2913/204
FOOD PROCESSING AND
PRESERVATION I
Oct. / Nov. 2022
Time: 3 hours

THE KENYA NATIONAL EXAMINATIONS COUNCIL

DIPLOMA IN FOOD SCIENCE AND PROCESSING TECHNOLOGY

MODULE II

FOOD PROCESSING AND PRESERVATION 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.

Turn over

SECTION A (60 marks)

Answer ALL the questions in this section.

1. (a) Define each of the following as used in food processing and preservation:

(i) refrigeration load; (2 marks)

(ii) freezer burn; (2 marks)

(iii) cryogen; (2 marks)

(iv) freeze concentration. (2 marks)

(b) Explain the negative effects of slow freezing of foods. (7 marks)

2. (a) State **four** functions of nitrites in meat curing. (4 marks)

(b) Differentiate between mesophilic and themophilic microorganisms. (4 marks)

(c) With the aid of a flow diagram, describe the colour changes during curing and handling of meat. (7 marks)

3. (a) State **four** extrinsic factors which influence food spoilage. (4 marks)

(b) State **five** reasons why microorganisms are considered the most troublesome in food processing and preservation industry. (5 marks)

(c) With the aid of a labelled diagram, describe the operation of cabinet dryers in food preservation. (6 marks)

4. (a) State **four** preservative effects of smoking. (4 marks)

(b) Explain the disadvantages of heavily smoked food products. (4 marks)

(c) Discuss the traditional method of smoking food. (7 marks)

SECTION B (40 marks)

*Answer **TWO** questions in this section.*

5. (a) State **four** advantages of immersion freezing using cryogenic liquids. (4 marks)

(b) Describe the fermentation stages in acetic acid production. (9 marks)

(c) (i) Define pickling. (2 marks)

(ii) Outline the procedure of refreshing pickled products for use after storage. (5 marks)

6. (a) State **four** objectives of thermal processing of food. (4 marks)

(b) Explain **four** factors which affect resistance of microorganisms to heat. (8 marks)

(c) State **two** effects of heat on each of the following food constituents:

(i) proteins; protein denaturation. (2 marks)
(ii) lipids; Rancidity (2 marks)
(iii) pigments; Discolourization (2 marks)
(iv) carbohydrates. - gelatinization. (2 marks)
Dextri, syneresis.

7. (a) Differentiate between perishable and durable foods. (4 marks)

(b) State **four** ways through which sodium chloride effects food preservation. (4 marks)

(c) State **five** factors which determine the amount of heat needed to produce a commercially sterile food product. (5 marks)

(d) With the aid of a diagram, explain the effects of constituent orientation on the rate of dehydration. (7 marks)

8. (a) Define 'commercial sterilization'. (2 marks)

(b) With the aid of a flow diagram, outline septic food packaging procedure. (8 marks)

(c) With the aid of a diagram, describe the sections of a moisture absorption isotherm. (10 marks)

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