THE UNITED REPUBLIC OF TANZANIA

NATIONAL EXAMINATIONS COUNCIL OF TANZANIA

CERTIFICATE OF SECONDARY EDUCATION EXAMINATION

033/2B **BIOLOGY 2B**

(ACTUAL PRACTICAL 2B)

Time : 3 Hours **ANSWERS** **Year : 2020**

Instructions

1. This paper consists of **two (2)** questions. Answer all questions.
2. Each question carries **twenty five (25)** marks.
3. Communication devices and any unauthorised materials are **not** allowed in the examination room.
4. Write your **Examination Number** on every page of your answer booklet(s).

1. You are provided with a piece of mirror and food samples labelled by letter A, B, C and D. Carry out experiments under procedures (i) – (v) and then answer the questions that follow:

(a) Identify the function of each sense organ identified in procedure (i).
The eyes enable vision to detect light and images. The nose allows the sense of smell to detect odours. The ears enable hearing and balancing of the body. The tongue helps in tasting different flavours. The skin enables the sense of touch and temperature detection.

(b) Name the stimuli perceived by each of the sense organs identified in procedure (i).
The eyes perceive light stimuli. The nose perceives chemical stimuli in the form of odours. The ears perceive sound waves as auditory stimuli. The tongue perceives chemical stimuli in the form of tastes. The skin perceives mechanical stimuli such as pressure, touch, and temperature.

(c) What is the shape of the samples C and D?
Sample C is oval in shape while sample D is round in shape.

(d) Identify the coarseness of samples C and D.
Sample C is smooth while sample D is rough.

(e) Identify the contents producing the sound inside sample D.
The sound inside sample D is produced by seeds present within it.

(f) Draw a well labeled diagram of sense organ observed in the mouth and locate the regions corresponding to the taste of the following food samples: (i) A (ii) B (iii) C.
[Expected labelled diagram of the tongue: tip for sweet (A), sides for sour (B), back for bitter (C)].

(g) Briefly explain how the nervous system recognizes the taste of food samples.
Taste buds on the tongue detect chemicals in food and generate impulses. These impulses travel via sensory nerves to the brain. The brain interprets the impulses, recognizing the specific taste as sweet, sour, salty or bitter.

2. You are provided with specimens Q, R, S and T and answer the questions that follow:

(a) Classify the specimens Q, R and S from Phylum/Division to Class level.
Specimen Q: Kingdom Plantae, Division Bryophyta, Class Musci.
Specimen R: Kingdom Animalia, Phylum Arthropoda, Class Insecta.
Specimen S: Kingdom Plantae, Division Angiospermophyta, Class Monocotyledonae.

(b) What distinctive features of the specimen R makes it typical representative of the Class it belongs?
It has a body divided into head, thorax and abdomen. It possesses three pairs of legs. It has one pair of antennae and compound eyes.

(c) What are the three observable differences between the specimens Q and R at Class level?
Specimen Q is non-vascular while specimen R has a complex vascular system. Specimen Q reproduces using spores while specimen R reproduces sexually with eggs and sperm. Specimen Q is stationary and autotrophic while specimen R is mobile and heterotrophic.

(d) (i) What is the habitat of each of the specimens S and T?
Specimen S lives on land, mainly in grassland or cultivated fields. Specimen T lives in aquatic environments such as rivers and ponds.

(ii) Identify three observable features which help the specimen T to adapt its habitat.
It has streamlined body to reduce water resistance. It has gills for respiration in water. It has fins to enable swimming and balance in water.

(e) Give three advantages of the products produced by each specimens S and T for the development of processing industry in Tanzania.
Specimen S provides cereals that are used in milling and brewing industries. It also provides raw materials for animal feed production. Specimen T provides fish which is processed for food, oil, and fertilizer production. The fisheries industry also creates employment and foreign exchange earnings.