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**UNIVERSITI TUN HUSSEIN ONN MALAYSIA**

**FINAL EXAMINATION  
SEMESTER I  
SESSION 2014/2015**

COURSE NAME : FUNDAMENTALS OF FOOD  
TECHNOLOGY  
COURSE CODE : DAU 21102  
PROGRAMME : 2 DAU  
EXAMINATION DATE : DECEMBER 2014/JANUARY 2015  
DURATION : 2 HOURS 30 MINUTES  
INSTRUCTIONS : A) ANSWER ALL QUESTIONS  
B) ANSWER TWO (2)  
QUESTIONS ONLY

THIS QUESTION PAPER CONSISTS OF FOUR (4) PAGES

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**PART A**

- Q1** (a) Differentiate between the two categories of fat. (4 marks)
- (b) The extraction and refining of oils involve several steps. Among the steps are pressing, solvent extraction, degumming, deodorization, neutralization and bleaching. Discuss the significance of each step. (12 marks)
- (c) Margarine is an example of a food emulsion.
- (i) Define an emulsion. (2 marks)
- (ii) Discuss the function of an emulsifier in an emulsion. (3 marks)
- (iii) Describe the characteristics of an emulsifier. (4 marks)
- Q2** (a) (i) State the changes that occur during the ripening of fruits. (4 marks)
- (ii) Fruits and vegetables may be packed under controlled atmosphere (CA) or modified atmosphere package (MAP). Describe the characteristics of the two types of packages. (6 marks)
- (b) Canning and freezing are two of the methods that can be used to preserve fish and meat.
- (i) List the basic principles of freezing and canning as preservation technique. (3 marks)
- (ii) Discuss the important unit operations involved in the processing of fish cake. (8 marks)
- (c) Suggest a suitable drying technique for the production of egg powder and give your reasons. (4 marks)

**PART B**

- Q3** (a) (i) Define an essential nutrient. (3 marks)
- (ii) State the functions of a food nutrient. (2 marks)
- (iii) Describe the two (2) categories of food nutrients together with suitable examples. (4 marks)
- (b) Protein is one of the important nutrients required by human.
- (i) Describe the properties and the sources of protein in the human diet. (4 marks)
- (ii) Give four (4) functions of protein in food preparation. (4 marks)
- (c) Food regulation is related to food safety. Discuss this statement. (8 marks)
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- Q4** (a) Describe the functions of carbohydrates in food. (4 marks)
- (b) For each of the following additive, discuss their function when added to food and give an example of a food product that contain them.
- (i) Benzoic acid and sorbic acid (3 marks)
- (ii) Monosodium glutamate (3 marks)
- (iii) Xanthan gum and sodium alginate (3 marks)
- (iv) Vitamins and minerals (3 marks)
- (v) BHA and BT (3 marks)
- (c) Elaborate on the importance of water activity,  $a_w$ . (6 marks)

- Q5** (a) Differentiate between *gram-positive* and *gram-negative* bacteria. (4 marks)
- (b) Discuss four (4) intrinsic factors that affect microbial growth in food. (8 marks)
- (c) (i) Define microbial fermentation. (2 marks)
- (ii) Give three (3) examples of industrially important products produced by fermentation. (6 marks)
- (d) Discuss other examples of important fermentation products. Include in your answer the type of product and its use. Name the microorganisms involved. (5 marks)
- Q6** (a) Describe the basic principles of food preservation. (3 marks)
- (b) Milk can be bought in many different forms in a supermarket. It can be purchased as pasteurized, evaporated, dried and UHT. Discuss the difference between dried and pasteurized milk with reference to the following :
- (i) Suitable method to produce the two types of milk products and their respective processing conditions. (6 marks)
- (ii) Storage conditions and shelf-life. (6 marks)
- (iii) Effect on sensory properties of the product. (2 marks)
- (iv) Suggest suitable packaging materials for the two types of products. (2 marks)
- (c) You have a product that is heat sensitive to be dried. Suggest a drying method and give reasons for your choice. (6 marks)

- END OF QUESTION -