1507/112 1819/102
1802/102 1907/102
FOOD SCIENCE AND NUTRITION
June/July 2017
Time: 3 hours

THE KENYA NATIONAL EXAMINATIONS COUNCIL

CRAFT CERTIFICATE IN CATERING AND ACCOMMODATION
CRAFT CERTIFICATE IN FOOD AND BEVERAGE PRODUCTION AND SERVICE
CRAFT CERTIFICATE IN BAKING TECHNOLOGY
MODULE I

FOOD SCIENCE AND NUTRITION

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** questions in Section **A** and any **THREE** questions from Section **B** in the answer booklet provided.*
Maximum marks for each part of a question are indicated.
Candidates should answer the questions in English.

This paper consists of 4 printed pages.

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

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SECTION A (55 marks)

Answer ALL the questions in this section.

1. Explain **two** methods by which the energy value of foods may be determined. (4 marks)

2. Explain the importance of the following activities in the food industry:

   (a) lowering the PH value in a cake mixture; (2 marks)

   (b) the addition of citric acid to strawberries in jam-making. (2 marks)

3. Explain the meaning of the following terms as used in the study of organic compounds:

   (a) homologous series;

   (b) hydrocarbons.

   (4 marks)

4. (a) Explain the meaning of the term *'beta carotene'* as used in the study of vitamins.

   (b) Identify **four** food rich sources of beta-carotene.

   (4 marks)

5. (a) Identify **four** types of citrus fruits used in the food industry.

   (b) Outline **three** uses of citrus fruits in the food industry.

   (5 marks)

6. Explain the role of the following enzymes in food digestion:

   (a) salivary amylase; (2 marks)

   (b) dipeptidase. (2 marks)

7. Differentiate *'synthetic'* food additives from *'artificial'* food additives. (4 marks)

8. Explain **two** ways of preventing food contamination by using temperature control in the preparation area. (4 marks)

9. Identify **three** ways in which food may become unfit for human consumption. (3 marks)

10. Outline **three** conditions necessary for the growth of micro-organisms. (3 marks)

11. (a) Explain the meaning of biological food poisoning.

(b) Identify **four** food commodities which may cause biological food poisoning. (4 marks)

12. Outline **three** ways through which blood can transmit HIV. (3 marks)

13. State **three** benefits of using food additives in food production. (3 marks)

14. State **three** symptoms of osteomalacia. (3 marks)

15. Identify **six** sources of cereals in the diet. (3 marks)

SECTION B (45 marks)

*Answer any **THREE** questions from in this section.*

16. (a) Outline **four** signs and symptoms of nutritional marasmus. (4 marks)

(b) State **five** legal requirements relating to the labelling of packaged food. (5 marks)

(c) Outline **six** rules which should be followed by food workshop staff to control contamination by house flies. (6 marks)

17. (a) State **four** properties of the following substances:

(i) acids;
(ii) alkalis.

(8 marks)

(b) Differentiate *'saturated'* hydrocarbons from *'unsaturated'* hydrocarbons. (4 marks)

(c) Outline **three** factors which should be considered when choosing food commodities. (3 marks)

18. (a) Explain the meaning of the following terms as used in food science:

(i) microbial food spoilage;
(ii) micro-organisms;
(iii) sterilization.

(6 marks)

(b) Outline **four** desirable roles of enzymes in food processing. (4 marks)

(c) State **five** symptoms of HIV and AIDS in human beings. (5 marks)

19. (a) Explain the manner in which the following chemicals may cause food poisoning:

(i) arsenic;
(ii) lead;
(iii) antimony.

(6 marks)

(b) (i) Identify the first **two** members of the alkane series of hydrocarbons.

(ii) Write the structural formula of each of the alkanes in b(i). (5 marks)

(c) Explain the following methods of food preservation:

(i) dehydration;

(ii) chilling. (4 marks)

20. (a) (i) Identify **four** signs of a rodent infestation in a food workshop.

(ii) Outline four measures of controlling rodent infestation in a food workshop.

(8 marks)

(b) Identify the chemical elements contained in proteins. (3 marks)

(c) Explain the following chemical properties of carbohydrates:

(i) hydrolysis;

(ii) reducing properties.

(4 marks)

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