

THE UNITED REPUBLIC OF TANZANIA  
NATIONAL EXAMINATIONS COUNCIL  
DIPLOMA IN SECONDARY EDUCATION EXAMINATION

BIOLOGY 1

3/1  
Time: 3 Hours

Monday, 09<sup>th</sup> May 2016 a.m.

Instructions

This paper consists of sections A, B and C.

Answer **all** questions in section A and **two (2)** questions from each of the sections B and C.

Sections A and B carry 30 marks each and section C carries 40 marks.

Cellular phones are **not** allowed in the examination room.

Write your **Examination Number** on every page of your answer booklet(s).

## SECTION A (30 Marks)

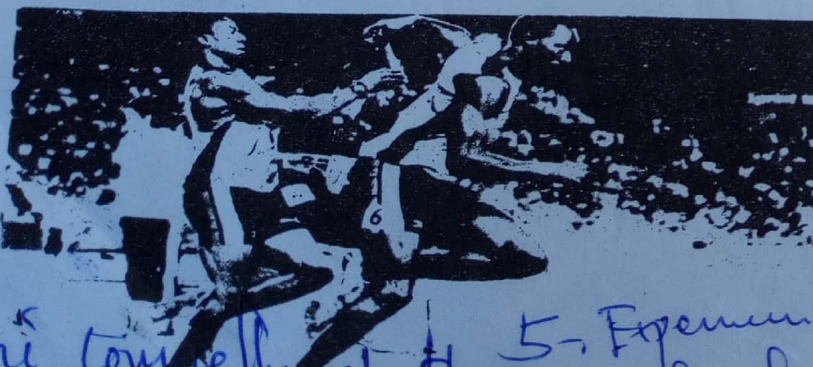
Answer **all** questions in this section.

1. Give the meaning of the following biological terms:
  - (a) A substrate. *The chemical which an enzyme works on.*
  - (b) Active site. *The part of enzyme that reacts with the substrate.*
  - (c) Activation energy. *The energy required to enable the substance to react.*
2. Outline three significance of stepped cell respiration. *To solve family conflict. To determine the suspended person of the problem.*
3. (a) Briefly explain the term genetic counseling.  
 (b) Mention two uses of "DNA analysis" in criminal investigations.
4. Briefly explain three harmful effects of organisms belonging to phylum Platyhelminthes to mammals. *Leishmaniasis, Anaplasmosis*
5. Identify three main features to observe when selecting a quality biology text book.
6. Give three reasons why biologists use small mammals in dissection practicals.
7. Outline three ways of discouraging superficial learning in biology lessons. *1. Easy to access 2. Easy to store*
8. State three rationales of including assessment part in a biology lesson plan.
9. Identify three ways in which a biology learner benefits from a well-planned lesson.
10. Give three points to support the argument that "bat is both a bird and a mammal"
  - Presence of teeth*
  - Ability to give birth through delivery*
  - Wings*
  - Nervous system*
  - Mammary glands*

## SECTION B (30 Marks)

Answer **two** (2) questions from this section.

11. Study carefully the photograph below and answer the questions which follow.





- (a) (i) Explain what happens to the metabolic rate, breathing rate and heart beat in people shown in the photograph.
- (ii) Explain why muscles of these people are going to experience anaerobic respiration.

(b) Describe the events that may likely to happen suddenly after these people have completed performing this activity.

(c) In six points, differentiate between Glycolysis and Krebs's cycle pathways of respiratory reactions.

(a) Analyze three mutagenic agents which cause mutation in organisms.

(b) With examples, explain four areas where genetic engineering is applied.

(a) By giving five reasons, justify the statement that "class insecta is highly successful among arthropods."

(b) Explain five economic importance of class insecta.

(a) Identify two components of an ecosystem and explain how they interact each other.

(b) Describe three ecological pyramids which show the feeding relationships of the living component of the ecosystem.

pyramid of biomass  
pyramid of energy  
pyramid of number

### SECTION C (40 Marks)

Answer two (2) questions from this section

15) Discuss six principles of teaching and learning Biology.

16. As a biology expert, you have been invited to advice the school committee on construction of a biology laboratory to a newly built school.

(a) Describe five basic plans for a typical biology laboratory.

(b) Elaborate four guidelines to be followed when ordering materials for the laboratory use.

17. Explain six merits and three demerits of an open ended test questions to biology teachers and students.

18. (a) Block teaching is very important to a teacher trainee. Discuss by giving seven points.

(b) Explain two limitations of each of the following types of teaching practice.

(i) Single lesson practice

(ii) Block teaching practice.

13/10 - possession of wing to fly  
- Have efficient respiratory system  
- Presence of chitinous exoskeleton