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.

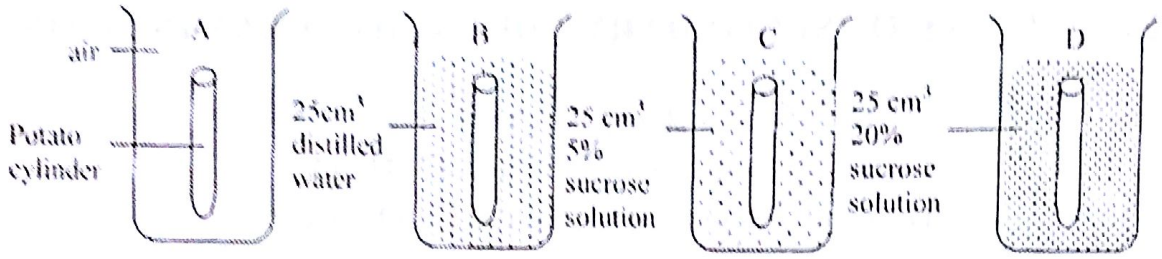

Figure 1

(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.

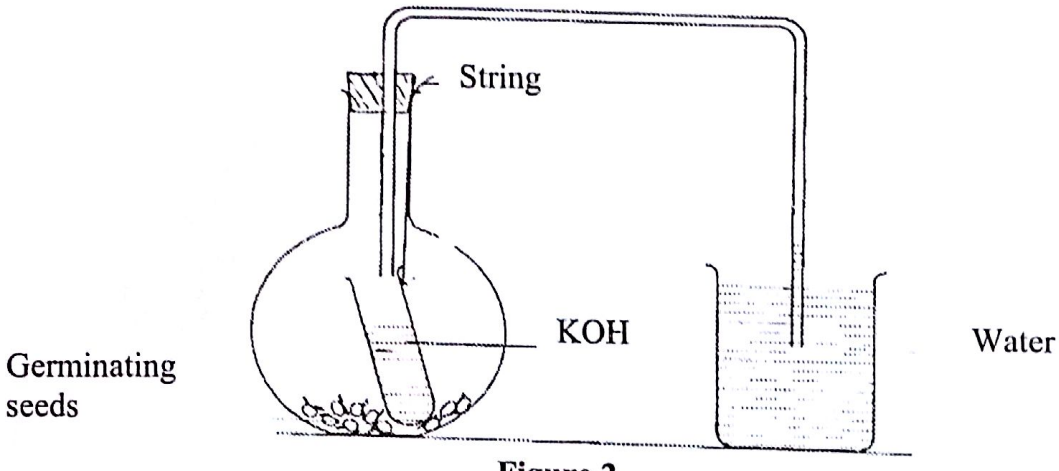

Figure 2

(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.

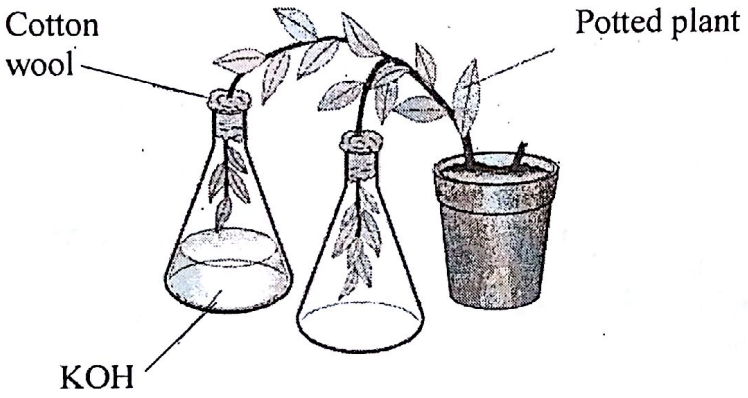

Figure 3

(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.

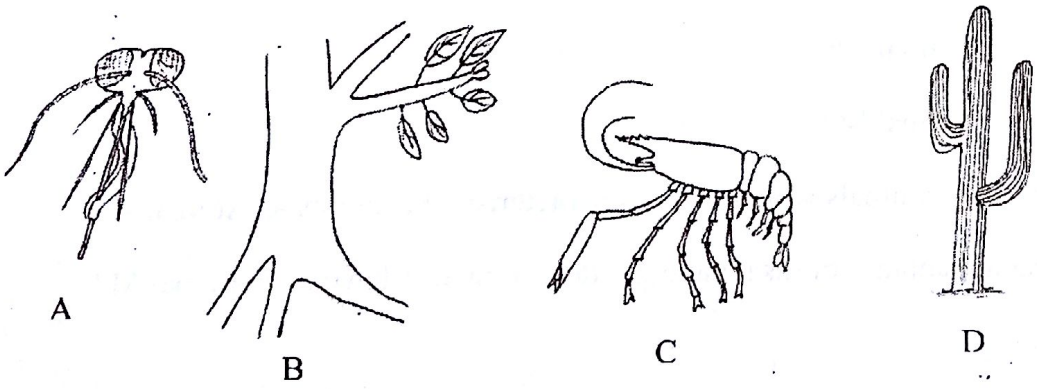

Figure 4

(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 exhi 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 st 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 temperature of two animals when subjected to different conditions, animal A and M. 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 posses characteristic behaviors as Animal A.

(d) What advantages or disadvantages does animal A have over animal M?