



P530/2

BIOLOGY THEORY

Paper 2

Monday 14th August 2023 (Afternoon)

2 hours 30 minutes

ACHOLI SECONDARY SCHOOLS EXAMINATIONS COMMITTEE

Uganda Advanced Certificate of Education

Joint Mock Examinations, 2023

BIOLOGY THEORY

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2 hours 30 minutes

INSTRUCTIONS TO CANDIDATES:

- ✓ Answer question ONE in section A plus THREE others from section B.
- ✓ Candidates are advised to read the questions carefully, organise their answers and present them precisely and logically.
- ✓ Illustrate whenever necessary with well labelled diagrams.

SECTION A

Number 1 is Compulsory

1:

- (a) During germination of maize seeds, the volume of carbon dioxide (cm^3) evolved and oxygen (cm^3) consumed by the seed embryo were established with time and recorded in the table as shown below. Study the table and answer the questions that follow.

Time (days)	0	2	4	6	8	10
Volume of CO_2 (cm^3)	8.4	7.2	8.0	8.5	9.4	6.8
Volume of O_2 (cm^3)	6.0	6.0	8.0	8.59	10.4	13.3
Respiratory Quotient						

- (i) Calculate the respiratory quotient and fill in the table you have copied from the question paper above. (03 marks)
- (ii) Draw a graph to show the variation of respiratory quotient with time. (07 marks)

- (b) Account for the variations / changes in the respiratory quotient of seedling with time. (08 marks)
- (c) Outline the importance of respiratory quotient in regard to the activities of an organism. (04 marks)
- (d) Describe the process of aerobic respiration of a lipid molecule in the absence of other substances. (08 marks)

SECTION B

Answer any THREE questions

2:

- (a) Define the following terms:
- (i) Resting potential (02 marks)
 - (ii) Action potential (02 marks)
- (b) Explain how the following processes are involved in the formation of nerve impulses.
- (i) The formation of resting potential
 - (ii) The formation and transmission of action potential (12 marks)

3:

- (a) Define the following terms: (06 marks)
- (i) Deme
 - (ii) Genetic equilibrium
 - (iii) Genome
- (b) Describe how genetic equilibrium can be upset in a deme. (07 marks)
- (c) Give an account of how reproductive isolation is brought about in a population. (07 marks)

4:

- (a) Describe the structural adaptations in birds which have made them acquire a successful aerial life. (12 marks)
- (b) How does flight in birds differ from that in insects? (08 marks)

5:

- (a) Describe the process of fertilisation in human being. (08 marks)
- (b) Explain hormonal control of pregnancy in man. (12 marks)

6:

- (a) Explain the significance of C4 plants for being more efficient in CO₂ fixation than C3 plants. (06 marks)
- (b) How is the leaf anatomy of C4 plants modified to suit its different methods of CO₂ fixation? (06 marks)
- (c) Describe the process of carbon dioxide fixation in C4 plants. (08 marks)

END.