

GENERAL CERTIFICATE OF EDUCATION BOARD

General Certificate of Education Examination

BIOLOGY 2

0710

JUNE 2022

ADVANCED LEVEL

Subject Title	BIOLOGY
Paper No./Title	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.

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1. Seed bearing plants are known to be the most successful group of plants.

- (a) (i) State the general characteristic of seed bearing plants.
- (ii) How are seed bearing plants adapted to life on land?
- (b) Describe the process of fertilization in a named flowering plant.

(5, 8, 7 marks)
(Total = 20 marks)

2. (a) Using specific examples explain the following forms of nutrition.

- (i) Mutualism.
- (ii) Saprophytic nutrition.
- (b) (i) Describe how the alimentary canal of a named herbivore is adapted to its diet.
- (ii) What are the functions of the stomach in mammals?

(3, 4, 8, 5 marks)
(Total = 20 marks)

- 3. (a) (i) What is tissue respiration?
- (ii) Describe how anaerobes break down glucose in cells.
- (b) Differentiate between aerobic and anaerobic respiration.
- (c) What is the fate of the energy produced from respiration?

(3, 7, 5, 5 marks)
(Total = 20 marks)

- 4. (a) State the components of an ecosystem?
- (b) Describe the ecological relationships that exist between the living components in a named ecosystem.
- (c) How are ecosystems essential for man's survival?
- (d) Compare a food chain and a food web.

(2, 10, 4, 4 marks)
(Total = 20 marks)

- 5. (a) (i) What is accommodation with respect to vision?
- (ii) Describe how mammals regulate the amount of light entering the eye.
- (b) How color blindness brought about in man?
- (c) Differentiate between rods and cones.

(2, 8, 4, 6 marks)
(Total = 20 marks)

- 6. (a) Distinguish between the following terms:
 - (i) Allometric and isometric growth
 - (ii) Growth and development.
- (b) Differentiate between growth in flowering plants and growth in mammals.
- (c) Outline the role of auxins in the development of plants.

(4, 4, 6, 6 marks)
(Total = 20 Marks)



GO ON TO THE NEXT PAGE

7. (a) Define the following terms as used in Genetics.

- (i) Phenotype.
- (ii) Genotype.
- (iii) Complete dominance.
- (iv) Codominance

(b) (i) In guinea pig (*Cavia*) there are two alleles for hair color, black and white and two alleles for hair length short and long. A homozygous short and black haired guinea pig was crossed with a homozygous long and white haired guinea pig. The F_1 phenotypes had short and black hair. When the F_1 generation was test crossed with a double homozygous recessive guinea pig, the following offspring were produced:

6 short and black hair.

5 short and white hair.

7 long and black hair.

8 long and white hair.

Using genetic symbols, explain these results.

(8, 12 marks)
(Total = 20 marks)

8. (a) Define the following terms:

- (i) Biotechnology.
- (ii) Genetically modified organisms (GMOs).
- (iii) DNA profiling.

(b) Describe the main stages involved in penicillin production.

(c) Give the advantages and disadvantages of genetic engineering.

(6, 6, 8 marks)
(Total = 20 marks)

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