

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

**133/1**

**BIOLOGY PAPER 1  
(For Both School and Private Candidates)**

TIME: 2½ Hours

24 May 1999 P.M.

**INSTRUCTIONS**

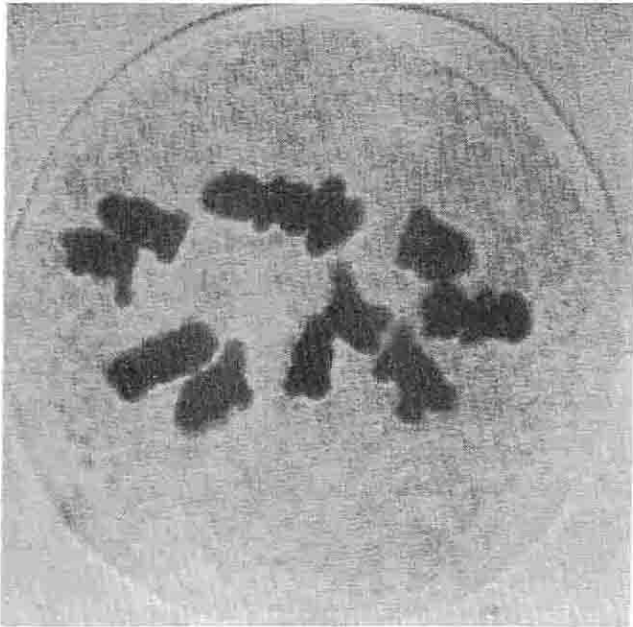
1. Answer FIVE (5) questions including at least one question from each of sections A, B, C and D.
2. Write your Centre and Index number on every page of your answer booklet provided.
3. Except for diagrams, which must be drawn in pencil, all writing must be in blue or black ink/ball point pen.
4. Read each question carefully.
5. Each question carries 20 marks.

This paper consists of 4 printed pages.

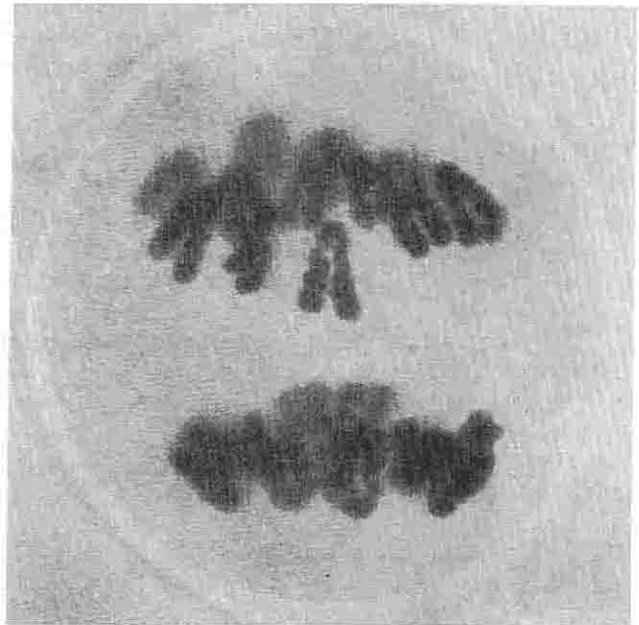
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## SECTION A

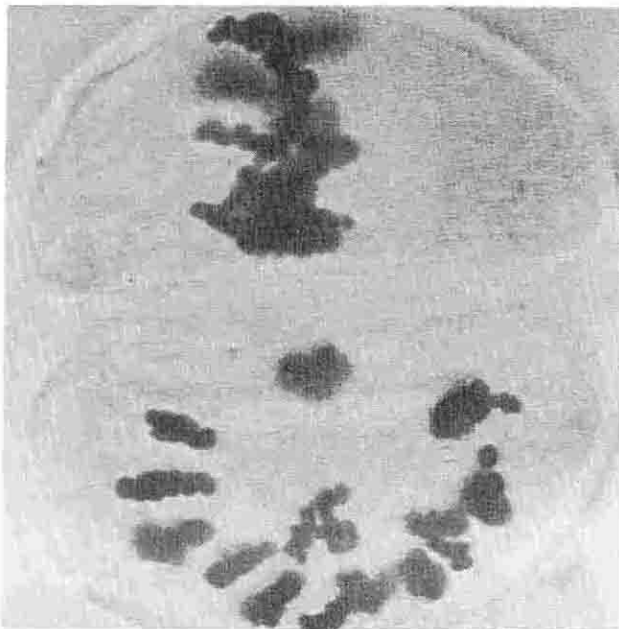
1. The photomicrographs below: A, B, C and D show different stages of an animal cell undergoing division.



A



B



C



D

- (a) Giving reasons, name the type of cell division shown in the photographs.
  - (b) (i) Identify the stages of cell division shown in the four photographs, A, B, C and D.  
(ii) Describe the events taking place at each of the four stages, A, B, C and D.
  - (c) (i) Explain the importance of the type of cell division mentioned in 1(a) above.  
(ii) Where and when in a human being are you likely to encounter this type of cell division?
  - (d) Basing on only 3 pairs of chromosomes, draw large and well labelled diagrams to represent stages B and D.
2. Describe the location of parenchyma tissue in plants and show how the structure of this tissue is related to its functions.

### SECTION B

3. (a) Explain why we classify organisms.
- (b) Discuss Artificial and Natural systems of classification. Clearly point out the advantages and disadvantages of each system.
4. (a) In the early classification schemes, fungi were grouped together with plants.  
(i) What features possessed by fungi lead to this classification?  
(ii) What considerations have been taken in separating fungi and plants into different kingdoms?
- (b) Discuss the ways in which fungi are harmful to human beings.

### SECTION C

5. (a) Compare photosynthetic phosphorylation and oxidative phosphorylation.
- (b) Describe how energy in the form of ATP is formed during cyclic photophosphorylation.
6. (a) Discuss the physiological processes which account for the opening of stomata during the day and closing at night.
- (c) Explain any six features or methods used by xerophytes in minimizing water loss.
7. (a) What do you understand by Autonomic Nervous System?
- (b) Differentiate between the sympathetic and parasympathetic systems. Explain their antagonistic effects giving five examples.

### SECTION D

8. Albinism in human beings is caused by a recessive gene which is transmitted in Mendelian fashion. A couple which is phenotypically normal for skin pigmentation has four children. The first three have normal skin and the fourth is an albino.
- (a) What is the genotype of the parents?
- (b) What is the probability that the fifth child will be an albino?
- (c) One of the first three children marries a normal skinned woman. What predictions can you make regarding the skin of their first child?

- (d) The albino child marries a normal skinned widow who had an albino child in her first marriage. What is the probability of this couple producing a normal skinned child?
9. Discuss Darwin's contributions to the theory of evolution and show how this theory has been updated.
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