

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

**133/2**

**BIOLOGY 2**

(For Both School and Private Candidates)

**Time: 3 Hours**

**Monday, 08<sup>th</sup> May 2017 a.m.**

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**Instructions**

1. This paper consists of **eight (8)** questions in sections A, B, C and D.
2. Answer five questions by choosing at least **one (1)** questions from each section.
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 are **not** allowed in the examination room.
6. Write your **Examination Number** on every page of your answer booklet(s).

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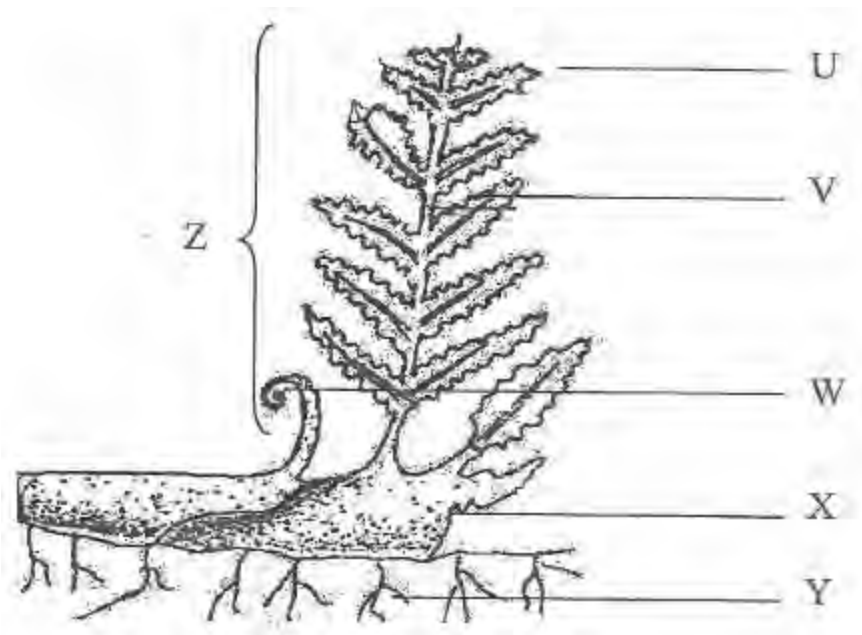


## SECTION A

### COMPARATIVE STUDY OF NATURAL GROUPS OF ORGANISMS

Answer at least **one (1)** question from this section.

1. (a) Classify the following organisms to the class level.
  - (i) Bean
  - (ii) Crab
  - (iii) Elephant grass
  - (iv) Mouse.
- (b) Giving six reasons, justify the:
  - (i) Phylum to which mouse belongs.
  - (ii) Class to which bean plant belongs.
2. (a) Study Figure 1 and answer questions which follow.



**Figure 1**

- (i) Name the organism.
  - (ii) Classify the organism to division level.
  - (iii) Explain four general and three distinctive feature of the kingdom to which the organism belongs.
- (b) (i) Identify the parts labeled U, V, W, X, Y and Z.
  - (ii) State three roles played by the part labeled Y.
  - (iii) Give five ways in which the organism structurally adapts to its mode of life.

## SECTION B

### REGULATION AND GROWTH AND DEVELOPMENT

Answer at least **one (1)** question from this section.

3. (a) Describe the location, role and effects of apical, lateral and intercalary meristems.

Tabulate your answers as shown in the following table:

Type of meristem	Location	Role	Effect

- (b) Figure 2 shows relative changes in dry mass of endosperm and embryo during germination of barley. Explain the results shown by endosperm, embryo and total mass curves.

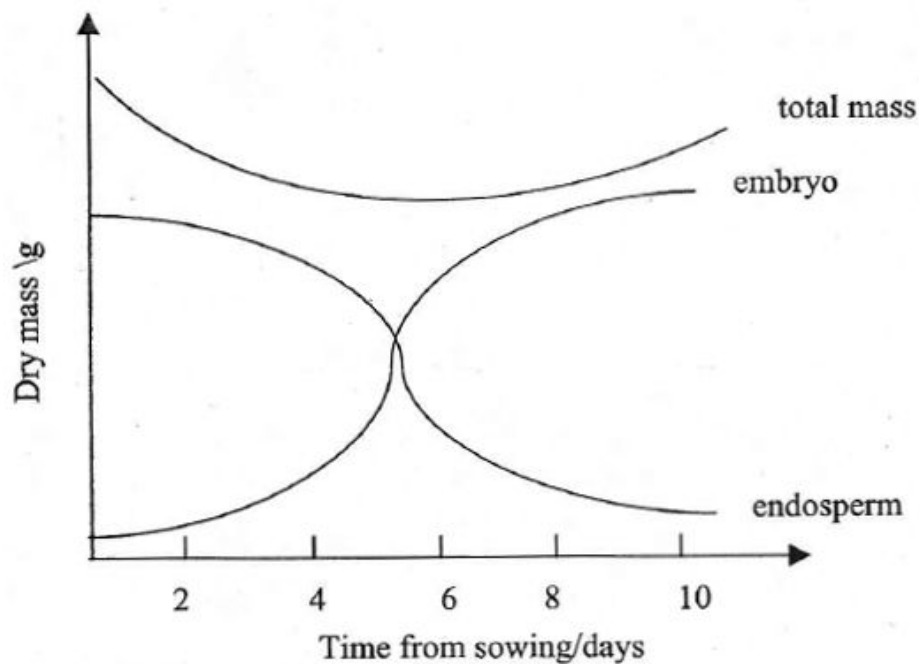


Figure 2

4. (a) (i) State two main roles played by the kidney.  
 (ii) Table 2 summarizes the relationship between excretory product and the habitat of the representative animal group. Complete the table.

**Table 2**

Animal	Excretory product	Habitat
Protozoan		
Terrestrial insect		
Freshwater bony fish		
Marine bony fish		
Bird		
Mammal		

- (b) Enumerate three symptoms of each of the following disorders of urinary system in human:
- (i) Bladder infection.
  - (ii) Kidney stone.
  - (iii) Kidney gout.
  - (iv) Kidney failure.

## SECTION C

### GENETICS

Answer at least **one (1)** question from this section.

5. (a) State three features of DNA which enable it to:
- (i) Serve as a store of genetic information.
  - (ii) Transmit genetic information accurately.
- (b) (i) Using appropriate genetic symbols carry out genetic crosses to show the percentage phenotype of blood group of children, whose parents are both heterozygous, the father being blood group A and the mother AB.
- (ii) What is the probability that the parents will have a child with blood group O?
6. (a) Explain how the formation of messenger ribonucleic acid takes place during protein synthesis.
- (b) (i) Identify three types of ribonucleic acids.  
 (ii) Describe the structure and location of the types of ribonucleic acids identified in 6(b) (i). (Diagrams are not required).

## SECTION D

### EVOLUTION AND ECOLOGY

Answer at least **one (1)** question from this section.

7. (a) (i) Name three theories of origin of life.  
(ii) Explain the origin of life based on the theories named in 7(a) (i).
- (b) Explain the mechanism of organic evolution according to Lamarck theory and state strengths and weakness of the theory.
8. (a) (i) Define the term population explosion and explain three causes to it.  
(ii) State five negative consequences of population explosion.
- (b) (i) What is capture recapture method?  
(ii) Outline nine procedures used to estimate population under capture-recapture method.