

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

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

033/2

Time: **2½ Hours** **11 November 2002 a.m.**

**Instructions**

1. This paper consists of **FIVE (5)** questions.
2. Answer **ALL** questions.
3. Each question carries **10 marks**.
4. **Cellular phones are not allowed in the examination room.**
5. **Electronic calculators are not allowed in the examination room.**
6. **Write your Examination Number on every page of your answer booklet(s).**

1. (a) Saitot is a curious form III student. He usually cleans his teeth after every meal to remove traces of left over foods after eating rice and roasted beans. As a form four graduate, write down the instructions he must follow to identify the foods present in the washings he collected in a bowl after eating a similar meal, as shown in the table below.

Food tested	Procedure	Observation	Inference

- (b) What conclusion do you draw about the food substances present in these traces?
- (c) What problems is he likely to suffer if he stops cleaning his mouth after every meal?
- (d) Suggest a diet essential for well formed and strong teeth of a growing child.
2. The mass of 30 individual bean fruits, from a kilogram of freshly collected fruits was measured and recorded.

- (a) In the table form as shown below, record the number of fruits in each group of masses, using tally marks. One example has been completed for you.

Mass of individual fruits: (g)

5.31	4.61	4.67	4.67	5.09
6.23	4.94	2.87	4.41	5.80
4.46	5.10	6.65	4.39	5.47
6.22	3.94	4.48	3.94	4.94
6.13	5.13	5.85	5.36	4.35
6.17	5.23	5.98	4.43	6.34

Group by mass	Number of fruits
0 - 3.49	
3.50 - 3.99	
4.00 - 4.49	
4.50 - 4.99	
5.00 - 5.49	
5.50 - 5.99	
6.00 - 6.49	
6.50 - 6.99	

(b) (i) On the graph paper provided, present the data you have recorded to show the frequency distribution of masses.

(ii) State the type of variation shown by the fruits.

3. The diagrams in Figure 1 below show an experiment set up by four students using four glass jars. The glass jars A, B and C were maintained at 30 °C for 7 days while jar D was maintained at 0 °C for the same period of time.

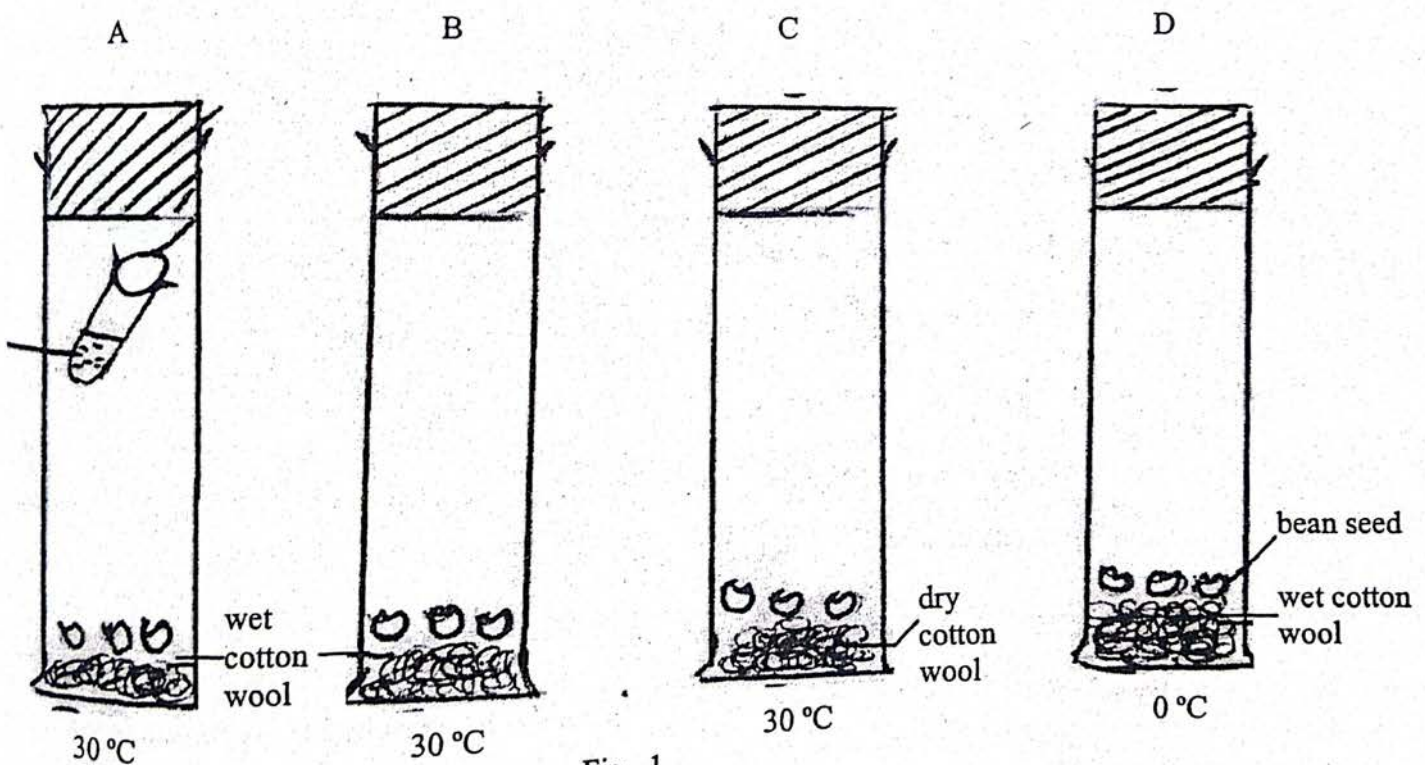


Fig. 1

- Suggest the aim of the experiment.
- Why was pyrogallol included in glass jar A?
- Explain why glass jars C and D were included in the experiment.
- What result would you expect in glass jars A and B at the end of experiment?

4. A leafy shoot was cut under water and fitted with a rubber cork which was then fitted into a graduated test tube containing water. The experiment was set up as shown in Figure 2 below. The experiment was placed near an open window for forty minutes.

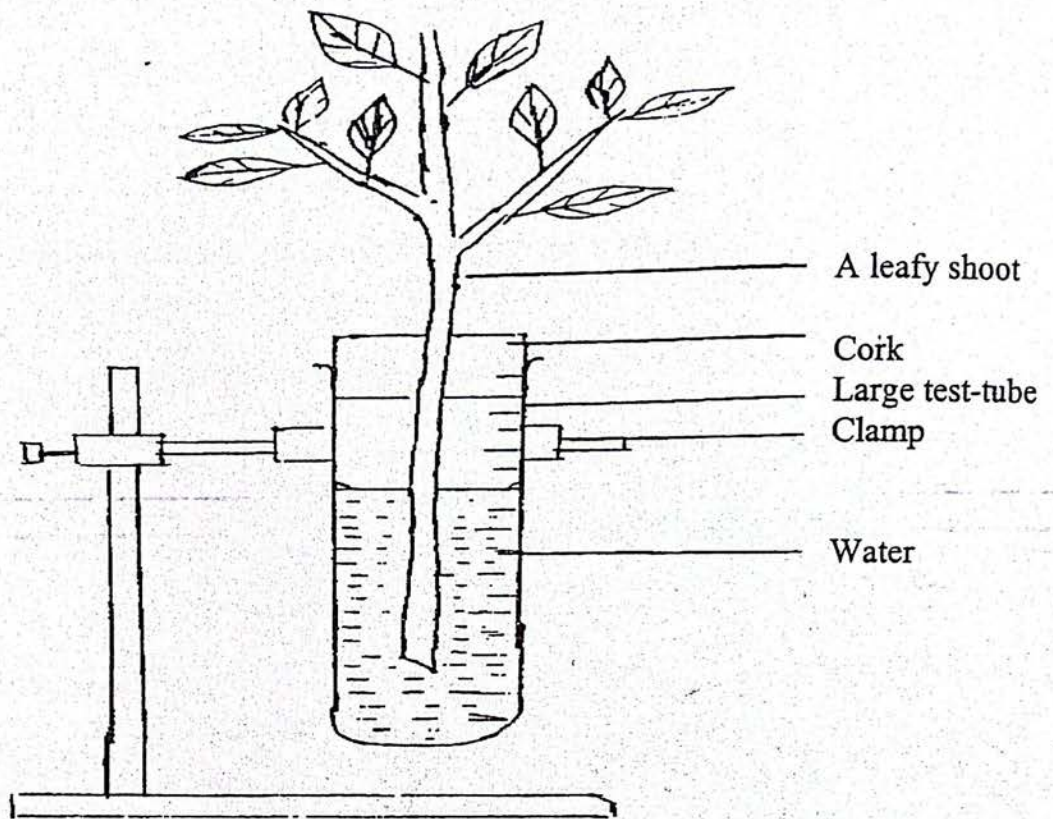


Fig. 2

- (a) What was the aim of the experiment?
- (b) (i) Write down the expected results for the experiment and give reasons for your answer.  
(ii) Why was the shoot cut under water?
- (c) Write down the conclusion from the experiment.
- (d) What is the importance to life of the phenomenon investigated in this experiment?

carefully the organisms represented by diagrams A, B, C and D in Figure 3 below.

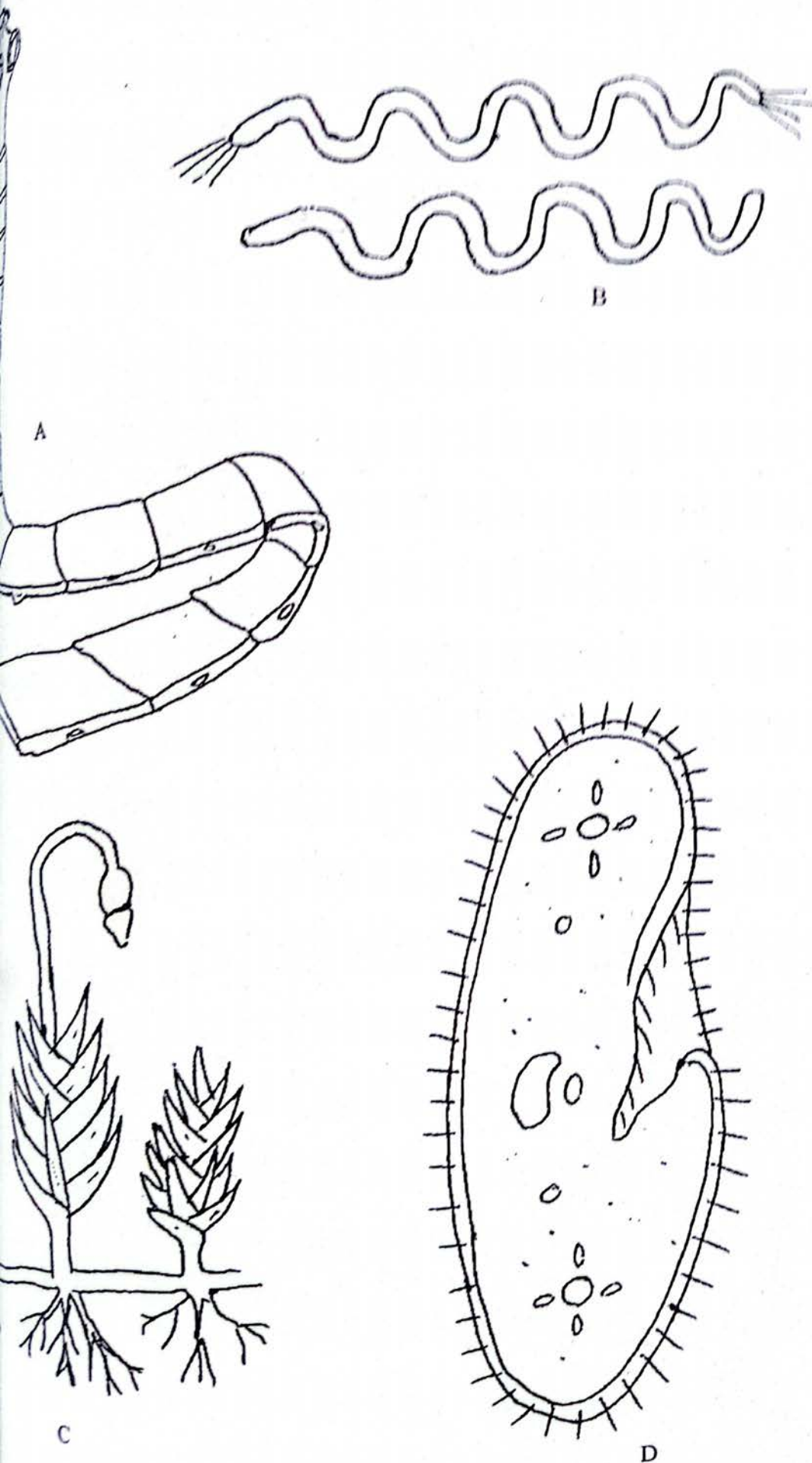


Fig. 3

- (a) (i) Identify the organisms represented by diagrams A, B, C and D by their common names.
- (ii) Name the kingdom to which each organism belongs.
- (b) Name the two (2) features used to place the organisms represented by diagrams A and D in their respective kingdom.
- (c) (i) State the mode of nutrition for the organisms represented by diagrams A and B.
- (ii) Name the habitats for organisms C and D.
- (d) Write down the economic importance of organism B.