



UNIVERSITI TUN HUSSEIN ONN MALAYSIA

**FINAL EXAMINATION
SEMESTER I
SESSION 2023/2024**

COURSE NAME	:	FUNDAMENTALS OF FOOD SCIENCE AND TECHNOLOGY
COURSE CODE	:	DAU 21303
PROGRAMME CODE	:	DAU
EXAMINATION DATE	:	JANUARY / FEBRUARY 2024
DURATION	:	3 HOURS
INSTRUCTIONS	:	1. ANSWER ANY FOUR (4) QUESTIONS 2. THIS FINAL EXAMINATION IS CONDUCTED VIA CLOSED BOOK . 3. STUDENTS ARE PROHIBITED TO CONSULT THEIR OWN MATERIAL OR ANY EXTERNAL RESOURCES DURING THE EXAMINATION CONDUCTED VIA CLOSED BOOK

THIS QUESTION PAPER CONSISTS OF **FIVE (5)** PAGES

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- Q1** (a) (i) List **four (4)** roles of food science and technology. (4 marks)
- (ii) List all key topics involved in the food science and technology area. (6 marks)
- (b) Food sensory properties are one of the main factors in food quality. Describe sensory properties. (10 marks)
- (c) Food law and regulation in Malaysia is governed by the Food Act 1983 and the Food Regulations 1985. List **five (5)** topics that are covered in these laws and regulations. (5 marks)
- Q2.** (a) (i) Describe calorie. (2 marks)
- (ii) State **three (3)** factors that influence an individual's calorie requirement. (3 marks)
- (iii) Calculate the calorie requirement for a heavy worker man weighing 75kg. (3 marks)
- (iv) Calculate the mass of each carbohydrate, protein and fat needed by a man whose daily calorie requirement is 2500 kcal. (6 marks)

- (b) Nutritional facts and ingredients for the “Baked Potato Chips” product are as shown in Figure 2.1.

Nutrition Facts	
About 10 servings per container	
Serving size About 15 chips (28g)	
Amount per serving	
Calories	158
% Daily Value*	
Total Fat 10g	13%
Saturated Fat 1.5g	7%
<i>Trans</i> Fat 0g	
Cholesterol 0mg	0%
Sodium 65mg	3%
Total Carbohydrate 15g	6%
Dietary Fiber 1g	5%
Total Sugars less than 1g	
Protein 2g	
Vitamin D 0mcg	0%
Calcium 10mg	0%
Iron 0.6mg	2%
Potassium 350mg	6%
Vitamin C	6%
Not a significant source of added sugars.	
* The % Daily Value (DV) tells you how much a nutrient in a serving of food contributes to a daily diet. 2,000 calories a day is used for general nutrition advice.	

- (i) State the serving size of this product. (1 mark)
- (ii) State the percentage of daily value sodium if you ate half of the bag of this product. (2 marks)
- (iii) Calculate total calories if you consume the whole container of this item at once. (2 marks)
- (iv) Show the calculation of the calorie count from each macronutrient that give the value of 158 calories per serving. (3 marks)
- (v) Give your opinion about this product is a healthy choice to take every day. (3 marks)

- Q3.** (a) (i) State the scope area of Food Microbiology. (1 mark)
- (ii) Describe **four (4)** important of food microbiology in food production. (8 marks)
- (b) (i) State **two (2)** signs of food spoilage by microbe with example. (4 marks)
- (ii) State **two (2)** common bacteria pathogens that can cause diarrhea and abdominal pain. (2 marks)
- (c) There are several methods of microbial control and food preservation. Explain **five (5)** techniques to control microbial growth in food preservation. (10 marks)
- Q4.** (a) Explain **four (4)** drawbacks of food preservation. (4 marks)
- (b) Describe the role of government to ensure industries adhere to the Food Additive Regulations. (4 marks)
- (c) (i) Explain how temperature control during the chilling process can reduce the growth of microbes. (3 marks)
- (ii) Suggest the other **two (2)** processes that usually combine with the Chilling process to improve food shelf time. (4 marks)
- (iii) Describe the basics and mechanism of a home mechanical refrigerator. (6 marks)
- (iv) Describe **two (2)** purposes of blanching in food processes. (4 marks)

- Q5.** (a) State **four (4)** purposes of the drying process in food industries. (6 marks)
- (b) Sketch and describe the relationship between water activity and food shelf life. (6 marks)
- (c) Compare sun drying and artificial drying. (5 marks)
- (d) Discuss **two (2)** benefits of freeze drying compared to the traditional drying method. (4 marks)
- (e) There are still many food manufacturers using traditional food drying methods as opposed to freeze drying. Give your opinion. (4 marks)
- Q6.** (a) State an example of a food product that undergoes a distillation process. (2 mark)
- (b) Sketch and label the flow diagram for the following process. Explain in detail all major unit operations involved in the process.
- (i) Large-scale production of banana chips. (10 marks)
- (ii) Production of carrot juice in bottles. (10 marks)
- (c) State **three (3)** environmental problems that arise from food production. (3 marks)

- END OF QUESTIONS -