

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

**133/2**

**BIOLOGY 2**  
(For Both School and Private Candidates)

**Time: 3 Hours**

**Year: 2022**

**Instructions**

1. This paper consists of **six (6)** questions.
2. Answer **five (5)** questions.
3. Each question carries **twenty (20)** marks.
4. Except for diagrams that must be drawn in pencil, all writing 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).



1. (a) In five points, describe the structural similarities and differences between the bodies of birds and mammals.
- (b) Explain how amphibians adapt to their environments.
2. Describe the process of osmoregulation by Anti Diuretic Hormone in human body.
3. (a) Explain internal and external factors that affect seed germination. Give three points in each.
- (b) With the aid of a diagram, describe five events which occur during telophase stage of mitosis.
4. A cross between pure yellow testa and green testa bean seeds produced yellow testa seeds in  $F_1$ . On selfing the  $F_1$  plants,  $F_2$  had the phenotypes shown in the following Table:

$F_2$ Phenotype	Number
Yellow testa	836
Red testa	212
Green testa	72

Carry out genetic crosses to show the phenotypes and genotypes of  $F_1$  and  $F_2$ .

5. (a) Briefly describe four theories of origin of life.
- (b) Outline strengths and weaknesses of each of the theories described in 5(a).
6. (a) Giving an example in each, describe the interdependence of the following groups of organisms in the ecosystem:
  - (i) Detritivores and decomposer.
  - (ii) Producers and consumers.
  - (iii) Food chain and food web.
- (b) In five points, explain how energy flows within an ecosystem.