

THE UNITED REPUBLIC OF TANZANIA
NATIONAL EXAMINATIONS COUNCIL
CERTIFICATE OF SECONDARY EDUCATION EXAMINATION, 1993

033/2

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

TIME: 2:30 Hours.

INSTRUCTIONS TO CANDIDATES

1. Answer ALL questions in this paper.
2. ALL answers MUST be written in the answer booklet provided.
3. Write your centre and index number on every page of your answer booklet.
4. Except for diagrams which must be drawn in pencil, ALL writing should be in ink or ball point pens.

FAILURE TO FOLLOW INSTRUCTIONS WILL LEAD TO LOSS OF MARKS.

This paper consists of 5 printed pages

1. Suppose you were provided with solution x containing carbohydrates and you were asked to plan and carry out experiments to identify the carbohydrates present in it:

(a) Outline how you would carry out a test and interpret the results of that test for each carbohydrate investigated. Tabulate your answer as shown below (Table 1).

Table 1

Carbohydrate tested	Procedure	Observation	Inference

(b) Name one example of a food material which will give a positive result for each of the tests in (a) above.

2. Oyoko assembled the apparatus as in Fig. 1 and then carried out the experiment described below.

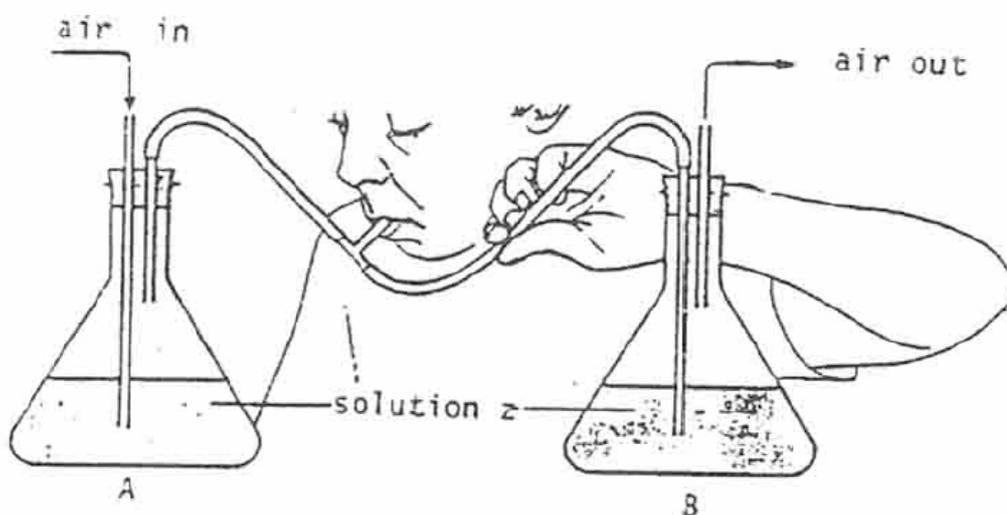


Fig.1

- (i) While pinching the rubber tubing shown on the right side of Fig. 1, he inhaled deeply through the stem of the T tube.
- (ii) he released the hold on the right-hand tubing and pinch the tubing on the left side and exhaled.
- (iii) He repeated the above two steps a number of times until there was a marked change in appearance of one of the flasks.

(iv) He lit a wooden splint and placed the burning splint into an empty glass jar. He held it in the jar until the flame went out. He added a few cm³ of solution z (same as that in flasks A & B) to the jar and shook. A change similar to that observed in one of the flasks in step (iii) was produced.

- (a) What was the aim of the experiment?
 - (b)
 - (i) What was solution z?
 - (ii) Which of the flasks A and B changed in appearance in step (iii) of the experiment?
 - (iii) What kind of gas produced a change in solution z in steps (iii) and (iv) of the experiment?
 - (c) Explain the observations made in steps (iii) and (iv) of the experiment.
 - (d) What three differences other than that investigated in Dyoko's experiment are there between inhaled and exhaled air?
3. (a) Figs. 2 and 3 represent two plant parts.

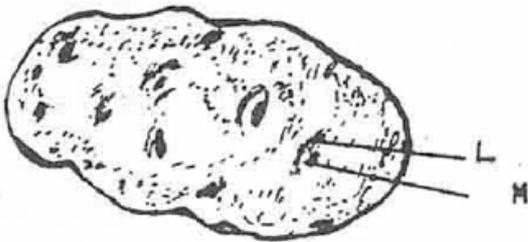


Fig.2

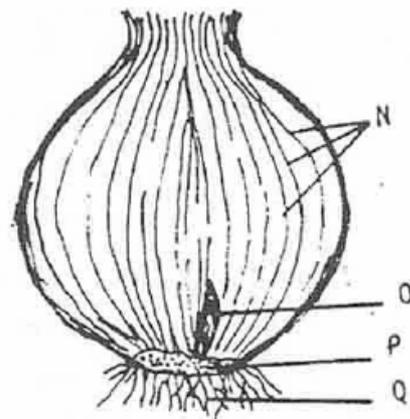
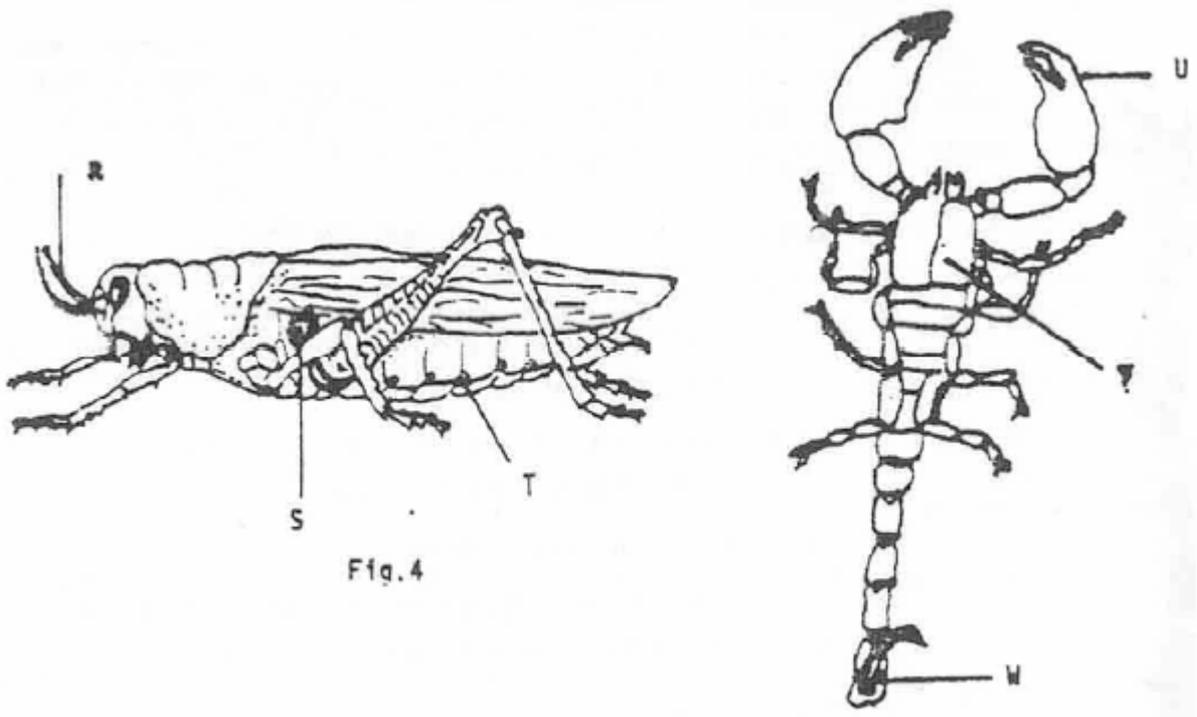


Fig.3

- (i) Identify the plant parts represented by figs.2 and 3
- (ii) Name the structures labeled L, M, N, O, P & Q.
- (iii) State two functions common to both plant parts (fig.2 and 3) in nature.
- (iv) Which structure in Fig.3 serves the same function as structure M? Name the function served by these two structures.

(b) Figs. 4 and 5 represent two animals



- (i) Identify the two animals using common names.
- (ii) Name the parts labeled R, S, T, U, V and W.
- (iii) Which distinguishing characteristics, observable from the diagrams are used to place the organisms represented by Figs. 4 & 5 in their respective classes?
- (iv) Name the phyla and classes to which the organisms in Figs. 4 & 5 belong.
- (v) In the mammalian body there are organs which have similar functions to those labeled R, S and T in Figs. 4. Name the corresponding organs in mammals with functions similar to those of R, S & T. Your answer should be in the following manner.

Name of structure on Fig.4	Corresponding organ in mammals

4. (a) Fig.6 represents a life cycle of an animal.

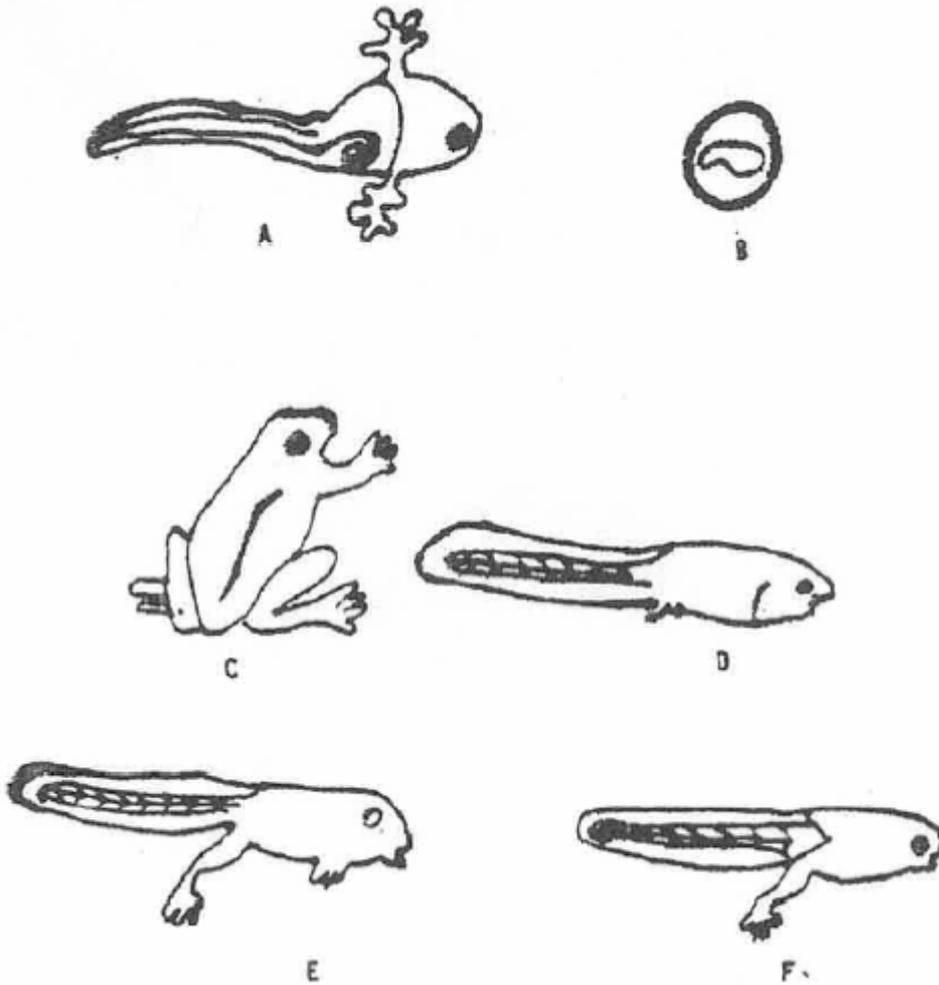


Fig.6

- (i) Name the animal whose life-cycle is represented in Fig.6
 - (ii) Rearrange the stages, using the letters, so that they show the correct sequence in the life cycle of the animal.
 - (iii) What substance is responsible for the change from one stage to another? Where is it produced?
- (b) Draw a large and well labeled diagram of a quill feather.