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

033/2

BIOLOGY 2
ALTERNATIVE TO PRACTICAL
(For School Candidates Only)

TIME: 2:30 Hours *Wednesday, 7th October 2009 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 writing should be in blue/black ink or ball point pen.
5. Electronic 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.

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1. Three food samples A, B and C were analysed to identify the food substances they contained using reagents X, Y and Z. The procedure and observations of the experiments were carried out as shown in the table below.

	Experiment	Observations	Inferenc
1.	(i) To 2mls of sample A in test tube add an equal amount of reagent Z and shake well to mix	No change	
	(ii) Immerse the test tube with contents in 1(i) above in a beaker of boiling water for three minutes.	No change	
2.	(i) To 2mls of sample A in a test tube add 3 drops of dil. hydrochloric acid and boil for two minutes. Then dilute the contents with dil. sodium Hydroxide solution.	No change	
	(ii) Add reagent Z to content in 2 (i), then boil in a water bath for three minutes	Brick–red colour	
3.	Add 2mls of sample B in a test tube and boil it for two minutes, allow cooling. After cooling add one drop of reagent Y.	A blue–black Colour appears	
4.	To 2mls of sample C in a test tube add reagent X and shake well. Heat the contents in a water bath for three minutes.	A red colour appears.	

(a) Give the inferences in experiments 1(ii), 2(ii), 3 and 4.

(b) (i) Give the names of reagents X, Y and Z respectively.

(ii) What is the name of the process(es) taking place in experiment 2(i)?

(c) What are the food substances in samples A, B and C?

2. Observe the drawings represented in Figure 1.

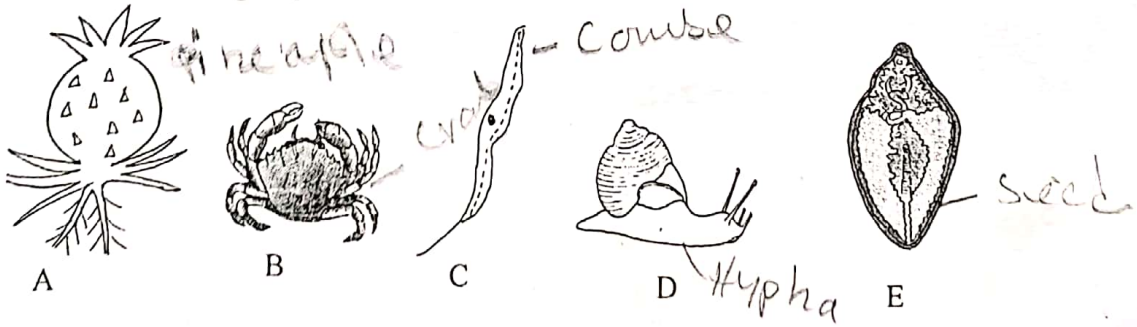


Figure 1

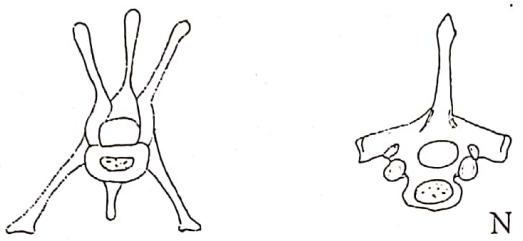
Crevatch

(a) (i) Identify organisms represented by A, B, C and D using their common names.
(ii) Name the kingdom to which each of the organisms belongs.

(b) Suggest the habitat for organism represented by B, C and E.

(c) Discuss the economic importance of the organisms represented by A, C, and E.

3. Carefully study the diagrams represented in Figure 2 and answer the questions that follow:



M

Figure 2

(a) (i) Name the bones labeled M an N.
(ii) Identify their location in the body.

(b) Label any three parts on each of the bones M and N.

(c) (i) State one function of each bone.
(ii) Explain briefly how these bones are adapted to their functions.

(d) Write down two differences between the bones M and N.

4. A Form Four student at Igole secondary school carried out the following procedures to investigate respiration:

(a) Filled two 100mls conical flasks with water which had previously been boiled and cooled to room temperature.
(b) Labelled the flasks A and B.
(c) Poured the water from conical flask A into a beaker and agitated it so as to get aerated and then poured it back to the flask A. He did not disturb the water in flask B.
(d) Gently placed live small fish in each of the flasks and observed.
(e) The fish in flask A continued swimming while that in B swam for a short period and then became motionless.

(i) Suggest the aim of the experiment.
(ii) What was the aim of boiling the water in procedure 4(a)?
(iii) What was observed in procedure 4(e)?
(iv) What conclusion could the student make?

5. An experiment has been set up as in Figure 3. The rims of the bell jar were smeared with petroleum jelly. The bell jars were then left in the sun.

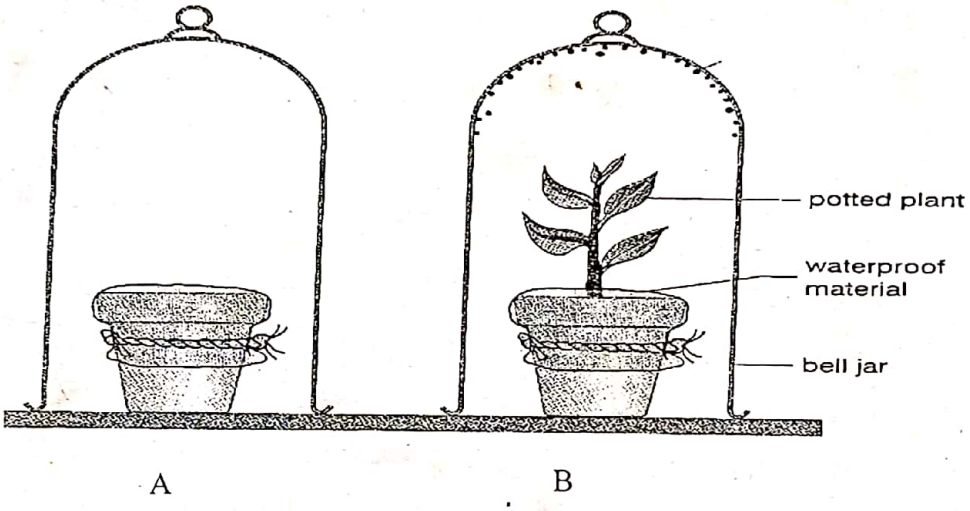


Figure 3

(a) (i) What was the aim of the experiment?

(ii) What has been formed on the inside of the bell jar B?

(iii) What was the purpose of putting the waterproof material?

(b) (i) What are the findings of the experiment?

(ii) Based on the results, what conclusions can be drawn from this experiment?

(c) (i) Mention the importance of the process involved.

(ii) What are the factors affecting the process you have mentioned in (c) (i) above?