THE UNITED REPUBLIC OF TANZANIA
PRESIDENT'S OFFICE, REGIONAL ADMINISTRATION AND LOCAL GOVERNMENT

FORM SIX SPECIAL SCHOOLS JOINT EXAMINATION

CODE: 133/1 **BIOLOGY 1**

Time: 3:00 HRS Wednesday **19-February-2025 PM**

INSTRUCTIONS

1. This paper consists of sections **A, B** and **C.**
2. Answer all questions in section **A** and only two **(2)** questions from section **B.**
3. All writing should be in **blue** or **black** ink except for diagram that should be drawn by pencil
4. Any unauthorized materials are not allowed in examination room.
5. Write your Examination Number on every page of your answer booklet (s).

SECTION A: (70 Marks)

Answer **all** questions in this section.

1. (a)Chloroplast, mitochondria and bacteria have features in common. Identify the features to reveal the truth of this statement.(5 points)

   (b) If mitochondria were to perform the function of chloroplast. What modification would it require? (5 points)

2. (a)Protein is one among other polymolecules. Justify this statement.

   (b)Briefly explain significance of protein in structure and metabolism in organisms.

3. (a)RUBISCO is an enzymes that act as both carboxylase and oxygenase. Why do you think RUBISCO carries more carboxylation in C_4 - plants?

   (b) Study this chemical equation, $2H_2O \rightarrow 2H^+ + O_2 + 4e^-$. Then answer the questions asked below.

   (i)Account for the significance of this reaction and state the part (s) of the plant where reaction is likely to occur.

   (ii)Even though a very few cells in C_4 – plants can carry out biosynthesis Calvin cycle, yet they are high productive. Explain in three points.

4. (a)Mountain climbers and divers are faced by the challenge of deficient or lack of oxygen supply due to low oxygen partial pressure at high altitude and lack of dry air in water. Briefly describe five points to identify features developed in mountain climber and diver to manage the situation.

   (b)Account for the fact that Athletes during vigorous exercises prefer to undergo anaerobic respiration rather than aerobic respiration.

   (i)State the advantage of anaerobic over aerobic respiration during this time for athletes.

   (ii)Why an athletic spend certain time to breath air after vigorous exercise. Explain three reasons.

5. (a) The systems of classification established by Carl Linnaeus lead to significant simplification for the study of classification. Identify five systems and their classification basis.
   (b) In five pints, explain how you can construct a simple taxonomic key.

6. (a) The axon of most neurons are wrapped in an insulating lipid layer called myelin sheath. Why is insulation important?
   (b)Explain briefly seven steps by which a nerve impulse can be transmitted across the synapse.
7. (a)If menstruation flow in female human being does not occur after 28 days of first flow, they are considered to be pregnant although this may not only be the factor to describe pregnancy. Identify another factor to be considered on the basis of pregnancy test?
   (b)The root of the certain plant has 32 chromosomes. State the number of chromosomes present in its endosperm, polar nuclei, egg nucleus, polar tube nucleus, embryo sacs and mega sporangium.

SECTION B (30 Marks)

8. (a) Describe the munch's hypothesis and state how is applied in the translocation of synthesized organic molecules in plants.
   (b)Distinguish between passive and active transport.

9. (a) Despite the fact that fat release more energy than twice the amount of energy release by glucose however, animal ells prefer the respiration of glucose than fat. Justify.
   (b)Describe the metabolism of sunflower oil as a chief substrate in the body of organism.

10. (a)Illustrate the feedback mechanism in hormone control in human menstrual cycle.
    (b)Explain the events that account for occurrence of double fertilization in flowering plant.