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UNIVERSITI TUN HUSSEIN ONN MALAYSIA

**FINAL EXAMINATION
SEMESTER I
SESSION 2013/2014**

COURSE NAME	:	FUNDAMENTALS OF FOOD TECHNOLOGY
COURSE CODE	:	DAU 21102
PROGRAMME	:	2 DAU
EXAMINATION DATE	:	DECEMBER 2013/JANUARY 2014
DURATION	:	2½ HOURS
INSTRUCTION	:	ANSWER FOUR (4) QUESTIONS ONLY

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

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- Q1**
- (a) (i) List five (5) groups of nutrients that are important to human. (5 marks)
- (ii) Calcium is one of the nutrients required by human. Identify the class of nutrient calcium belongs to and give two (2) reasons why calcium is needed in the human diet. (3 marks)
- (b) (i) Explain why water is classified as a nutrient. (2 marks)
- (ii) Discuss four (4) functions of water in the human body. (8 marks)
- (iii) Discuss three (3) ways in which water is held within a food substance. (3 marks)
- (c) In your own words, discuss the importance of a food label. (4 marks)
- Q2**
- (a) Define a food additive. (2 marks)
- (b) Food additives are added to food for various reasons. Name an additive, using suitable examples for each of the following additive that functions as :
- (i) Preservative (3 marks)
- (ii) Flavouring agent (3 marks)
- (iii) Emulsifiers, stabilizers and thickeners (3 marks)
- (iv) Nutrients (3 marks)
- (v) Antioxidants (3 marks)
- (c) (i) Differentiate between enzymatic and non-enzymatic reactions in food. (4 marks)
- (ii) Discuss the advantages and disadvantages of each reaction in a food system. (4 marks)

- Q3**
- (a) List four (4) groups of microorganisms that cause food spoilage. (4 marks)
 - (b) Discuss four (4) factors that influence the ability of food to support the growth of microorganisms. (8 marks)
 - (c)
 - (i) Differentiate between microbial spoilage and microbial fermentation. (4 marks)
 - (ii) Give three (3) examples of industrially important products produced by fermentation. (3 marks)
 - (d)
 - (i) Discuss the mechanisms by which a low A_w value produces an antimicrobial effect. (3 marks)
 - (ii) Describe the microbiological objectives of low-temperature preservation of food. (3 marks)
- Q4**
- (a) Give four (4) reasons why foods are processed. (4 marks)
 - (b) Milk can be bought in many different forms in a supermarket. It can be purchased as pasteurised, evaporated, dried and UHT. Discuss the difference between pasteurized and UHT milk with reference to the following :
 - (i) Processing conditions. (4 marks)
 - (ii) Storage conditions and shelf-life. (4 marks)
 - (iii) Effect on sensory properties of the product. (2 marks)
 - (c)
 - (i) Outline five (5) functions of food packaging materials. (5 marks)
 - (ii) Briefly discuss the main advantages and disadvantages of using glass as a packaging material. Use examples to illustrate your answer wherever possible. (6 marks)

- Q5** (a) (i) State the difference between lipid (fat or oil) extraction and refining. (2 marks)
- (ii) Explain the meaning of RBD oil. (3 marks)

(b) Basic production methods to obtain and refine fats and oils involve the following steps

- (i) Rendering
- (ii) Pressing
- (iii) Solvent extraction
- (iv) Deodorization
- (v) Degumming
- (vi) Neutralization
- (vii) Bleaching
- (viii) Hydrogenization
- (ix) Winterizing
- (x) Plasticizing

Briefly describe any five (5) of the above steps of processing.

(10 marks)

- (c) (i) List the preprocessing unit operations in the processing of fruits and vegetables. (3 marks)
- (ii) Explain the importance of blanching in the processing of vegetables. (3 marks)
- (d) Modified Atmosphere Packaging (MAP) is a packaging technique used to package fruits and vegetables. Describe the characteristics of MAP.

(4 marks)

Q6 (a) Egg powder is one of the processed products of egg for use in baking food industry. One of the techniques to produce egg powder is spray drying. Explain why spray drying is the method of choice.

(4 marks)

(b) Grinding is a common meat processing step. Describe the possible physical and microbiological effects of grinding.

(5 marks)

- (c) Explain briefly the function of nitrites (NO_2^-), nitrates (NO_3^-) and phosphates in meat processing.

(6 marks)

- (d) Meat and fish products can be preserved through curing, freezing and canning. Discuss the application of each process for the preservation of meat and fish.

(10 marks)

- END OF QUESTION -