THE UNITED REPUBLIC OF TANZANIA

NATIONAL EXAMINATIONS COUNCIL

CERTIFICATE OF SECONDARY EDUCATION EXAMINATION, 1992

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.

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1. In a biology practical lesson, form four students were provided with sunflower fruits and asked to plan and carry out an experiment to identify the food substances present in them. Suppose you were in that lesson;

   (a) What food substances would you have suspected to be present in sunflower fruits?
   (b) How would you have prepared the sunflower fruits for the investigation?
   (c) What would have been the procedure, results and inferences for your various tests to identify the food substances you have mentioned in (a) above? Tabulate your answer as in Table 1 below.

   Table 1

Test for	Procedure	Results	Inferences

2. Three different soil samples A, B and C were each shaken up with water in a measuring jar and then left to settle. After some time the different size particles of soil settled in layers. The proportions of the various soil particles in the three samples of soil were determined and the results were as shown in table 2 below.

   Table 2

Soil Sample	% gravel	% sand	% silt	% clay
A	70	20	5	5
B	3	13	27	57
C	20	25	35	20

   Percentage constituents of each of soil samples A, B and C

(a) (i) What was the aim of the experiment ?
   (ii) From what type of soils were samples A, B and C taken? Give reasons

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2. Contd…

(b) (i) Draw a well labeled diagram to show the arrangement of the various layers formed in the measuring jar when soil sample C was being investigated.

(ii) Briefly explain how one can determine the proportion of each type of particle in a soil sample.

3. Study the diagrams in Figs. 1 – 9 and then answer the questions that follow.

Fig. 1

Fig. 2

Fig. 3

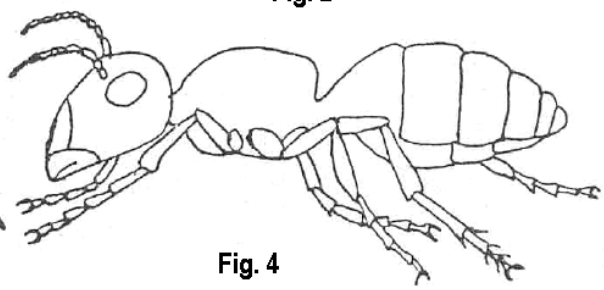

Fig. 4

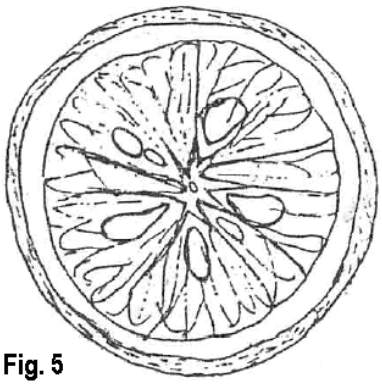

Fig. 5

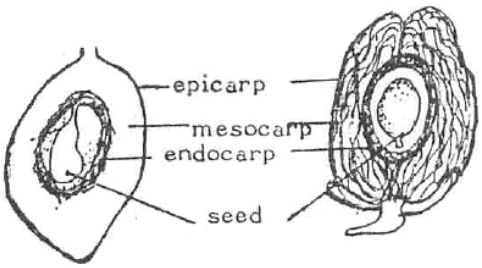

Fig. 6

Fig. 7

Fig. 5 Cross-section of A fruit

Longitudinal section of mature fruits (Figs. 6 & 7)

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3. Contd ….

Fig. 8

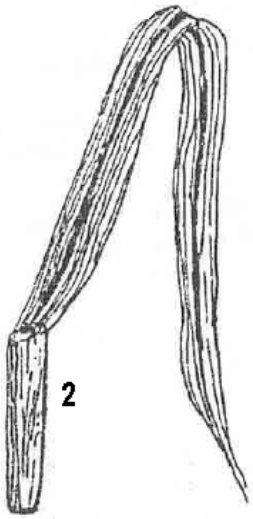

Fig. 9

(a) Giving reasons based on observable features from the diagrams state the feeding habits of the animals with structures like those shown in Figs. 1 – 3.

(b) (i) State the phylum and class to which the animal represented by Fig. 4 belongs.

(ii) List the observable characteristics in Fig. 4 which have enabled you to place it in the class stated in 3(b)(i) above.

(c) (i) Using common names , identify the fruits represented by Figs. 5 – 7.

(ii) Name the edible part(s) of the fruits in Figs. 6 and 7.

(iii) To which group of fruits does each of the fruits in Figs. 5 – 7 belong?

(d) (i) Which classes of flowering plants do the structures in Figs 8 and 9 represent ?

(ii) Distinguish the two classes using only those characteristics observable from the diagrams.

(iii) Give the names of the structures labeled 1 and 2 in Figs. 8 and 9.

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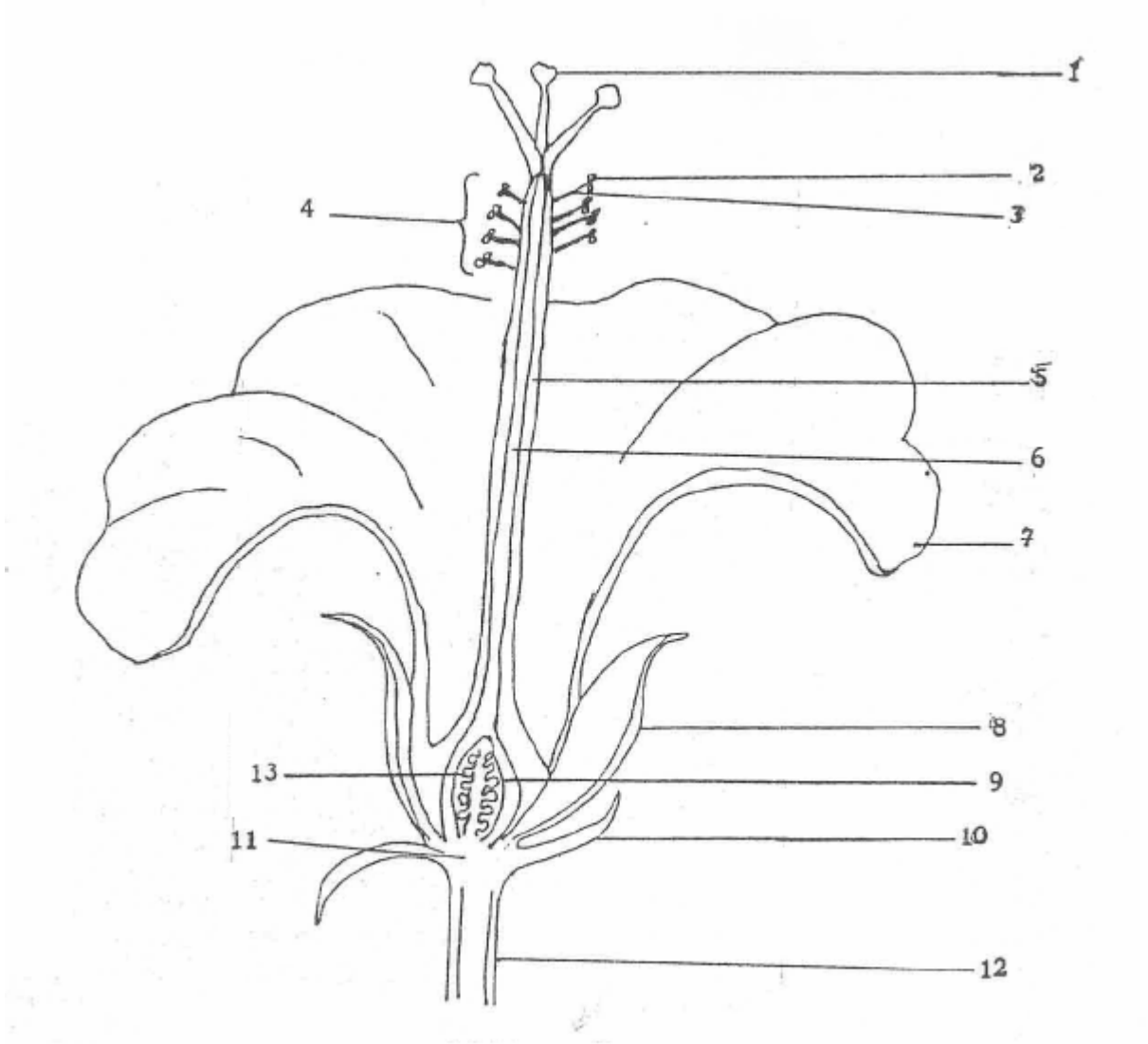
4. The following is a longitudinal section of a hibiscus flower.



L.S. of hibiscus flower

(a) Name the structures labeled 1 -13.

(b) Some of the structures you have labeled have functions similar to those od certain structures and organs found in a mammalian body. Identify such structures and compare their functions with those of their counter – parts in mammals. Use a table as shown below (Table 3).

Structure in hibiscus flower	Function	Corresponding structure in mammal	Function