

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.**

## 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)  
= Calorie
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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