

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

133/1

BIOLOGY PAPER 1
(For both School and Private Candidates)

TIME: $2\frac{1}{2}$ Hours.

IMPORTANT

The following instructions must be strictly adhered to.
Failure to do so may lead to loss of marks.

1. Answer FIVE questions including at least ONE question from each of sections A, B, C and D.
2. Read each question carefully.
3. Write your centre and Index Number on every page of your answer book.
4. Except for diagrams, all writing must be in blue or black ink/ball point pen.

This paper consists of 4 printed pages.

SECTION A

1. Diagrams A and B represent two cell organelles as seen under the electron microscope.

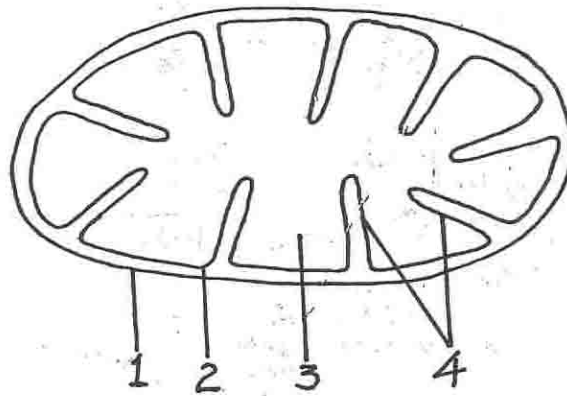


Diagram A

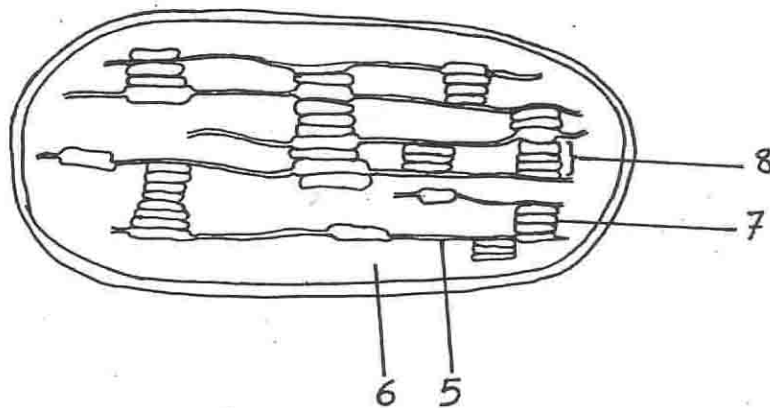


Diagram B

- (a) (i) Identify the two cell organelles.
(ii) Name the structures numbered 1 - 8.
- (b) Without using diagrams, outline the processes taking place in the structures labelled 3 and 8.
- (c) Explain briefly how organelles 1 and 2 are adapted to the functions they perform.

4	Boil 3cm ³ of S ₂ with Millon's reagent		
5	Place 2 drops of S ₂ on a filter/blotting paper and allow it to dry.		

- (b) Explain the role of each of the reagents in step 3.
- (c) Why was it necessary to carry out the procedure for steps 1 & 2 before step 3?
3. (a) Identify the six insects labelled J, K, L, M, N and O using common names.
- (b) Carefully observe the six insects. List down three features (i), (ii) and (iii); characteristic of insects, which are shown by each of the six insects.
- (c) Using a table as shown below (table 2) compare the six insects on the basis of only the three features you have listed in (b). Copy the table in your answer book but instead of writing (i), (ii) and (iii) in the boxes at the top of each column write your chosen features.

Table 2

Name of insect	(i)	(ii)	(iii)
1			
2			
3			
4			
5			
6			

- (d) Using only the information in your table, construct a simple dichotomous key which could be used to separate the six insects.
4. With the help of a hand lens, examine specimens S_3 and S_4 .
- (a) (i) Name the class to which specimen S_3 belongs.
- (ii) What observable features enable specimen S_3 to inhabit terrestrial environments?
- (iii) Make a large labelled drawing of specimen S_3 .
- (b) (i) Provide the common and scientific names of specimen S_4 .
- (ii) Name the class and phylum to which specimen S_4 belong.
- (iii) Name one other class of the phylum to which specimen S_4 belong and say how the members of this class differ from those in the class from which S_4 was taken.
5. Cut transverse sections (T.S.) of specimen S_5 . Select the best section and stain it with phloroglucinol. Mount the section on a microscope slide and observe it under a microscope.
- (a) Make a low power drawing (tissue map) of the section. Label the different layers.
- (b) (i) Name the tissues which have stained in phloroglucinol.
- (ii) What functions do these tissues perform in the plant represented by S_5 ?
- (iii) What features enable the structures which have taken up the stain perform the functions you have mentioned in b(ii)?
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