

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

033/2

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

Time: 2:30 Hours

Friday, 8th October 2010 a.m.

Instructions

1. This paper consists of **five (5)** questions.
2. Answer **all** questions.
3. Each question carries 10 marks.
4. Except for diagrams that must be drawn in pencil all writings should be in blue/black ink or ball point pen.
5. Calculators are **not** allowed in the examination room.
6. Cellular phones are **not** allowed in the examination room.
7. Write your **Examination Number** on every page of your answer booklet(s).

This paper consists of 4 printed pages.

1. Four cylinders of potato named A, B, C and D were carefully dried using a piece of blotting paper and weighed. Each cylinder weighed 0.3 gm. One cylinder was placed in each beaker as shown in Figure 1 below.

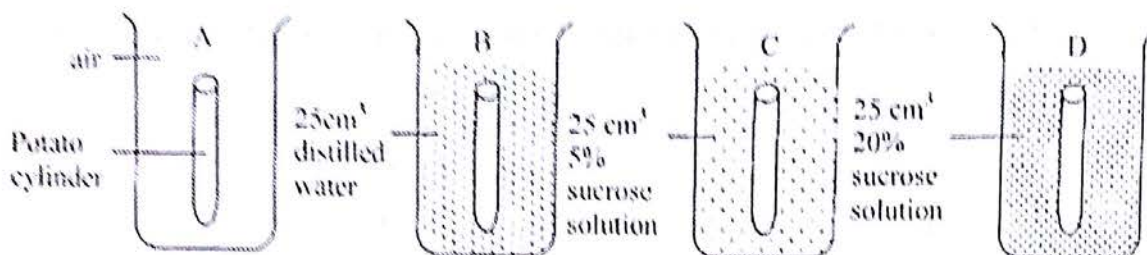


Figure 1

- (a) After 48 hours, which potato cylinder would be
 - (i) The heaviest?
 - (ii) The lightest?
 Give reasons.
 - (b)
 - (i) Which set acts as a control?
 - (ii) Why is a control necessary in biological experiments?
 - (c)
 - (i) Name the biological process being investigated in this experiment.
 - (ii) Define the biological process mentioned in (c) (i) above.
 - (d) What is the importance of the process identified in (c) in flowering plants?
2. In an experiment, some bean seeds were germinated on moist cotton wool in a flask and the apparatus set up as shown in Figure 2. The set up was left for two days.

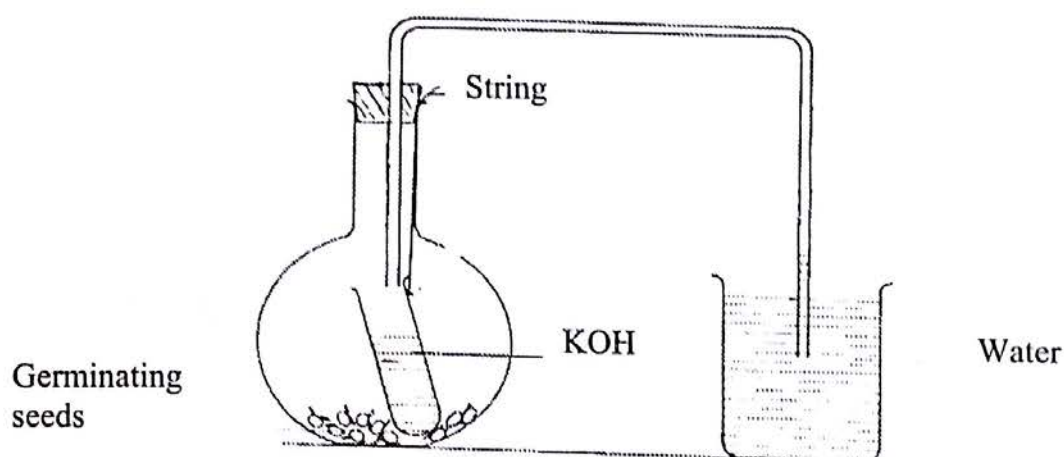


Figure 2

- (a) What do you think was the aim of the experiment?
- (b) What do you think happened to the level of water in the tube? Give reason.

- (c) What conclusion would you draw from the results of this experiment?
- (d) State the precaution which should be taken when conducting an experiment as the one shown in Figure 2.
- (e) Draw a diagram similar to that in Figure 2 for the control experiment, clearly showing the control(s) needed.

A potted plant was kept in a dark place for 12 hours after which it was set up in an experiment as shown in Figure 3. The plant was then left in the sun for 6 hours. A leaf from each of the flasks was tested for starch.

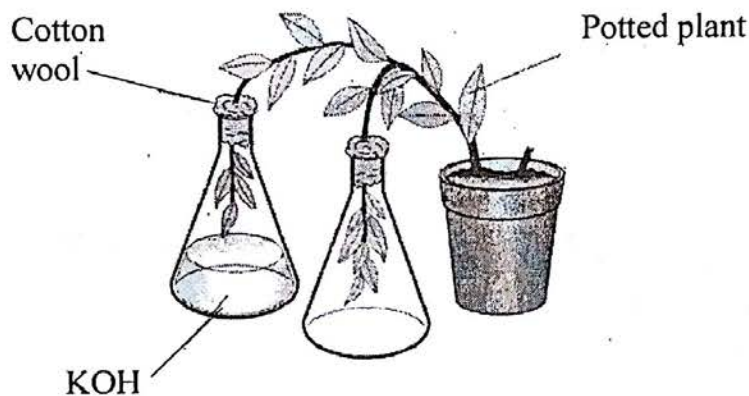


Figure 3

- (a) What was the aim of the experiment?
- (b) Explain what was the purpose of using KOH?
- (c) Which of the two leaves responded positively to the starch test?
- (d) What can you conclude from the results of the above experiment?

In Figure 4, A represents part of an organism while B, C and D represent whole organisms. Study them and then answer the questions which follow.

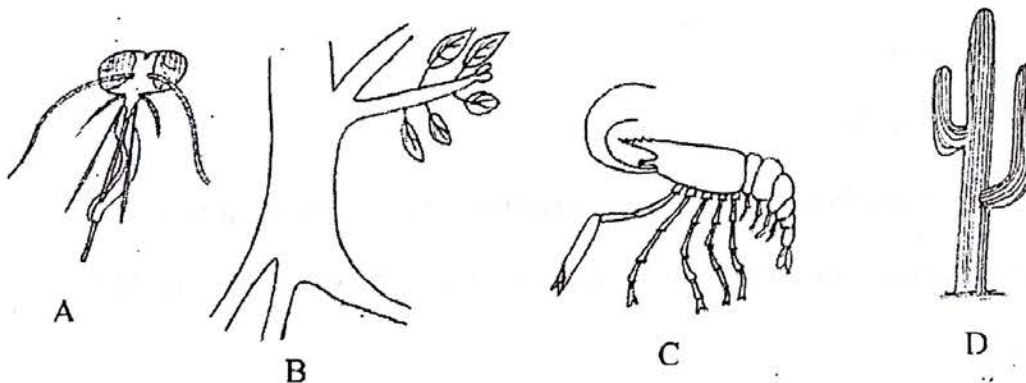


Figure 4

- (a) (i) How do the organisms represented by A and B obtain their food?
 (ii) What name is given to organisms whose feeding habits are like those exhibited by the organisms A and B?
- (b) (i) Classify the organism C to class level.
 (ii) What observable characteristic(s) have you used to place C in the phylum stated in (b) (i) above?
- (c) (i) State the habitat of organism D.
 (ii) How is the organism adapted to its habitat?
5. A form three student at Mjengi secondary school performed an experiment to determine the body temperature of two animals when subjected to different conditions, animal A and M. The results were as shown in the table below.

Environmental conditions	Body Temperature	
	Animal A	Animal M
Temperature at the beginning of the experiment	38° C	38° C
Two animals were kept in a refrigerator at 10° C for ½ an hour	15° C	36° C
The two animals were then kept in an environment of around 35° C for half an hour.	33° C	37° C

- (a) Interpret the observations made by the student.
- (b) What is the name given to organisms which behave as
- (i) Animal A?
- (ii) Animal M?
- (c) Name two animals which possess characteristic behaviors as Animal A.
- (d) What advantages or disadvantages does animal A have over animal M?