THE UNITED REPUBLIC OF TANZANIA
NATIONAL EXAMINATIONS COUNCIL OF TANZANIA
ADVANCED CERTIFICATE OF SECONDARY EDUCATION EXAMINATION

133/1 **BIOLOGY 1**

(For Both School and Private Candidates)

Time: 3 Hours **Year: 2024**

Instructions

1. This paper consists of sections A and B with a total of **ten (10)** questions.
2. Answer **all** questions in section A and **two (2)** questions from section B.
3. Section A carries **seventy (70)** marks and section B carries **thirty (30)** marks.
4. All writing must be in **blue** or **black** ink, **except** drawings which must be in pencil.
5. Communication devices and any unauthorised materials are **not** allowed in the examination room.
6. Write your **Examination Number** on every page of your answer booklet(s).

SECTION A (70 Marks)

Answer **all** questions in this section. Each question carries **ten (10)** marks.

1. (a) A Form Five student was provided with a sample containing globular protein to identify its features. Which five features did the student identify?

   (b) Denatured protein molecules lose both their three dimension structure and functions. Explain five ways which you would use to prevent denaturation.

2. (a) Explain how water is used in each of the following processes in human body:
   (i) Transportation
   (ii) Removal of wastes
   (iii) Secretion
   (iv) Hearing and balance

   (b) Use one point in each case to justify the need for animal cells to possess each of the following organelles/structures.
   (i) Peroxisomes
   (ii) Lysosomes
   (iii) Rough endoplasmic reticulum
   (iv) Glycocalyx

3. (a) Draw a diagram of a synapse and label its four parts.

   (b) Use four points to show how the structure of a synapse is adapted for transmission of impulse.

4. (a) Anaerobic respiration is a wasteful process especially in animal cells where it produces only 2 ATP from breakdown of a glucose molecule. Propose a way in which the process can be prevented.

   (b) Evaluate the number of ATP produced in each stage of respiration (Glycolysis, Krebs' cycle and Electron transport chain) when a glucose molecule is completely oxidized to make a total of 38 ATP.

5. (a) A woman gave birth to three babies in a single pregnancy (triplets). The two babies were genetically identical while one was different. She wondered how it was possible. In seven points, explain how the triplets resulted.

   (b) In mammals, giving birth involves three processes namely; dilation of cervix, expulsion of the foetus with the head first and expulsion of the placenta. Give an importance of each stage.

6. (a) Use five points to show the importance of classifying organisms.

   (b) Use five points to support the statement that, artificial system of classification is not preferred by scientists.

7. (a) Hydrochloric acid is one of the components of gastric juice produced by the stomach wall during digestion of food. Give seven points to show its importance in digestion of food in human being.

(b) Give three points to justify the need for secretion of mucus in the stomach epithelial and gastric glands.

SECTION B (30 Marks)

Answer **two (2)** questions in this section. Each question carries **fifteen (15)** marks.

8. Describe the process of water uptake from the soil to the xylem.

9. A certain couple stayed together for ten consecutive years and wishes to have children but they could not. Explain the possible causes of the problem for each partner.

10. Draw a diagram to show the path taken by the air from the nose to the alveolar and explain six adaptations of alveoli for gaseous exchange.

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133/2 **BIOLOGY 2**

(For Both School and Private Candidates)

Time: 3 Hours **Year : 2024**

Instructions

1. This paper consists of **six (6)** questions.
2. Answer **five (5)** questions.
3. Each question carries **twenty (20)** marks.
4. All writing must be in **blue** or **black** ink, **except** drawings which must be in pencil.
5. Communication devices and any unauthorised materials are not allowed in the examination room.
6. Write your **Examination Number** on every page of your answer booklet(s).

1. Identify four Classes of the Phylum to which a crab belongs and analyse four characteristics of each Class.

2. Describe four factors which determine the form in which nitrogenous wastes are eliminated in animals.

3. A viable bean seed was placed in the soil. After seven days the seed developed into seedling.
   (a) Explain physiological process which led to the development of seedling.
   (b) Analyse four external conditions that enabled the development of seedling.

4. (a) Account for six success of Mendel's work in genetics.
   (b) The following table shows blood transfusion in relation to the Rhesus factor. Assess the compatibility of the blood by putting in each cell a tick (√) if there is no agglutination or a cross (**X**) if agglutination will occur.

Donor

Recipient	A^+	A^-	B^+	B^-	AB^+	AB^-	O^+	O^-
A^+								
A^-								
B^+								
B^-								

5. Describe any four theories of origin of life.

6. Describe the following types of the world biomes based on their characteristics and distribution.
   (a) Chapparal
   (b) Tropical Savannah
   (c) Grassland
   (d) Desert

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133/3A **BIOLOGY 3A**
(ACTUAL PRACTICAL 3A)
(For Both School and Private Candidates)

Time: 3:20 Hours **Year: 2024**

Instructions

1. This paper consists of **three (3)** questions.
2. Answer **all** the questions.
3. Question **one (1)** carries **twenty (20)** marks and the other **two (2)**, carry **fifteen (15)** marks each.
4. All writing should be in **blue** or **black** ink, **except** diagrams which must be in pencil.
5. Communication devices and any unauthorised materials are **not** allowed in the examination room.
6. Write your **Examination Number** on every page of your answer booklet(s).

1. You have been provided with specimen C_1. Dissect the specimen in a usual way and display the digestive system and pin it to your right hand side.

   (a) Draw a large, neat diagram of your dissection and label twelve parts.
   Leave your dissection properly displayed for assessment.

   (b) What are the roles played by digestive parts you have labelled in 1(a)? Give five points.

2. You have been provided with specimen **N**.

   (a) Observe the specimen carefully then answer the following questions:
   (i) What function do the structures constituting the female and male parts play in the specimen?
   (ii) How does the specimen manage to attract insects for pollination?
   (iii) How does fertilization process take place in the specimen?

   (b) Using a scalpel, remove all petals and sepals from the specimen then answer the following questions:
   (i) Draw a neat and well labelled diagram of the remaining part of the specimen.
   (ii) Which part of the specimen receives the male gametes during pollination?
   (iii) How the part responsible for transfer of male gametes to the place where fertilization takes place adapted to its function?

3. You have been provided with specimens **R**, **S** and **T**. Study the specimens and answer the following questions.

   (a) (i) What are the common names of specimens **R**, **S** and **T**?
   (ii) Specimens **S** and **T** belong to which Class(s)?
   (iii) Why do specimens **R**, **S** and **T** placed in the Class they belong?

   (b) (i) Where is the habitat for specimens **R** and **S**?
   (ii) How does specimen **S** adapted to its habitant?
   (iii) In what ways do specimens **S** and **T** considered useful to human being?

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133/3A

BIOLOGY 3A
(ACTUAL PRACTICAL 3A)

03 HOURS ADVANCE INSTRUCTIONS

1.0 IMPORTANT

1.1 GREAT CARE MUST BE TAKEN **NOT** TO DIVULGE THESE INSTRUCTIONS TO BOTH CANDIDATES AND UNAUTHORIZED PERSONS EITHER DIRECTLY OR INDIRECTLY.

1.2 MAKE SURE THAT THE CANDIDATES ARE PROVIDED WITH SPECIMENS, CHEMICALS AND APPARATI AS INDICATED IN THESE 3 HOURS PRACTICAL ADVANCE INSTRUCTIONS ONLY AND **NOT** OTHERWISE.

2.0 PREPARATION OF THE SPECIMENS AND SOLUTIONS

Use chloroform to anaesthetize the fresh cockroaches about 10 minutes before the commencement of the examination. Provide 1 specimen to each candidate.

3.0 LABELLING OF THE SPECIMENS

(a) Fresh Cockroach (1 per candidate) ---------- C_1
(b) Hibiscus flower (1 per candidate) ---------- N
(c) Crab (1 for 4 candidates) ---------- R
(d) Grasshopper (1 per candidate) ---------- S
(e) Preserved rat (1 for 4 candidates) ---------- T

4.0 APPARATI

Provide each candidate with the following apparati:
(a) 1 dissecting kit/instruments
(b) 1 dissecting board/tray
(c) 1 scalpel/knife
(d) 4 watch glasses.

5.0 OTHER REQUIREMENT PER CANDIDATE (5 Marks)

(a) 1 pair of gloves
(b) 1 piece of cotton wool

(c) 30 cm cotton thread
(d) 10 office pins.

6.0 ASSESSMENT OF THE DISSECTION AND DRAWING (05 Marks)

A Biology teacher appointed will be required to make an on-the spot assessment of each candidate's dissection and drawing at least 45 minutes after the beginning of the Biology Practical examination. The candidates' scores of the assessment should be recorded on a separate form provided. The form **must be attached to each candidate's script** and sent to NECTA.

7.0 NOTE TO EXAMINATIONS SUPERVISORS AND LABORATORY TECHNICIAN/ BIOLOGY TEACHER APPOINTED

After the arrangement of the laboratory for examination, the Laboratory Technician/ Biology teacher assigned the responsibility to arrange the laboratory must fill in the attached declaration form in page 3. The form indicates the quantity provided and the labels used for the specimens, chemicals and apparati as indicated in the **03 Hours Advance Instructions**. The form must be filled at the beginning of each session of the examination and submitted to the Council enclosed together with the candidates' scripts in the last envelope of the final session.