



ZIMBABWE

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

**HIGHER EDUCATION EXAMINATIONS COUNCIL
(HEXCO)**

NATIONAL DIPLOMA

IN

FOOD SCIENCE AND TECHNOLOGY

MODULE: Food Chemistry

PAPER NO: 544/23/M01

DURATION: 3 Hours

JUNE 2026 EXAMINATION

REQUIREMENTS

Calculator

INSTRUCTIONS TO CANDIDATE

- 1. Answer any five (5) questions.**
- 2. Start each question on a new page.**
- 3. Do not write your name on the answer script.**
- 4. Each question carries 20 marks.**

QUESTION 1

- a) Give an account of the amphoteric nature of amino acids. (5 marks)
- b) Illustrate the formation of peptide bond. (5 marks)
- c) Outline the advantages and disadvantages of using artificial sweeteners. (10 marks)

QUESTION 2

- a) Give a detailed description of the four main classes of carbohydrates. (12 marks)
- b) Discuss the benefits and uses of functional foods. (8 marks)

QUESTION 3

- a) Briefly explain water activity and its importance in food stability. (5 marks)
- b) Describe methods of moisture determination in foods. (10 marks)
- c) Explain the structure of amino acids. (5 marks)

QUESTION 4

Give a detailed description of the following reactions in food.

- a) Enzymatic browning. (4 marks)
- b) Non- enzymatic browning. (4 marks)
- c) Lipid oxidation (4 marks)
- d) Protein oxidation (4 marks)
- e) Vitamin and pigment degradation (4 marks)

QUESTION 5

Describe the effects of preservation methods on chemical, physical and nutritional composition. (20 marks)

QUESTION 6

- a) Distinguish between fats and oils. (10 marks)
- b) Describe the following reactions and in your description highlight their importance in food processing.
- i) Gelatinisation (5 marks)
- ii) Denaturation (5 marks)

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