

2913/201
FOOD CHEMISTRY I AND
FOOD MICROBIOLOGY I
Oct./Nov. 2022
Time: 3 hours



THE KENYA NATIONAL EXAMINATIONS COUNCIL
DIPLOMA IN FOOD SCIENCE AND PROCESSING TECHNOLOGY

MODULE II

FOOD CHEMISTRY I AND FOOD MICROBIOLOGY I
3 hours

INSTRUCTIONS TO CANDIDATES

You should have an answer booklet for this examination:

This paper consists of TWO sections; A and B.

Answer ALL the questions in section A and any TWO questions from section B in the answer booklet provided.

Each question in section A carries 15 marks while each question in section B carries 20 marks.

Maximum marks for each part of a question are as shown.

Candidates should answer the questions in English.

This paper consists of 3 printed pages.

Candidates should check the question paper to ascertain that all the pages are printed as indicated and that no questions are missing.

SECTION A (60 marks)

Answer ALL the questions in this section.

1. (a) State five advantages of obtaining enzymes from micro-organisms. (5 marks)
- (b) With the aid of chemical structures, explain the structural differences between amylose and amylopectin. (10 marks)
2. (a) State six types of surface sampling techniques applied during food microbiological analysis. (6 marks)
- (b) State five objectives of food microbiological testing during processing. (5 marks)
- (c) Differentiate between microbiological standard and microbiological specification. (4 marks)
3. (a) (i) Using linear structure of fructose molecule, identify all asymmetric carbon atoms. (3 marks)
- (ii) Determine the possible number of isomers of fructose in (i). (1 mark)
- (b) State five features of an active site of an enzyme. (5 marks)
- (c) Using a graphical diagram, explain how temperature influence the rate of enzyme catalysed reactions. (6 marks)
4. (a) State five beneficial effects of microbiological activities in food. (5 marks)
- (b) Explain five intrinsic factors which influence microbiological growth in food. (10 marks)

SECTION B (40 marks)

Answer any TWO questions from this section.

5. (a) Define water activity. (2 marks)
- (b) Explain the importance of water activity in food. (2 marks)
- (c) With the aid of sorption isotherms of a low moisture content food, describe the types of water found in food. (16 marks)

- ✓ 6. (a) Describe the formation of glycosidic bond. (3 marks)
- (b) State three ways of lowering water activity in a food system. (3 marks)
- (c) Explain the use of carbohydrates in the food industry. (14 marks)
7. (a) State eight qualities of a good disinfectant. (8 marks)
- (b) Explain six factors which influence the effectiveness of a disinfectant. (12 marks)
- ✓ 8. (a) State five sources of egg contamination. (5 marks)
- (b) Describe egg spoilage with respect to each of the following:
- (i) black spot; (5 marks)
- (ii) green rots. (5 marks)
- (c) Identify five features of a spoiled packaged food can. (5 marks)

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