

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

133/1

BIOLOGY 1
(For Both School and Private Candidates)

Time: 3 Hours

Monday, 14th May 2018 p.m.

Instructions

1. This paper consists of sections A and B with a total **ten (10)** questions.
2. Answer **all** questions in section A and **two (2)** questions from section B.
3. The marks allocation is indicated at the beginning of each section.
4. Cellular phones and any unauthorized materials are **not** allowed in the 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. Each question carries **10** marks.

1. (a) Describe the features of cell membrane.
(b) Assess the suitability of the structure of a mitochondrion to its function. Give five points.
2. (a) State three importance of each of the following groups of carbohydrates in living things:
 - (i) Pentose
 - (ii) Hexose
 - (iii) Disaccharide.(b) Explain the role of the following chemical reagents in testing carbohydrates:
 - (i) Dilute hydrochloric acid.
 - (ii) Dilute sodium hydroxide.
3. (a) Distinguish between the following:
 - (i) nervous and hormonal coordination. Give four points.
 - (ii) positive and negative feedback of body temperature regulation process. Give two points.(b) Examine four properties of a hormone which enable it to accomplish its function.
4. (a) Study the photosynthesis equation given below and answer the questions which follow:
$$6\text{CO}_2 + 6\text{H}_2\text{O} \longrightarrow \text{C}_6\text{H}_{12}\text{O}_6 + 6\text{O}_2$$
 - (i) Give two reasons to justify the fact that, this equation is not correct although it is balanced.
 - (ii) Identify two types of reaction that take place in photosynthesis process and state specifically where in the cell does each reaction takes place.(b) Explain how each of the following factors affects the rate of photosynthesis:
 - (i) Temperature
 - (ii) Inorganic ions.
5. (a) Identify two categories of carbohydrate.

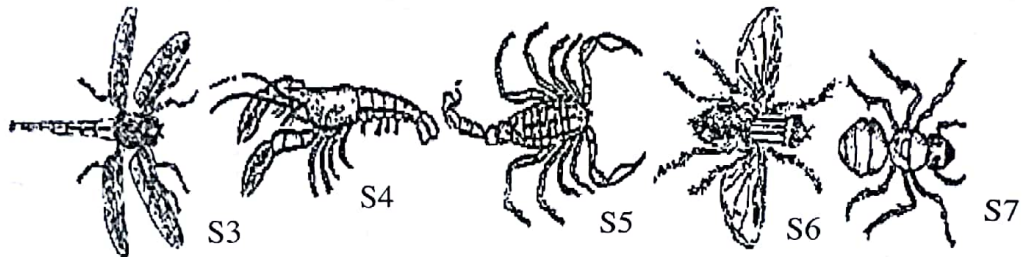
(b) Using one example in each case, describe six functions of carbohydrates in organisms.

6. (a) What is phytohormone?

(b) Outline three roles of each of the following phytohormones:

- (i) Auxins
- (ii) Gibberellins
- (iii) Cytokinins.

7. Study the labeled organisms below and then answer the question that follows:



(a) For each organism, identify the observable features only and put a tick (✓) if the characteristic is present or a cross (X) if the characteristic is absent in Table 1.

Table 1

Organism	Wings two pair	Antennae present	Legs three pair	Legs four pair
S3				
S4				
S5				
S6				
S7				

(b) Use the characteristics you have filled in Table 1 to construct a simple bracketed key.

SECTION B (30 Marks)

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

8. Explain the following concepts as used in the movement of materials in the body of an organism:

(a) Active transport.

- (b) Closed circulatory system.
- (c) Sympalast.
- (d) Apoplast.

9. Describe the events which comprise the mechanism of fertilization in mammals.

10. (a) (i) Define the term respiratory quotient.

(ii) For each metabolic pathway listed in Table 2, name the specific location in the cell it occurs, substrates used and products formed under each.

Table 2

Metabolic pathway	Precise location	Substrates	Products
Glycolysis			
Krebs cycle			
Alcoholic fermentation			

(b) Briefly explain how each of the following factors affect the rate of respiration:

- (i) Temperature
- (ii) Size of an organism.