

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

033/2A

BIOLOGY 2A  
ALTERNATIVE A PRACTICAL  
(For Both School and Private Candidates)

Time: 2 Hours 30 Minutes

*Tuesday, October 18, 2005 a.m.*

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**Instructions**

1. This paper consists of three (3) questions.
2. Answer two (2) questions including question Number 1.
3. All questions carry equal marks.
4. Electronic calculators are not allowed in the examination room.
5. Cellular phones are not allowed in the examination room.
6. Write your Examination Number on every page of your answer booklet(s).

CPB

This paper consists of 3 printed pages.

1. You have been provided with solution S<sub>1</sub>.
  - (a) Carry out food test experiments to identify the food substances present in solution S<sub>1</sub>. Record your experimental work as shown in table 1 below.

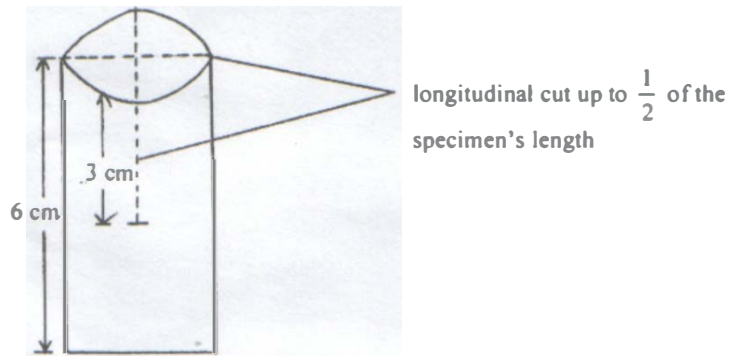
Table 1

TEST FOR	PROCEDURE	OBSERVATIONS	INFERENCE

- (b) Suggest one natural food substance from which solution S<sub>1</sub> might have been prepared.
  - (c) What are the functions of food substances present in solution S<sub>1</sub> to human beings?
2. You have been provided with specimen X and two solutions S<sub>2</sub> and S<sub>3</sub>. Using a razor blade or scalpel, cut a 6 cm long petiole from specimen X. Use this same piece of petiole in all the 3 stages of the experiment described below.

**Stage I:** Using a razor blade or scalpel split the piece of petiole from specimen X longitudinally, up to  $\frac{1}{2}$  of its length, so as to produce 4 strips on one end of the specimen, while the other end remains intact as shown in the diagram below.

Make a sketch drawing of the petiole and label it as sketch No. 1.



**Stage II:** Dip the piece of petiole in solution S<sub>2</sub> for about 10 minutes.

Remove it from the solution, observe and touch it gently to feel its hardness or softness.

Make a sketch drawing of the petiole and label it as sketch No. 2.

**Stage III:** Dip the petiole in solution  $S_3$  for about 10 minutes.

Remove it from the solution, observe and touch it gently to feel its hardness or softness.

Make a sketch drawing and label it sketch No. 3.

- (a) Record your observations and explanations for stages II and III of the experiment as shown in table 2 below.

Table 2

Stage of experiment	Observation	Explanation
Stage II		
Stage III		

- (b) What was the aim of the experiment?
- (c) Give brief comments on the concentrations of solutions  $S_2$  and  $S_3$ .
- (d) Why is the biological process demonstrated by the above experiment important to plants?
- (e) Define the process demonstrated by the above experiment.
- (f) Explain what happened to the cells of the petioles in stage II and stage III. Illustrate your answer.
3. Study carefully specimens A, B, C and D.
- (a) Give the common name of each specimen.
- (b) Compare the modes of reproduction in A and B.
- (c) Give three (3) differences between the modes of reproduction of specimens C and D.
- (d) What are the merits and demerits of the modes of reproduction in C and D. (State 2 merits and 2 demerits).