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

133/2

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

Time: 2:30 Hours **Friday, 12th October 2012 a.m.**

Instructions

1. This paper consists of **five (5)** questions. Answer **all** the questions.
2. Each question carries 10 marks.
3. Except for diagrams that must be drawn in pencil, all writings should be in blue or black ink.
4. 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).

1. A form two student was provided with a food mixture A_1 containing food extracts obtained from maize flour and honey. The student was asked to carry out food tests so as to identify the food substances contained in the mixture.

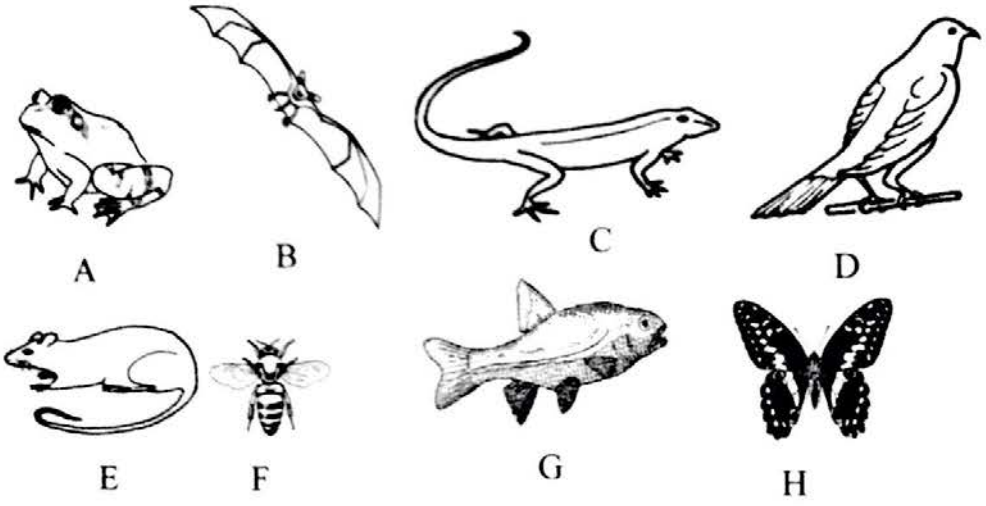
(a) Write down a report of the experiment the student was supposed to carry out using a table as the one shown below (Table 1).

Table 1

Food tested	Procedure	Observations	Inference

(b) State the importance of the food substances stated in 1(a) to the human body.

2. (a) You are provided with the following organisms:



(i) Identify organisms **A**, **B**, **C**, **D**, **E**, **F**, **G** and **H** by their common names.

(ii) Classify the animals into three (3) groups using only one observable characteristic for each group. Tabulate your results as shown in Table 2.

Table 2

Groups	Name of the animal(s)	One characteristic
Group 1		
Group 2		
Group 3		

(iii) What type of classification have you used?

(b) (i) Mention another system of classification used in Biology.

(ii) Differentiate the system of classification mentioned in (b)(i) with the one used in (a)(iii).

3. An experiment was set up as shown in Figure 1. The mixture of yeast and glucose solution was warmed for 10-15 minutes in water bath of which the temperature was 40°C.

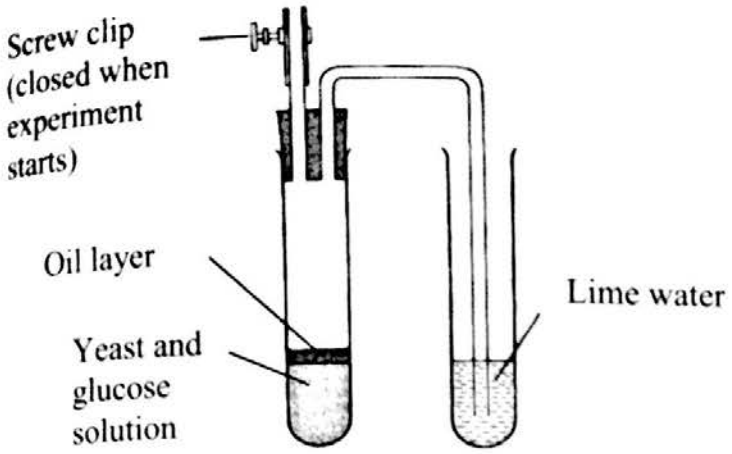


Figure 1

(a) (i) What changes would you expect to observe?
(ii) How do you explain the changes mentioned in (a) (i)?

(b) What was the aim of the experiment?

(c) What is the purpose of using glucose in the experiment?

(d) Why was it necessary to have a layer of oil above the yeast and glucose solution?

(e) Suggest a suitable control experiment.

(f) What conclusions can be drawn from the results of the experiment?

(g) Mention the economic importance of the process that took place in the experiment in Figure 1.

4. Figure 2 shows different stages of an experiment that was carried out using seedlings. Seedlings were placed in two pots A and B. The seedlings in pot B had their tips cut off while those in pot A were left intact. The experiment was observed for 2-3 days.

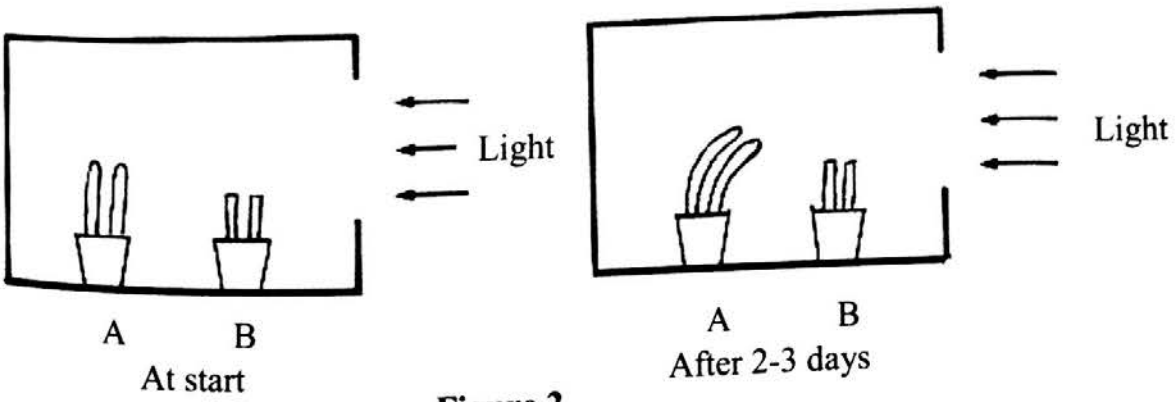


Figure 2

(a) What was the aim of the experiment?

(b) (i) Briefly describe the mechanism behind the response of the seedlings in pot A.
(ii) Why were there no significant changes in pot B?

(c) What conclusions can be drawn from the experiment?

(d) Explain why shoots deprived of light grow very tall.

5. Table 3 summarizes an experiment that was carried out to show the rate of water loss and uptake by a plant on a bright day.

Table 3

Time (Hours)	Rate of water movement (mm^3/h)	
	Water uptake	Water loss
6 a.m.	17	10
8 a.m.	17	15
10 a.m.	30	55
12 noon	50	65
2 p.m.	58	68
4 p.m.	57	63
6 p.m.	58	58
8 p.m.	45	34
10 p.m.	20	15
12 midnight	17	10
2 a.m.	17	10
4 a.m.	17	10
6 a.m.	17	10

(a) Use Table 3 to find out the following:
(i) The time when optimum rate of water loss took place.
(ii) The time when the rate of water uptake was equal to the rate of water loss.

(b) Explain why the water content of the plant increased during the time interval from 10 p.m. to 6 a.m.

(c) (i) What is the name of the process of water loss observed in the plant?
(ii) State the importance of this process to the plant.

(d) How do xerophytes adapted to avoid excessive loss of water?