



ZIMBABWE

**MINISTRY OF HIGHER AND TERTIARY EDUCATION,
INNOVATION, SCIENCE AND TECHNOLOGY DEVELOPMENT**

**HIGHER EDUCATION EXAMINATIONS COUNCIL
(HEXCO)**

NATIONAL DIPLOMA

IN

APPLIED BIOLOGICAL TECHNOLOGY

SUBJECT: Biochemical Analysis

PAPER NO: 503/23/M01

DURATION: 3 hours

NOVEMBER/DECEMBER 2025 EXAMINATION

REQUIREMENTS

INSTRUCTIONS TO CANDIDATE

1. Do not write your name on any of the pages on the answer booklet.
2. Answer any five (5) questions.

QUESTION 1

- a) Explain how enzyme activity is affected by the following factors:
- i) pH (5 marks)
 - ii) Substrate concentration (5 marks)
 - iii) Temperature (5 marks)
- b) Describe enzyme inhibition. (5 marks)

QUESTION 2

Describe the structure and function of the following lipids:

- a) Triglyceride (5 marks)
- b) Glycolipid (5 marks)
- c) Phospholipid (5 marks)
- d) Lipoprotein (5 marks)

QUESTION 3

- a) With the aid of a diagram, outline the formation of a peptide bond. (4 marks)
- b) Describe the four (4) levels of protein organisation. (16 marks)

QUESTION 4

- a) Draw the structure of α -glucose. (3 marks)
- b) Outline the synthesis of cellulose with the aid of a diagram. (10 marks)
- c) Outline any simple test for reducing sugars. (7 marks)

QUESTION 5

- a) List any three (3) water soluble vitamins and four fat soluble vitamins. For each vitamin, state the function and one source. (14 marks)
- b) State three (3) examples of coenzymes and give functions of each. (6 marks)

QUESTION 6

- a) Outline any four (4) minerals and their roles in biochemistry. (8 marks)
- b) Describe with the aid of well-labelled diagrams, the mechanism of enzyme action. (12 marks)

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