



UNIVERSITI KUALA LUMPUR
MALAYSIAN INSTITUTE OF CHEMICAL AND BIO-ENGINEERING TECHNOLOGY

FINAL EXAMINATION
OCTOBER 2025 SEMESTER

COURSE CODE : CFB31003
COURSE TITLE : FOOD QUALITY & SAFETY MANAGEMENT SYSTEM
PROGRAMME NAME : BACHELOR OF CHEMICAL ENGINEERING TECHNOLOGY (FOOD)
WITH HONOURS
DATE : 27 JANUARY 2026
TIME : 9:00AM - 12:00PM
DURATION : 3 HOURS

INSTRUCTIONS TO CANDIDATES

1. Please read the instructions given in the question paper CAREFULLY.
2. This question paper is printed on both sides of the paper.
3. This question paper consist of TWO sections.
4. Answer ALL questions for Section A.
5. Section B consist of four questions. Answer THREE (3) questions only.
6. Please write your answer on the answer booklet provided.
7. Please answer all questions in English only.
8. Please answer MCQ/EMQ questions using OMR sheet. ☐ *Tick if applicable*
9. Refer to the attached Formula/ Appendies. ☐ *Tick if applicable*

SECTION A (Total: 40 marks)

Answer ALL questions.

Please use the answer booklet provided.

1. How long can food be in the "danger zone" before it becomes unsafe to eat?
 - A. 4 hours
 - B. 1 hour
 - C. 6 hours
 - D. 2 hours

2. The main purpose of food safety legislation is_____.
 - A. To reduce food costs
 - B. To promote food exports
 - C. To protect consumers from illness and harm
 - D. To increase food production

3. Which types of food are most often implicated with food poisoning?
 - A. Sugar-based, high-acid and moist
 - B. Low-acid, protein-based and moist
 - C. High-moisture, protein-base and raw
 - D. Dry, carbohydrates-based and spoilt.

4. How is the aesthetics of a product defined as?
 - A. Whether the product is made exactly as the designer intended.
 - B. How good the product performs its job.
 - C. How fast the job of the product is completed.
 - D. How good it looks.

5. Which one of these is a dimension of quality?
 - A. Control limits
 - B. Hazard rate
 - C. Performance
 - D. Process Capability

6. What is the main type of micro-organism responsible for food poisoning?
 - A. Mould
 - B. Bacteria
 - C. Virus
 - D. Parasite

7. The FDA Food Code recommendation no more than a cumulative ____ hours in the danger zone
 - A. 2
 - B. 3
 - C. 1
 - D. 4

8. One key role of the World Health Organization (WHO) is _____.
 - A. Enforcing local laws
 - B. Regulating drug pricing
 - C. Coordinating world health efforts
 - D. Approving pharmaceutical brands

9. Which agency oversees Codex matters in Malaysia?
- A. Food Safety Quality Department (FSQD)
 - B. SIRIM
 - C. Department of Veterinary Services (DVS)
 - D. Ministry of Health
10. The Codex Alimentarius aims to _____.
- A. Regulate local authorities
 - B. Support local agriculture
 - C. Enforce drug control
 - D. Ensure fair trade and food safety
11. Which of the following are recommended properties for floor surfaces in a food preparation room?
- A. Absorb liquids and anti-slip.
 - B. Jointless and easy to clean
 - C. Smooth and open jointed
 - D. Hard wearing and open jointed
12. A list of ingredients must be included on a food label. These ingredients are listed in descending order according to its:
- A. Volume
 - B. Weight
 - C. Bulk
 - D. Particle size

13. Which statements below is TRUE?
- I. All food contact surfaces, equipment and utensils must be cleaned and sanitized when they become contaminated.
 - II. The purpose of detergent, which is a chemical product, is to kill bacteria.
 - III. Use the same cloth to wipe benches utensils and crockery.
 - IV. Cross-contamination is when bacteria contaminate food or a food surface.
 - V. Frozen foods do not contain bacteria.
- A. I and II
 - B. I, II, III and IV
 - C. I, II, III, IV and V
 - D. I, II and III
14. In general, food should be cooked to which temperature?
- A. 100°C
 - B. 60°C
 - C. 75°C
 - D. 5°C
15. What are the factors that need to be considered when preparing and cooking a food product?
- A. Physical Hazards
 - B. Cooking the ingredients and following the recipe.
 - C. Leaving jewellery on and wearing an apron.
 - D. The raw materials are cooked safely to prevent food hygiene hazards and safe personal hygiene practices are followed.

16. Cross-contamination of food occurs when:
- A. Washing hands before handling food
 - B. Cleaning and sanitizing equipment and benches.
 - C. Using food handling gloves for handling money.
 - D. Keeping food stored in food-grade containers.
17. Identify the best reason for integrating HACCP with ISO 22000.
- A. Easier staff recruitment
 - B. Faster market penetration
 - C. Lower documentation needs
 - D. More comprehensive food safety management
18. Which of the following is covered under 'Raw Material Quality Assurance'?
- A. Survey program
 - B. Specifications
 - C. Service
 - D. All of mentioned
19. How many principles are listed in a HACCP system?
- A. Five
 - B. Ten
 - C. Seven
 - D. Twelve

20. Which of the followings is an example of a biological hazard?
- A. Salmonella
 - B. Dirt
 - C. Cleaners
 - D. Antibiotics
21. Which of the following is useful in trouble shooting for physical systems hazard?
- A. Identifying all physical system hazards to safety and integrity of products.
 - B. Developing and maintaining flow diagrams to cover all food processing and physical systems and environment.
 - C. Establishing systems of control for all hazards and maintaining records of the same.
 - D. All of the mentioned
22. Based on Malaysia Food Hygiene Regulation 2009, the interpretation of "food handler" includes any person who _____.
- I. directly involved in the preparation area
 - II. comes into contact with food or food contact surfaces, and
 - III. handles packaged or unpackaged food, or appliances
 - IV. any workers included office administration
- A. I, III and IV
 - B. I and II
 - C. I, II, and III
 - D. I, II, III and IV
23. The recordkeeping requirements of a HACCP plan would enable:
- A. The company to save money by using less paper than it otherwise would.
 - B. Food handlers to work faster.
 - C. Complying with food safety laws over a set period.
 - D. People to know what their colleagues are doing.

24. What kind of hazards does HACCP address?
- A. It is used to guide businesses through the process of identifying food safety hazards.
 - B. It highlights inaccuracies in an organization administrative process.
 - C. It focuses on potential fire hazards within the food preparation area.
 - D. It shows food handlers which utensils to use when cooking meals.
25. _____ helps organization reduce employee turnover and absenteeism.
- A. Job design
 - B. Wage revision
 - C. Training & development
 - D. All of mentioned
26. Which of the followings are the benefits of implementing HACCP?
- A. It helps to increase the profits of a company involved in food preparation.
 - B. It keeps workers involved in food production on their toes.
 - C. It assists businesses that work within the food preparation and supply industry to identify and manage key controls over processes and thereby ensure safe food.
 - D. It helps organizations to keep accurate administrative records relating to food production.
27. TQM and ISO both focuses on
- A. Employee
 - B. Customer
 - C. All listed
 - D. Supplier

28. Total Quality Management (TQM) focuses on
- A. Employee
 - B. Employee and customer
 - C. Customer
 - D. None of the mentioned
29. The objective of ISO-9000 family of Quality management is
- A. Skill enhancement
 - B. Environmental issues
 - C. Customer satisfaction
 - D. Employee satisfaction
30. Which of the following is an example of data suitable for an attribute control chart?
- A. The pH level of a chemical solution.
 - B. The number of defective items in a batch.
 - C. The weight of a packaged product.
 - D. The diameter of a manufactured part.
31. Which of the following best explains why randomization is essential in a single-factor experimental design?
- A. To average out the effects of uncontrolled variables
 - B. To simplify data collection
 - C. To reduce response variables
 - D. To eliminate replication

32. Evaluate the reason for rejecting the null hypothesis in an ANOVA test.
- A. Mean values are equal
 - B. $F\text{-value} > F\text{-crit}$
 - C. $F\text{-value} < F\text{-crit}$
 - D. Variances are small
33. Identify a process where attribute control charts are more appropriate than variable charts.
- A. Counting defective cans
 - B. Measuring pH in food
 - C. Calculating weight
 - D. Testing viscosity
34. A sausage manufacturer tests three smoking methods. Which statistical approach best determines whether a significant difference exists between the methods?
- A. Control chart analysis
 - B. Correlation matrix
 - C. Box plot interpretation
 - D. One-way ANOVA
35. What is the primary difference between variable control charts and attribute control charts?
- A. Variable control charts use continuous data, while attribute control charts use countable data.
 - B. Variable control charts can monitor multiple characteristics simultaneously, while attribute control charts cannot.
 - C. Variable control charts measure categorical data, while attribute control charts measure numerical data.
 - D. Variable control charts are less precise than attribute control charts.

36. Control charts for central tendency and the variability are called _____ control charts.
- A. Attributes
 - B. Rejections
 - C. Acceptance
 - D. Variables
37. The center line of a control chart will be having a value _____
- A. Higher than mean of quality characteristic.
 - B. Equal to mean of quality characteristic.
 - C. Lower than mean of quality characteristic.
 - D. Which is higher than UCL
38. Control chart is a useful _____
- A. process monitoring technique.
 - B. manufacturing process
 - C. off-line quality control tool
 - D. part of acceptance sampling techniques.
39. A designed experiment is a test or series of tests in which _____ changes are made to the input variables so that we may observe and identify corresponding changes in the output response.
- A. Purposeful
 - B. Non-purposeful
 - C. Random
 - D. Systematic

40. Which factor helps ensure safe inventory?

- A. Sanitation in storage
- B. Design features
- C. Employee feedback
- D. Advertising

SECTION B (Total: 60 marks)

Answer THREE (3) questions only.

Please use the answer booklet provided.

Question 1

Describe the initiatives undertaken by the Food Quality Control Unit, Ministry of Health Malaysia (MoH)/ Kementerian Kesihatan Malaysia (KKM) to increase food safety aspect nationwide.

(20 marks)

Question 2

Briefly discuss about the primary advantages and disadvantages of using variable control charts in quality control processes.

(20 marks)

Question 3

- (a) Discuss about the increasing importance of Identity Preserved (IP) products influence towards consumer awareness and behavior regarding food choices due to recent food safety scares.

(10 marks)

- (b) In raw material certification program, there are two major criteria being targeted for testing of food raw materials. List both criteria and describe factors involved for both of them.

(10 marks)

Question 4

One food company has embarked on a study to understand the effect of nozzle width towards the weight of its product. Five different nozzle width were studied with eight samples from tablet were recorded for each level in a random order. The following table summarizes the data of product at different factor level in a single factor experiment.

Refer Below - Table1 : Size of tablet at different nozzle size. .

Table 1: Size of tablet at different nozzle size.

Nozzle Width (mm)	Weight (g)							
13.5	1.60	1.57	1.58	1.43	1.55	1.61	1.63	1.64
14.0	1.64	1.69	1.73	1.65	1.71	1.72	1.68	1.69
14.5	1.79	1.75	1.76	1.75	1.78	1.76	1.78	1.79
15.0	1.74	1.73	1.69	1.76	1.75	1.72	1.75	1.79
15.5	1.82	1.79	1.81	1.80	1.79	1.80	1.83	1.81

Answer the followings:

- (a) Calculate the value of Sum of Squares (SS) for Total, Error and Level of experiments: SS_{total} , SS_{error} and SS_{level} .
Show the method of calculation used

(5 marks)

- (b) Develop the ANOVA table and conclude the result of experiment based on the experimental data.

Given: F_{crit} value is 2.64146394 for the data size in Table 1.

(15 marks)

END OF EXAMINATION PAPER

