THE UNITED REPUBLIC OF TANZANIA

NATIONAL EXAMINATIONS COUNCIL

CERTIFICATE OF SECONDARY EDUCATION EXAMINATION

033/2 **BIOLOGY 2**

(ACTUAL PRACTICAL)

(For Both School and Private Candidates)

Time: 2:30 Hours **ANSWERS** **Year: 1988**

Instructions

1. This paper consists of two questions.

2. Answer all questions.

1.You have been provided with specimen A. Design and carry out an experiment to identify the carbohydrates present in it.

(a) Outline the procedure you will follow to prepare specimen A for the investigation:
- Wash specimen A thoroughly
- Cut into small pieces
- Grind using a mortar and pestle
- Add a small amount of distilled water to make a solution
- Filter the mixture to obtain an extract for testing

(b) In testing for the carbohydrates, record your results:

Test for	Procedure	Observations	Inference
Starch	Add iodine solution to the extract of specimen A	Blue-black coloration forms	Starch is present
Reducing sugars	Add Benedict's solution and heat in a water bath	Brick-red precipitate forms	Reducing sugar is present
Non-reducing sugars	Boil with dilute HCl, neutralize with NaOH, then repeat Benedict's test	Brick-red precipitate forms	Non-reducing sugar present

2. (a)(i) What part of the plant does specimen A represent?
Specimen A is likely a root tuber. It is thick, fleshy, and contains stored food.

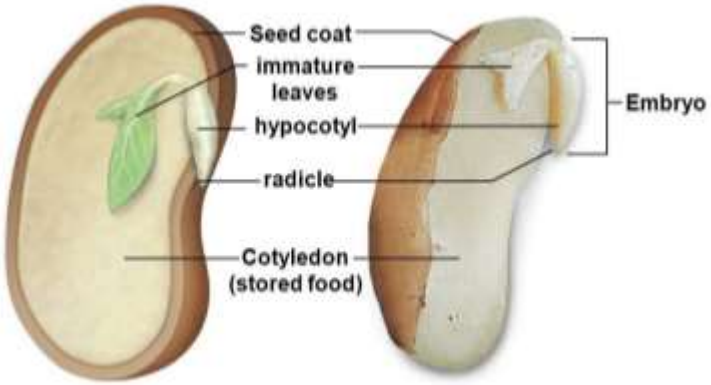
(ii) What functions does specimen A perform in the plant?
- Stores food (carbohydrates) for future use
- Aids in vegetative reproduction
- Anchors the plant in the soil

(b) Study specimen B carefully.

(i) Remove the structures concerned with gaseous exchange. Draw and label the parts.

(ii) What problems will specimen B face in life if all the fins were removed?
- It would lose balance in water
- It could not steer or maintain direction
- It would sink and not swim properly

3. (a)(i) Draw and label specimens C and D.



(ii) What part of the plant do specimens C and D represent?
They are seeds or fruits. They contain embryos and stored food for germination.

(b) Remove the outer covering of specimens C and D and place the contents on the bench.
Which part of the plant do the contents represent?
They represent the embryo and cotyledons. These are essential for seed germination and initial growth of the seedling.

(c) Using the contents of specimens C and D obtained in (b), outline the procedure to identify the classes for the plants from which specimens C and D were obtained.
- Soak specimens in water for a few hours
- Split open and examine internal parts
- Count the number of cotyledons
- If there is one cotyledon ---> Monocotyledon
- If there are two cotyledons ----> Dicotyledon
- Observe venation and root structure to confirm classification