LAZARUS

P530/2
BIOLOGY THEORY
Paper 2
July/August, 2025
2 ½ Hours

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GLORISO EXAMINATIONS BOARD (GEB)-KAMPALA

SECONDARY SCHOOLS JOINT MOCK EXAMINATIONS, 2025

Uganda Advanced Certificate of Education

BIOLOGY THEORY

Paper 2

2 hours 30 minutes

INSTRUCTIONS TO CANDIDATES:

- ✓ This Question paper consists of **TWO** sections **A** and **B**.
- ✓ Answer question **ONE** in section **A** and any **THREE** questions from section **B**.
- ✓ Candidates are advised to read the questions **carefully**, **organise** their answers and **present** them precisely and logically, illustrating with well labelled diagrams where necessary.
- ✓ Begin each question on a fresh page.

SECTION A: (40 MARKS)

Question 1:

A certain senior six student of Nyondo SS in Mbale district carried out experiments on enzyme peptidase and protein content in cotyledons of germinating bean seeds over a period of 6 days, after the start of water absorption by the seeds. He obtained the results are shown below.

Experiment A:

Relative level of enzyme peptidase	7.5	6.0	9.0	10.0	12.0	5.0	–
Days after absorption of water	0	1	2	3	4	5	6

Experiment B:

Protein per seed in *mg.*	16.0	–	11.0	–	10.0	–	6.0
Days after absorption	0	1	2	3	4	5	6

(a) (i) Using the information provided, represent the relationship which is shown above graphically. (08 marks)

(b) (i) Describe how the levels of protein and peptidase enzyme vary with time (08 marks)

(ii) Describe the relationship exists between protein and peptidase concentration in the investigation (04 marks)

(c) (i) State the estimates of masses of protein and peptidase after 3 days from the start of water imbibition/absorption? (02 marks)

(ii) At the point when the concentration of enzyme peptidase was 9.0, calculate the protein in mg per seed. (01 mark)

(d) Giving reasons for your answer, explain how the protein content and peptide concentration differ in the process of seed germination in the bean seed. (06 marks)

(e) What are the significance of water and protein to plants? (11 marks)

SECTION B: (60 MARKS)

Question 2:

(a) Define the term "biochemical oxygen demand" and describe how it can be determined. (08 marks)

(b) Outline how human activities have contributed to the increase in biochemical oxygen demand. (06 marks)

(c) Before using agro-pesticide, what are the factors that should be considered? (06 marks)

Question 3:

(a) What are the evidences that DNA is a genetic material? (06 marks)

(b) Describe the characteristics of genetic codes. (10 marks)

(c) Differentiate between mRNA and DNA. (04 marks)

Question 4:

(a) Describe the effects of inbreeding in a population? (02 marks)

(b) What are the mechanisms which limit inbreed in plants? (10 marks)

(c) How does meiosis contribute to variation? (08 marks)

Question 5:

(a) Describe the factors that induce release of hormones from the endocrine gland? Outline using suitable examples. (07 marks)

(b) Explain the ways in which the hormones affect their target organs. (13 marks)

Question 6:

(a) Explain the circulatory and respiratory changes which occur in the skeletal muscles during vigorous exercise and how the muscles recover from such an activity. (12 marks)

(b) Describe the mechanisms of carbon dioxide transport and its release at the areolar surface. (08 marks)

"GOOD LUCK"

****THE END****

- Presence of another hormone
- Change in Conc of Metabolite
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- Non-overlapping
- Tripplet
- Universal
- Degenerate