1903/202
FOOD CHEMISTRY AND FOOD MICROBIOLOGY
Oct./Nov. 2021
Time: 3 hours

THE KENYA NATIONAL EXAMINATIONS COUNCIL

CRAFT CERTIFICATE IN FOOD PROCESSING AND PRESERVATION TECHNOLOGY

MODULE II

FOOD CHEMISTRY AND FOOD MICROBIOLOGY

3 hours

INSTRUCTIONS TO CANDIDATES

Your should have the following for this examination:
Answer booklet;
Non-programmable scientific calculator.
*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 **4** marks while each question in section **B** carries **20** marks.*
Maximum marks for each part of a question are as 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.

Turn over

SECTION A (60 marks)

Answer ALL the questions in this section.

1. State the principle of control of microorganisms by each of the following methods:
   (a) pasteurization; (1 mark)
   (b) fermentation; (1 mark)
   (c) drying; (1 mark)
   (d) chilling. (1 mark)
2. State **four** objectives of controlling microorganisms in food. (4 marks)
3. State **four** reasons for assessing the presence of indicator microorganisms in food. (4 marks)
4. Explain the significance of analysing water sample immediately after sampling. (4 marks)
5. Explain the importance of yeast and moulds assessment in foods. (4 marks)
6. Explain the use of lactic acid bacteria in cheese manufacture. (4 marks)
7. (a) Define probiotic as used in food processing. (2 marks)
   (b) State **two** functions of yeast in bread manufacture. (2 marks)
8. (a) State **two** intrinsic factors which affect microbial growth in foods. (2 marks)
   (b) State **two** sources of each of the following simple sugars:
      (i) maltose; (1 mark)
      (ii) glucose. (1 mark)
9. State **four** properties of monosaccharides. (4 marks)
10. Explain food adulteration. (4 marks)
11. (a) State the types of adulterants. (2 marks)
    (b) Define food contaminant. (2 marks)
12. Name **four** protein tests. (4 marks)
13. (a) State **two** dietary sources of retinol. (1 mark)
    (b) Explain the use of vitamins in food industries. (3 marks)

14. Explain the occurrence and toxicity of goitrogens. (4 marks)

15. Describe the formation of a fat molecule. (4 marks)

SECTION B (40 marks)

*Answer any **TWO** questions from this section.*

16. (a) Explain each of the following terms as used in food spoilage:

(i) whiskers; (2 marks)
(ii) putrefaction; (2 marks)
(iii) mouldiness. (2 marks)

(b) Explain the factors which influence microbial spoilage of canned foods. (6 marks)

(c) Describe flat sour spoilage in canned foods. (5 marks)

(d) State **three** factors which influence the numbers of microorganisms in food. (3 marks)

17. (a) State whether each of the following food poisoning organisms cause food infection or food intoxication:

(i) *salmonella typhi;* (1 mark)
(ii) *shigella dysentriae*; (1 mark)
(iii) *clostridium botulinum;* (1 mark)
(iv) *staphylococcus aureus;* (1 mark)
(v) *aspergillus parasiticus*; (1 mark)
(vi) *salmonella enteritidis*. (1 mark)

(b) Explain food intoxication. (3 marks)

(c) Differentiate between each of the following:

(i) enterotoxin and neurotoxin; (2 marks)
(ii) endotoxin and exotoxin. (2 marks)

(d) State **seven** preventive measures against food poisoning by moulds. (7 marks)

18. (a) Describe the composition of an amino acid molecule. (5 marks)

(b) Explain the functions of proteins in the human body. (9 marks)

(c) Describe the digestion of proteins in the stomach. (6 marks)

19. (a) Explain the classification of lipids. (6 marks)

(b) Define essential fatty acids giving **three** examples. (5 marks)

(c) Name **ten** sources of lipids. (5 marks)

(d) Explain the characteristics of bound water. (4 marks)

THIS IS THE LAST PRINTED PAGE.