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UNIVERSITI TUN HUSSEIN ONN MALAYSIA

**FINAL EXAMINATION  
SEMESTER I  
SESSION 2022/2023**

COURSE NAME : FUNDAMENTALS OF FOOD SCIENCE  
AND TECHNOLOGY

COURSE CODE : DAU 21303

PROGRAMME CODE : DAU

EXAMINATION DATE : FEBRUARY 2023

DURATION : 3 HOURS

INSTRUCTIONS : 1. ANSWER ALL 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 **THREE (3) PAGES**

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- Q1**
- (a) List the **three (3)** essential macronutrients and their functions in the human body. (3 marks)
  - (b) Protein is a necessary body builder made up of amino acid subunits.
    - (i) Draw a general structure of amino acids. (2 marks)
    - (ii) List the **two (2)** classifications of proteins and give an example for each. (3 marks)
  - (c) Trans fat consumption has been linked to an increased risk of coronary heart disease. Describe how trans fats could occur in food products. (5 marks)
  - (d) Carbohydrate food sources serve as a major source of energy for our body. However, they can affect blood glucose levels, especially for those with the diabetic problem.
    - (i) State the **two (2)** types of carbohydrates and give an example for each. (3 marks)
    - (ii) Give your suggestions on the proper intake of carbohydrates from food sources for a person with diabetes. (4 marks)
- Q2**
- (a) Food labels are important to support our personal dietary needs. Explain the general guidelines for choosing foods from food labels. (5 marks)
  - (b) A low carbohydrate diet can cause carbohydrate deficiency in our body. Answer the following:
    - (i) Discuss how carbohydrate deficiency occurs. (3 marks)
    - (ii) Explain the symptoms and diseases associated with severe carbohydrate deficiency. (5 marks)
  - (c) Calculate the calorie count of a pizza with the nutrition information below;
    - Total fat : 15 g
    - Saturated fat : 8 g
    - Trans fat : 1 g
    - Cholesterol : 30 mg
    - Sodium : 310 mg
    - Total Carbohydrate : 77 g
    - Total sugars : 61 g
    - Protein : 2 g(5 marks)

- Q3**
- (a) Food poisoning is an illness caused by the consumption of contaminated food. Identify **three (3)** preventive measures to avoid food poisoning using cases that occurred in Malaysia. (6 marks)
  - (b) Discuss why some people become ill while others are unaffected after consuming contaminated food. (4 marks)
  - (c) List **two (2)** suggestions to avoid protozoan water contamination. (2 marks)
  - (d) List **four (4)** advantages of food fermentation. (4 marks)
  - (e) Recall **two (2)** key points to successful food fermentation. (4 marks)
- Q4**
- (a) Describe the advantages and disadvantages of using food additives in food. (4 marks)
  - (b) Sketch a flow diagram for the following process and label the unit operation.
    - (i) Production of instant noodles. (4 marks)
    - (ii) Production of breakfast cereal. (4 marks)
  - (c)
    - (i) State the principles of a microwave oven. (2 marks)
    - (ii) Explain why many modern residents use ovens instead of gas stoves. (2 marks)
  - (d) Describe the application of freeze-drying in **two (2)** selected industries. (4 marks)
- Q5**
- (a) Hazard Analysis Critical Control Points (HACCP) is an internationally recognized method of identifying and managing food safety-related risks. Draw a simple HACCP plan for the production of a lemon juice drink. (6 marks)
  - (b) Explain **four (4)** environmental problems that arise from food production. (4 marks)
  - (c) List **six (6)** steps that can be taken individually to reduce the carbon footprint in relation to food production. (6 marks)
  - (d) State the importance of sensory testing data in the food industry. (4 marks)

-END OF QUESTIONS -