THE UNITED REPUBLIC OF TANZANIA

NATIONAL EXAMINATIONS COUNCIL OF TANZANIA

CERTIFICATE OF SECONDARY EDUCATION EXAMINATION

033/2C **BIOLOGY 2C**

(ACTUAL PRACTICAL C)

Time : 3 Hours **ANSWERS** **Year : 2022**

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 specimen C_1, D_1 and E.

(a) Observe the displayed reproduction system in the dissected specimen C_1 and then answer the following questions:

(i) What is a sex of the specimen C_1? Give a reason to support your answer.
The sex of specimen C_1 is male. This is because the reproductive system observed contains testes and sperm ducts but lacks ovaries and uterus.

(ii) Draw a well labelled diagram of the reproductive system observed in dissected specimen C_1.
[Expected labelled diagram showing testes, sperm ducts, seminal vesicles and penis].

(b) Carefully use the hand lens to observe the structures used for reproduction in specimen D_1 and then draw a diagram of a frond with its reproductive structures.
[Expected diagram showing fern frond with sori containing sporangia on the underside].

(c) What are types of reproduction exhibited by specimen D_1 and E? Give a reason on each to support your answer.
Specimen D_1 exhibits asexual reproduction because it reproduces using spores found in sori.
Specimen E exhibits sexual reproduction because it produces male and female gametes which fuse to form a zygote.

(d) Briefly explain how the type of reproduction in specimens D_1 and E occurs.
In specimen D_1, spores are released from sporangia, dispersed by wind and germinate to form a gametophyte which later produces gametes.
In specimen E, gametes are formed in reproductive organs, and fertilization occurs when the male gamete fuses with the female gamete, forming a zygote which develops into a new organism.

(e) In what ways are specimens D_1 and E useful to human being? Give two points for each.
Specimen D_1 improves soil fertility by contributing to organic matter when it decays. It is also used as ornamental plants in gardens.
Specimen E provides food to humans as it contains proteins and vitamins. It is also used in scientific research for studying human physiology and reproduction.

2. You are provided with specimens D, F and G.

(a) Classify each of the specimens D, F and G to Class level.
Specimen D – Class Pteridophyta (ferns).
Specimen F – Class Insecta.
Specimen G – Class Fungi.

(b) Why specimen D and F were placed in the same Kingdom but different Division?
They were both placed in the Kingdom Plantae because they are multicellular and have cell walls. They are placed in different Divisions because specimen D reproduces using spores while specimen F reproduces using seeds.

(c) Why is it important for scientists to use natural classification system to classify the specimen D and F?
It is important because natural classification groups organisms based on evolutionary relationships and genetic similarities, which avoids confusion.

(d) What would be the disadvantages for scientists to use artificial classification system to classify specimen D and F?
Artificial classification may group organisms based only on superficial features, leading to misidentification. It ignores evolutionary relationships, so organisms with similar functions but unrelated ancestry may be placed together wrongly.

(e) Draw a well labelled diagram of specimen F.
[Expected labelled diagram showing head, thorax, abdomen, antennae, compound eyes, and three pairs of legs].

(f) In what way are the products from specimen G useful for industrial development? Give two points.
Specimen G produces yeast which is used in the brewing and baking industries.
It also produces antibiotics like penicillin which are important in pharmaceutical industries.