TANZANIA HEADS OF ISLAMIC SCHOOLS COUNCIL

FORM SIX INTER ISLAMIC MOCK EXAMINATION

BIOLOGY 1

(For Both School and Private Candidates)

133/1

TIME: 3 HOURS **Tuesday, 4th March 2025 p.m.**

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. Except drawings that must be drawn in pencil. All writings should 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).

SECTION A (70 Marks)

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

1. (a) During practical session, a form five student examined eukaryotic animal cell and discovered that within a cytoplasm there is a network of flattened membrane bound sacs in which their quantity in a cell can slowly interchange from one type to the other depending on the changing metabolic activities of the cell.
   (i) By using well labelled diagram of each describe their structures.
   (ii) Based on your knowledge explain how cell benefits from each of the structure (4 points)

   (b) Enumerate four factors affecting membrane permeability.

2. (a) The diagram below shows a metabolic pathway in which substrate. A is converted into B, C to the end product D with the aid of enzyme 1, 2 and 3 respectively

   A $\xrightarrow{\text{Enzyme 1}}$ B $\xrightarrow{\text{Enzyme 2}}$ C $\xrightarrow{\text{Enzyme 3}}$ D

   Briefly explain what would happen to the rate of formation of end product D if;

   (i) Concentration of substrate A were reduced.
   (ii) The concentration of Enzyme 1 was increased but concentration of other enzymes remained constant.
   (iii) Suggest how molecule D could act as end-products inhibitor.

   (b) Suggest four classes of Enzymes based on type of reactions they catalyse.

3. (a) Normally neurons are used for conduction of nerve impulse along axon. How is that impulses are transmitted across neurons junctions?

   (b) Briefly explain what would happen to plant if fail to secrete. The following phytohormone:
   (i) Abscisic Acid
   (ii) Ethene

4. (a) Name the process that:
   (i) Produces pyruvate in cell cytoplasm
   (ii) Produces reduced NAD and carbondioxide in the mitochondria matrix

   (b) Suggest how ATP is produced from NAD within the mitochondrion of a cell (diagram not necessary).

   (c) It has been calculated that 1g of glucose combine with 774cm^3 of oxygen releasing 15.8kJ heat and 1g of long-chain fatty acid combine with 2012cm^3 of oxygen releasing 39.4kJ heat. Why does 1g of fatty acid release more than twice as much heat as1g glucose?

5. (a) Pollen tube contains two haploid generative nucleus which normally enter the embryosac. State what each of nuclei fuses with in embryosac and name the structure which results after fusion.

(b) Briefly predict the exact fate of the following parts of flowering plant after double fertilization:
(i) Nucellus
(ii) Integuments of ovule
(iii) Sepal, petals and stamens
(iv) Style
(v) Mature ovary
(vi) Micropyle
(vii) Synergid
(viii) Antipodal

6. (a) You are provided with the list of the following organisms:
A. Snail
B. Mosquito
C. Snake
D. Housefly
E. Ants
F. Weevils
G. Butterfly
Apply knowledge of classification and construct a bracketed key to identify the organism.
(Use features WING, SCALE, ANTENNAE, LEG, ABDOMEN, BODY SHAPE)

(b) Give the meaning of the following terms:
(i) Phyletic Classification
(ii) Phylogenetic Classification
(iii) Phenetic Classification
(iv) Numerical taxonomy

7. (a) Use a table below to give the difference between C_3 plant and C_4 plant.

Feature	C_3	C_4
(i) Representative species		
(ii) Effect of temperature rise from 25^{o}C to 35^{o}C		
(iii) Carbondioxide fixiations		
(iv) Leaf anatomy		
(v) Efficiency		
(vi) First product of photosynthesis		
(vii) Carbondioxide acceptor		

(b) Suggest three advantages of using active transport in absorption of monosaccharide, dipeptide and amino acid.

SECTION B (30 Marks)

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

8. Within a red blood cells there are Haemoglobin which always transport respiratory gases such as oxygen and carbondioxide. Which factor can be used by medical expert to determine the binding capacity of Haemoglobin (Hb) to oxygen? (5 points)

9. (a) Mr. Juma and his wife lived for ten years without getting a baby, medical diagnosis revealed that, there is no challenge for his wife. Enumerate what can be the causes for Mr. Juma's problem. (7 points)

   (b) Outline eight (8) healthy impacts that may occur to individual after abortion.

10. (a) Plants physiology suggest that xylem is vessel for transport of water and mineral salts, during a detail anatomical study it is revealed that is not just tube is a complex tissue with many components. Justify the validity of the statement.

    (b) Briefly explain four evidence to support that xylem are responsible for conduction of water and mineral salts.

Wabillah Tawfiiq