

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.

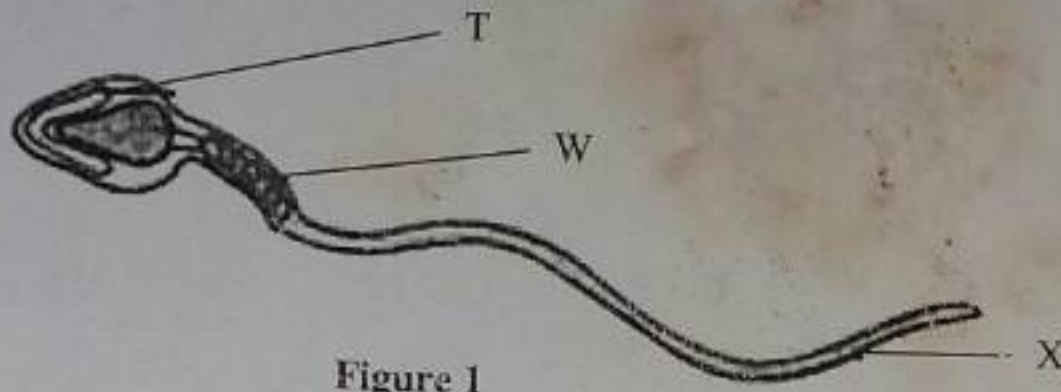


Figure 1

- (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.

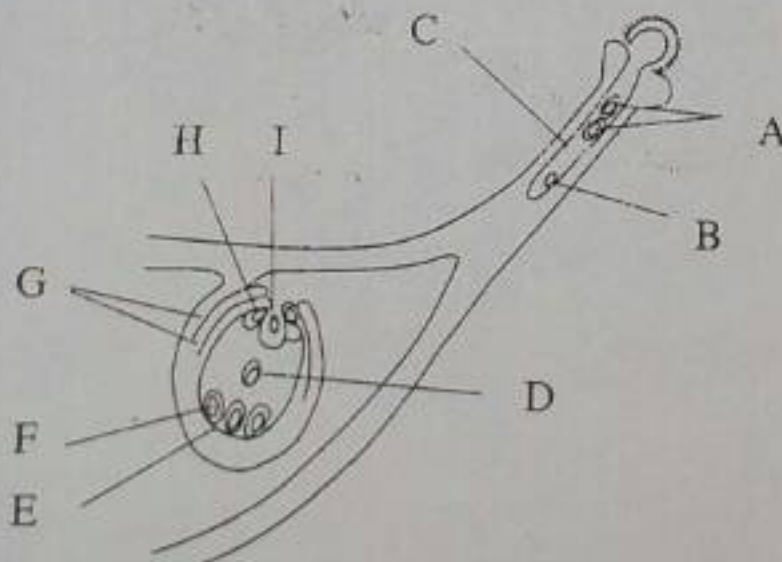


Figure 2

- (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:

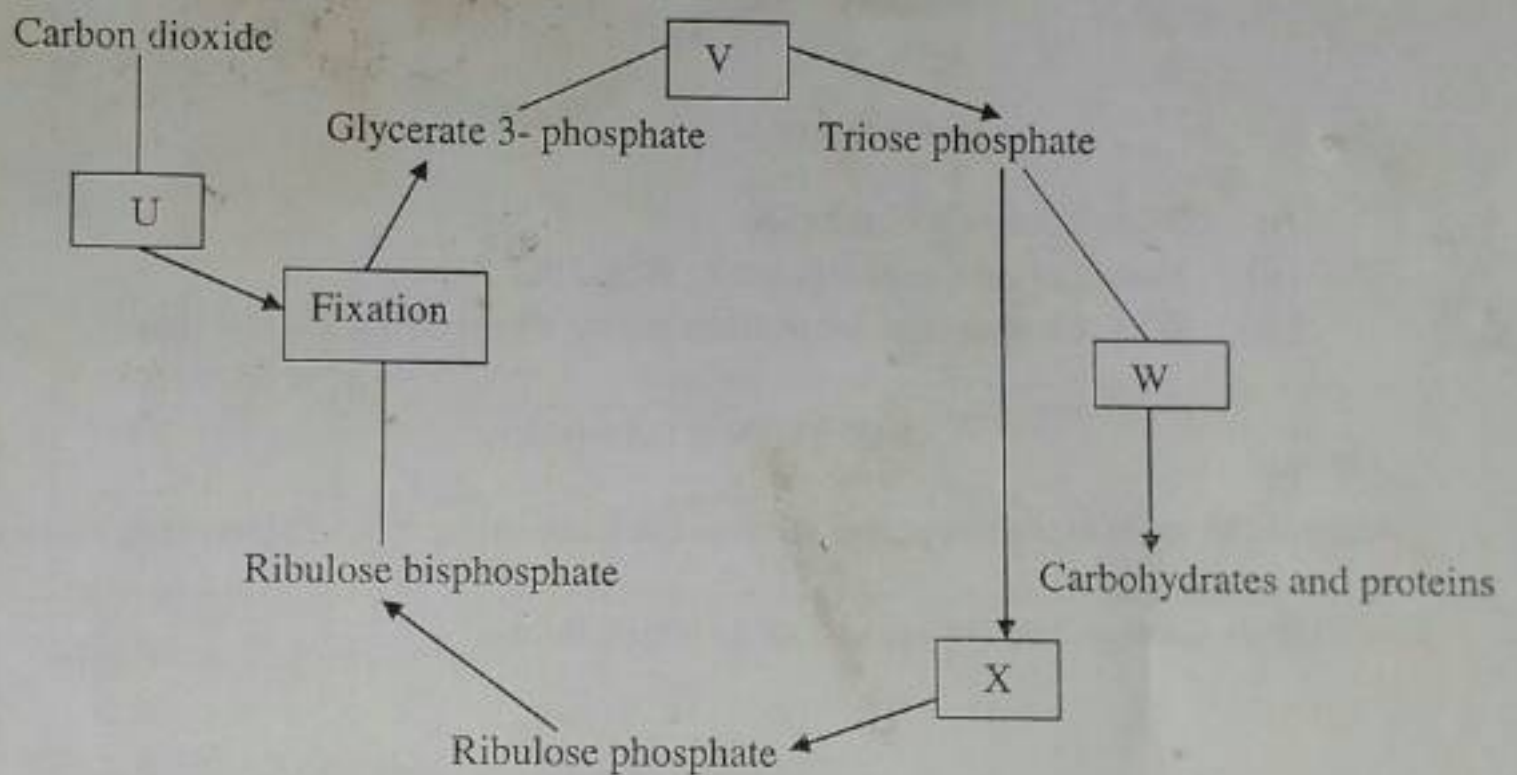


Figure 3

- (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 C₄ plants.