

1903/104
FOOD ENGINEERING I
Oct./Nov. 2022
Time: 3 hours



THE KENYA NATIONAL EXAMINATIONS COUNCIL
**CRAFT CERTIFICATE IN FOOD PROCESSING & PRESERVATION
TECHNOLOGY**

MODULE I

FOOD ENGINEERING I

3 hours

INSTRUCTIONS TO CANDIDATES

You should have the following for this examination:

Answer booklet;

Non-programmable scientific calculator.

This paper consists of TWO sections; A and B.

Answer ALL 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 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 questions in this section.

1. State **four** factors considered when selecting a site for a food processed plant. (4 marks)
2. Describe cleaning in place method for a food processing plant. (4 marks)
3. List **four** surface sources of water for processing industries. (4 marks)
4. Explain the importance of ventilation in a food plant. (4 marks)
5. State **four** defects of water from natural sources. (4 marks)
6. Define each of the following as used in steam generation:
 - (a) boiler efficiency; (2 marks)
 - (b) culinary steam. (2 marks)
7. State **four** desirable qualities of fuel for steam generation. (4 marks)
8. Describe the water-tube boiler. (4 marks)
9. Describe **four** classes of fires. (4 marks)
10. Name **four** wet cleaning methods of raw materials. (4 marks)
11. State **four** uses of steam in food processing. (4 marks)
12. Explain the use of cranes in food raw material handling. (4 marks)
13. State **four** safety considerations in material handling. (4 marks)
14. Explain the importance of cooling food. (4 marks)
15. List **four** pollutants found in wastewater. (4 marks)

SECTION B (40 marks)

Answer any TWO questions from this section.

16. (a) Explain five factors considered during equipment design for food processing. (10 marks)
- (b) Describe five factors affecting boiler efficiency. (10 marks)
17. (a) Explain the principle of cryogenic cooling. (4 marks)
- (b) Describe the co-current tunnel freezing of food. (6 marks)
- (c) Explain the importance of operator safety training in the food industry. (10 marks)
18. (a) Identify four categories of industrial safety symbols. (4 marks)
- (b) Describe each of the following physical methods of water treatment:
- (i) screening; (3 marks)
 - (ii) sedimentation; (5 marks)
 - (iii) sand filtration. (8 marks)
19. (a) Explain sorting of food raw materials. (10 marks)
- (b) Describe operational boiler accessories. (10 marks)

THIS IS THE LAST PRINTED PAGE.