THE UNITED REPUBLIC OF TANZANIA

NATIONAL EXAMINATIONS COUNCIL OF TANZANIA

CERTIFICATE OF SECONDARY EDUCATION EXAMINATION

033/2C **BIOLOGY 2C**

(ACTUAL PRACTICAL 2C)

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 mirror and you are required to hold it up until the image of the face is reflected on the surface of the mirror. Observe all sense organs on the mirror by touching them and then answer the questions that follow:

(a) What were the sense organs observed on the surface of the mirror?
The sense organs observed on the surface of the mirror were the eyes, ears, nose, tongue and skin.

(b) (i) Identify the sense organ responsible for hearing.
The ears are the sense organ responsible for hearing.

(ii) What nervous mechanism enables your hearing sense organs to recognize the sound?
Sound waves are received by the ears and converted into electrical impulses by the cochlea. These impulses travel through the auditory nerve to the brain where they are interpreted as sound.

(c) (i) Identify the sense organ responsible for vision.
The eyes are the sense organ responsible for vision.

(ii) What type of stimuli was perceived by the organ mentioned in (c)(i)?
The type of stimuli perceived by the eyes is light.

(d) Draw a well labelled diagram of the sense organ for vision to show the front view as you can see it on the surface of the mirror.
[Expected well labelled diagram showing cornea, pupil, iris, and sclera].

(e) Using any three labelled parts in (d) as a reference; explain what will happen in your daily life if the parts are seriously damaged.
If the cornea is damaged, light will not be properly refracted, leading to blurred or lost vision.

If the pupil is damaged, the regulation of the amount of light entering the eye will be impaired, causing difficulty in seeing under bright or dim light.

If the iris is damaged, the control of the pupil size will be affected, leading to inability to adjust to changes in light intensity.

2. You are provided with specimens T, U and V, study them carefully and answer the questions that follow:

(a) (i) Classify the specimens T and V to Class level.
Specimen T belongs to the Class Insecta.
Specimen V belongs to the Class Pisces.

(ii) Give two observable distinctive structures of each of the specimens T and V used to place them in their respective Classes.
Specimen T has three pairs of jointed legs and one pair of antennae.
Specimen T has a body divided into head, thorax and abdomen.
Specimen V has gills for breathing in water.
Specimen V has fins and scales covering its body.

(b) (i) Give the habitat for each of the specimens U and V.
Specimen U lives in moist terrestrial environments.
Specimen V lives in aquatic habitats such as rivers, lakes and oceans.

(ii) How do the specimens U and V adapt to their habitats? Give three points for each.
Specimen U has moist skin that allows gaseous exchange in damp environments.
Specimen U has long hind limbs adapted for jumping and escaping predators.
Specimen U has eyes and nostrils positioned on top of the head to allow breathing and vision while submerged.
Specimen V has gills that allow respiration in water.
Specimen V has streamlined bodies to reduce resistance while swimming.
Specimen V has fins to enable balance, steering and movement in water.

(c) Why the specimen V dies when taken out of its habitat?
Specimen V dies when taken out of water because it cannot use its gills to extract oxygen from air, leading to suffocation.

(d) (i) Why specimen U was formally placed in the Kingdom Plantae? Give two reasons.
Specimen U was thought to belong to Kingdom Plantae because it is often found in moist habitats resembling plant environments.
Specimen U also lays eggs in water and was mistakenly associated with aquatic plants.

(ii) State three economic importance of the specimen U in our daily lives.

Specimen U controls insect populations by feeding on them, reducing pests.

Specimen U serves as food for humans and other animals.

Specimen U is used in scientific research, especially in genetics and developmental studies.