PRESIDENT'S OFFICE

REGIONAL ADMINSTRATION AND LOCAL GOVERNMENT

FORM SIX COMPETENCE EXAMINATIONS (FOSCE) - 2025

133/1 **BIOLOGY 1**

Time: 3 Hours **20TH FEBRUARY 2025, PM**

Instructions

1. This paper consists of sections A and B with total of ten (10) questions.
2. Answer all questions in section A and only two (2) questions from section B.
3. Section A carries 70 marks and section B carries 30 marks.
4. Except for diagrams which must be drawn in pencil, all writings must be in blue or black ink.
5. Cellular phones and any unauthorized materials are not allowed in the examination room.
6. Write your examination number on every page of your answer booklet(s) provided

1. (a) Due to increased understanding on cell biology the "concept of cell theory " has been challenged based on the modern knowledge of virology blood cell and origin of life. Give five points (5) to justify the statement.

(b) Early research on cytoplasmic organelles revealed that mitochondria were formerly aerobic prokaryotes that invaded an ancestral eukaryotic cell and learn to live symbiotically within it. As a recent cytologist, justify this statement by giving five (5) points.

2 . (a) (i) By using ring formula show how condensation take place in the formation of double sugar that naturally occurs in stem of sugar cane plants.

(ii) A biology teacher provided egg white and assigned form six students to mention three important procedures used to test for protein and state expected observation. Give the required responses to the above statement.

(b) In the year 1943, Bloor proposed the classification of lipid based on their chemical composition, briefly show this classification

3. (a) Classify the types of receptors basing on the type of stimuli and location in the body .

(b)Explain five (5) adaptive features of the nerve tissues

4. (a) In C4 plants there are two types of chloroplast that accomplish the process of photosynthesis. Tabulates their difference (5 points).

(b) Mr. Kazimoto got an accident and immediately he was sent to hospital. After medical examination Doctor found that his pancrease was severely damaged. State five digestive that would be impaired in the body of Mr Kazimoto.

5. (a) Use four points to support the statement that, Artificial system of classification is not preferred by scientist.

(b) (i) Why do we need the ditochomous key?

(ii) State six rules that a biologist should follow in binomial nomenclature.

6. (a) Mr. Manyanda married Bi Msope after nine-month Chauvivu delivered two babies (Mariamu and Miriamu) simultaneously.

(i) Explain three reasons what caused Chauvivu to deliver two babies simultaneously

(ii) Name the process above

(iii) What type of process involved in a (ii)?

(b) The calyx of certain plant has 22 chromosome, state number of chromosome present in its, polar nuclei, egg nucleus, pollen tube nucleus, endosperm, embryo sac, and mega sporangium

7. (a) Name four (4) chemical substance which involved in respiration which would enter the mitochondria from cytoplasm and four (4) which would leave .

(b) The equation for the respiration of the fat tripalmitin is.

$$2C_{51}H_{98}O_2 + 145O_2 \longrightarrow 102CO_2 + 98H_2O$$

(i) What is the RQ for tripalmitin?

(ii) Give two meanings of RQ value that obtained

(iii) What is RQ when glucose is respired anaerobically to ethanol and carbon dioxide?

SECTION B (30 Marks)

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

8. (a) Explain why babies can stay alive in wombs of their mother despite that they are not in direct contact with atmospheric air .

(b) Explain the roles played by the mammalian placenta in the following.

(i) Gaseous exchange.

(ii) Excretion

(iii) Endocrine secretion

(iv) Protection against infection.

(v) Nutrition

9 (a) Tabulate to show five (5) differences between blood circulatory system of arthropods and blood circulatory system of vertebrates.

(b) Explain five (5) forces which are believed to cause flow of water xylem tissues.

10. (a)Explain the essential features of glycolysis which can led to the release of energy from glucose molecule. Drawing or chart is unnecessary.

(b) Explain three adaptations of the mountain climbers.