.
- Crush each specimen (X and Z) using a mortar and pestle
- Add a small amount of distilled water to each specimen
- Stir to make a homogenous mixture
- Filter the mixture using a muslin cloth or sieve to obtain clear solutions
- Label them as solution X and solution Z respectively

(ii) Write the procedure you followed to prepare solution X and Z.
- Peel and cut specimen X and Z into small pieces
- Crush them separately using mortar and pestle
- Add water and mix well
- Filter to obtain clear extracts
- Label them accordingly as solution X and Z

(b) Carry out an experiment to identify the food substances present in the solutions X and Z. Record your experimental work as shown in Table 1 below.

Table 1

Food tested	Procedure	Observation	Inference
Starch (X)	Add iodine solution to solution X	Blue-black color	Starch is present
Reducing sugar (Z)	Add Benedict's solution to Z and heat gently	Brick-red precipitate	Reducing sugar present

(c) State two properties of the food substance identified in the solution X.
- Starch is insoluble in cold water, meaning it forms a suspension and not a true solution.
- Starch gives a characteristic blue-black color when iodine solution is added, making it easy to detect.

(d) Name four other sources where food substances identified in solutions X and Z are found.
- For starch (solution X): cassava, rice, maize, yam
- For reducing sugar (solution Z): honey, ripe bananas, fruits like mango, sugarcane juice

(e) Mention the parts of the alimentary canal in which the digestion of the food substance identified in solution Z takes place.
- Mouth: where some disaccharides begin breakdown
- Small intestine: main site for reducing sugar digestion

(f) Name the enzymes responsible for digestion of food substance identified in solution Z until the end product is produced.
- Amylase: breaks down starch to maltose

- Maltase, sucrase, lactase: break down disaccharides to glucose

(g) In which form is the food substance identified in solution X stored in human body?
- It is stored as glycogen, which is a storage form of glucose found in liver and muscles

(h) State one function of the food identified in each solution X and Z in human body.
- Starch (X): Provides long-term energy when converted to glucose
- Reducing sugar (Z): Offers immediate energy for cell metabolism

2. You have been provided with specimens B, C, D and E.

(a)(i) Identify specimens B, C, D and E by their common names.
- B: Bean seed
- C: Butterfly
- D: Spider
- E: Lizard

(ii) To which Kingdom(s) do specimens C, D and E belong?
- All three (C, D, E) belong to Kingdom Animalia

(iii) Name the habitats of specimens B, C, D and E.
- B (Bean): Farmlands with fertile soil
- C (Butterfly): Flower gardens, meadows, fields
- D (Spider): Bushes, trees, corners of buildings
- E (Lizard): Warm areas, under rocks, dry ground, walls

(iv) Write two adaptations of specimen E to its habitat.
- Has scaly skin to prevent water loss in hot, dry environments
- Possesses sharp claws and strong limbs for climbing and gripping surfaces

(b) State two distinctive characteristics that place each of specimen C and D into their respective Kingdom.
- C (Butterfly): Has jointed limbs and body segmented into head, thorax, and abdomen; undergoes metamorphosis
- D (Spider): Has exoskeleton and jointed appendages; body divided into cephalothorax and abdomen

(c)(i) List down two advantages of specimen E.
- Controls insect population by feeding on them
- Source of food in some cultures

(ii) State two distinctive characteristics that place specimen E into its respective Class.
- Has scaly skin, which is a feature of Class Reptilia
- Lays eggs on land and breathes through lungs

(iii) Draw a well labeled diagram of specimen E.