

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

133/2

BIOLOGY 2
(For Both School and Private Candidates)

Time: 3 Hours

Year: 2020

Instructions

1. This paper consists of **six (6)** questions.
2. Answer **five (5)** questions.
3. Each question carries **twenty (20)** marks.
4. Except for diagrams that must be drawn in pencil, all writing should be in blue or black ink.
5. Cellular phones and any unauthorised materials are **not** allowed in the examination room.
6. Write your **Examination Number** on every page of your answer booklet(s).

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Answer **five (5)** questions.

1. (a) *Euglena* has both plant and animal characteristics. Explain its three plant and animal characteristics.

(b) In seven points, describe the structural adaptations of *Euglena* to its mode of life.
2. Describe any six processes which are impaired when mammalian liver is severely damaged.
3. With the help of well labeled diagrams, describe three main events which take place in each of the following stages of cell cycle:
 - (a) Interphase.
 - (b) Prophase.
 - (c) Metaphase.
4. (a) In four points, explain the usefulness of genetic engineering in different fields.

(b) When white and black coloured fur mice were mated, all of the F_1 had black coloured fur. Carry out genetic crosses to show the formation of F_1 and F_2 .
5. Describe how vestigial organs, chemical constituents and physiological processes support evolution among groups of organisms.
6. (a) Briefly describe how a quadrant is used to estimate population size.

(b) Describe how a quadrant can be used to estimate population size with respect to the species density, species frequency and species cover.