

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

133/1

BIOLOGY 1

(For Both School and Private Candidates)

Time: 3 Hours

Thursday, 07th May 2015 a.m.

Instructions

1. This paper consists of **eleven (11)** questions in section A and B.
2. Answer **all** questions in section A and **three (3)** questions from section B.
3. The marks allocation is indicated at the beginning of each section.
4. Cellular phones are **not** allowed in the examination room.
5. Write your **Examination Number** on every page of your answer booklet(s).

SECTION A (55 Marks)

Answer **all** questions in this section.

All questions carry **8 marks** except question seven (7) which carries **7 marks**.

1. (a) Differentiate between eukaryotic and prokaryotic cells basing on the following criteria:
- (i) Cell division
 - (ii) Genetic material
 - (iii) Cell wall
 - (iv) Flagella
 - (v) Respiration
 - (vi) Photosynthesis
 - (vii) Nitrogen fixation.

Tabulate your answer as shown below.

Criteria	Prokaryotic cells	Eukaryotic cells

- (b) What is cell differentiation?
2. (a) What are the chemical compositions of proteins?
- (b) State supporting and storage functions of carbohydrates using one example in each case.
3. Identify:
- (a) Steps used to construct simple taxonomic keys.
- (b) Rules used in binomial nomenclature.
4. (a) Explain three characteristics of nerve impulse.
- (b) Why do myelinated axons of frog having a diameter of 3.5 micro-meter conduct impulse at 30 m s^{-1} whereas axons of the same diameter in cat conduct impulses at 90 m s^{-1} ?
5. (a) Write a balanced equation of photosynthesis and from the equation, state which factors and conditions are likely to affect the rate of photosynthesis.
- (b) Explain events which take place during dark reaction.

6. (a) Give the meaning of basal metabolic rate.
- (b) Describe the fate of pyruvic acid under anaerobic respiration.
7. (a) What do you understand by the term double fertilization as applied in angiosperms?
- (b) Figure 1 represents a spermatozoan cell.

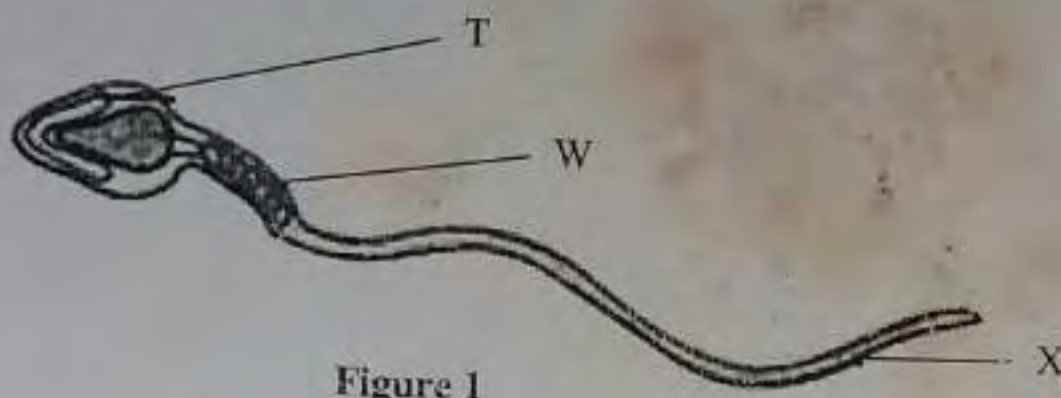


Figure 1

- (i) What is the role of the cell?
- (ii) Name the structures labeled T, W and X.
- (iii) What are structural adaptations shown by the cell to its function?

SECTION B (45 Marks)

Answer **three (3)** questions in this section. Each question carries **fifteen (15)** marks.

8. Study Figure 2 below and answer questions which follow.

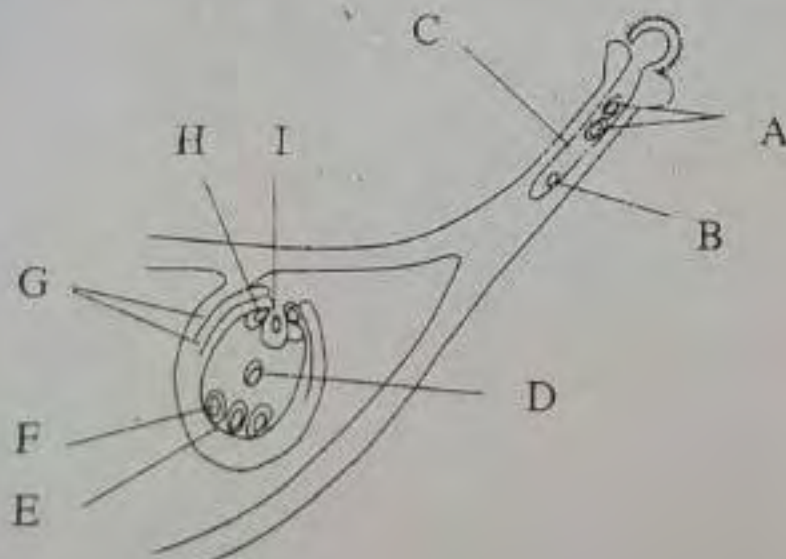


Figure 2

- (a) (i) Name the structure represented in Figure 2.
- (ii) Name the parts labeled A to I.
- (iii) Name a plant from which the structure could have been obtained.

- (b) State one role of each part labeled A to I.
9. Describe categories of proteins based on their structures and functions.
10. Explain the process of nerve impulse along the axon and across the synapse of the neuron.
11. Study Figure 3 and answer questions which follow:

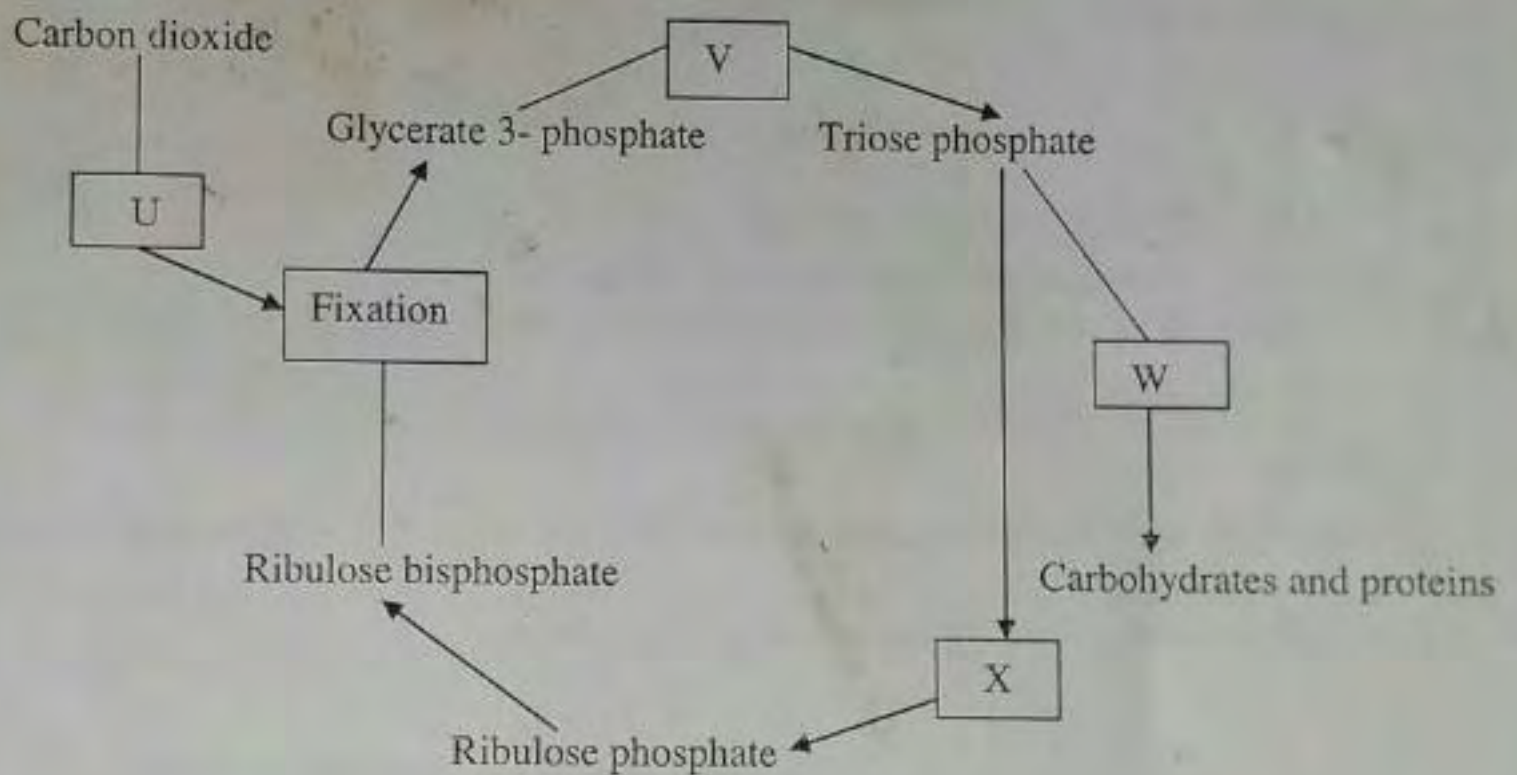


Figure 3

- (a) (i) Name the process illustrated by Figure 3.
- (ii) Name the steps in the process indicated by letter U, V, W and X.
- (b) Explain Hatch-Slack pathway in C_4 plants.