

GENERAL CERTIFICATE OF EDUCATION BOARD
General Certificate of Education Examination

BIOLOGY 2
0710

JUNE 2023

ADVANCED LEVEL

Subject Title	BIOLOGY
Paper No./Title	Paper 2 Theory
Subject Code No.	0710

THREE HOURS

Answer any **FIVE** out of the eight questions..

If more than five questions are answered, only the first five will be marked.

All questions carry equal marks. Marks allocated to parts of questions are indicated in brackets.

Illustrate your answers wherever desirable with large, clear and fully labelled diagrams.

You are reminded of the necessity for good English and orderly presentation in your answers.

Turn Over

0710/2
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1. (a) Explain how the information encoded in DNA is used to make protein.
 (b) How is the synthesis of proteins regulated by enzyme induction and enzyme repression? (12, 8 marks)
 (Total = 20 marks)
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2. (a) With the aid of suitable examples, distinguish between metagenesis and alternation of generation.
 (b) What role is played by metamorphosis in the life cycle of an insect?
 (c) Show how the tapeworm is adapted to its parasitic mode of life.
 (d) Which features enable the goat, sheep and man to be placed in the same group? (4, 4, 6, 6 marks)
 (Total = 20 marks)
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3. (a) What role is played by each of the following in digestion?
 (i) Salivary glands.
 (ii) Oxyntic cells.
 (b) How is the structure of the ileum suited to its function of absorption? (4, 9, 7 marks)
 (Total = 20 marks)
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4. (a) With the aid of a diagram, describe the cardiac cycle.
 (b) What role is played by the lymphatic system in the defense mechanisms of the body against infection? (10, 10 marks)
 (Total = 20 marks)
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5. (a) Outline the sequence of events that occur during the formation of a nerve impulse.
 (b) How are impulses transmitted from one neurone to another?
 (c) Briefly explain how the hypothalamus controls the pituitary gland in coordination. (9, 7, 4 marks)
 (Total = 20 marks)
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6. (a) Trace the pathway of energy flow from the sun to decomposers in a named ecosystem.
 (b) What role is played by bacteria in the recycling of nitrogen within an ecosystem?
 (c) In what ways can inhabitants in large towns and cities suffer from excessive noise? (7, 8, 5 marks)
 (Total = 20 marks)
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7. A cocoa farmer planted two species of cocoa plants. The cocoa plants with green and smooth pods were dominant over those with red and rough pods. A cross between a green and smooth pod cocoa plant and that with red and rough pod plant gave all the F_1 offspring having green and smooth pods. When the F_1 were allowed to cross with other cocoa plants with red and rough pods, the following results were obtained
- | | |
|-----|------------------------------------------|
| 380 | were green and smooth pods cocoa plants. |
| 63 | were green and rough pods cocoa plants. |
| 368 | were red and rough pods cocoa plants. |
| 69 | were red and smooth pods cocoa plants. |
- (a) Use genetic symbols to illustrate these crosses.
 (b) Calculate the crossover value of the above crosses.
 (c) What are the significances of this crossover value? (16, 2, 2 marks)
 (Total = 20 marks)
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8. (a) Distinguish between:
 (i) A culture and a culture medium.
 (ii) Batch and continuous cultures.
 (b) Show how humans have exploited the activities of microorganisms to produce:
 (i) A named antibiotics, and
 (ii) Beer. (4, 16 marks)
 (Total = 20 marks)

GO BACK AND CHECK YOUR WORK.