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University Examinations 2012/2013

THIRD YEAR, FIRST SEMSTER, EXAMINATIONS FOR DEGREE OF FOOD SCIENCE AND POST HARVEST AND THIRD YEAR, FIRST SEMSTER DEGREE IN FOOD SCIENCE AND NUTRITION

AFS 2312: FOOD PROCESSING AND PRESERVATION

DATE: AUGUST 2013

TIME: 2 HOURS

INSTRUCTIONS: Answer question *one* and any other *two* questions

QUESTION ONE – (30 MARKS)

- a) (i) Define commercial sterilization of foods
(ii) Discuss pasteurization of milk and pasteurization of fruit juice (10 Marks)
- b) Briefly explain the following terms; (10 Marks)
- D-Value
 - Z- value
 - F-Value
 - Order of cooking
 - Botulinum cook
- c) A food containing target organism having Z- 18°C is commercially sterilized by thermal treatment equivalent to 12.8F₀. The product is initially heated for 20min at 240°F. How long will it require at 249°F to achieve commercial sterility. (10 Marks)

QUESTION TWO – (20 MARKS)

- a) Briefly discuss why radiation sterilization of food has be categorized as a “food additive” (4 Marks)
- b) Discuss side effects of radiation treatment on foods and describe the ways to minimize them. (10 Marks)
- c) Explain the meaning of the following terms;
- ‘Photoelectric’ effect
 - Coupon effect
 - Indirect theory of destruction
- (6 Marks)

QUESTION THREE – (20 MARKS)

- a) Describe three factors that contribute to food spoilage (6 Marks)
- b) Discuss briefly the following; (9 Marks)
 - i. Cooking
 - ii. Pasteurization
 - iii. Blanching
- c) Outline the principle of freeze concentration of fruit juice and explain limitations of such a process. (5 Marks)

QUESTION FOUR– (20 MARKS)

- a) Explain the differences in quality at thawing of plant food and animal foods preserved through slow freezing. (8 Marks)
- b) Define chilling injury. (2 Marks)
- c) Explain factors that influence chilling injury (10 Marks)

QUESTION FIVE – (20 MARKS)

- a) Why is it important to concentrate foods. (3 Marks)
- b) List four ways that can be used to remove water from foods. (4 Marks)
- c) Explain characteristics of instant powders (5 Marks)
- d) Outline process steps in manufacture of instant powders. (8 Marks)