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University Examinations 2013/2014

THIRD YEAR, SECOND SEMESTER EXAMINATION FOR THE DEGREE OF BACHELOR OF SCIENCE IN FOOD SCIENCE AND TECHNOLOGY AND BACHELOR OF SCIENCE IN FOOD SCIENCE AND NUTRITION

AFS 2309: FRUITS AND VEGETABLE TECHNOLOGY

DATE: DECEMBER 2013

TIME: 2 HOURS

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

QUESTION ONE (30 MARKS)

- a) Discuss the nature and occurrence of carbohydrates in fruits and vegetables (10 Marks)
- b) Briefly discuss the design of the maturity indices of fruits and vegetables on the basis of the following:
 - i. Skin colour (4 Marks)
 - ii. Fresh firmness (4 Marks)
 - iii. Size and shape (4 Marks)
- c) Differentiate between climacteric and non-climacteric fruits and illustrate with a diagram the influence of added ethylene and increase in temperature on the respiratory behavior of climacteric fruits (8 Marks)

QUESTION TWO (20 MARKS)

- a) Explain how temperature and chemical composition influence respiration in fruits and vegetables. (8 Marks)
- b) Discuss generally, spoilage of fruits and vegetables by microorganisms. (12 Marks)

QUESTION THREE (20 MARKS)

- a) Give the main reasons for blanching of vegetables prior to canning. (6 Marks)
- b) Explain why fruits require only mild heat treatment while vegetables normally require severe heat treatment in canning in order to achieve commercial sterility. (4 Marks)

- c) Briefly discuss clarification of fruit juices by the following methods:
- i. Heating (4 Marks)
 - ii. Use of gelatin (4 Marks)
 - iii. Freezing (2 Marks)

QUESTION FOUR (20 MARKS)

- a) Differentiate between nectar and drink as fruit-based beverages (4 Marks)
- b) A nectar is to be manufactured from a mixture of papaya pulp and mango pulp in the ratio of 5:3. The papaya pulp has 8.2° Brix and total titrable acidity of 0.2%, while the mango pulp has 12.5° Brix and total titrable acidity of 3.1%. If the final beverage has 13.0° Brix and total tritrable acidity of 0.85% and contains 35.0% fruit pulp. Calculate the following based on 200kg fruit pulp.
- i. Total kg of beverage (2 Marks)
 - ii. Total kg of mango pulp (2 Marks)
 - iii. Total kg of papaya pulp (2 Marks)
 - iv. Total kg of added acid (4 Marks)
 - v. Total kg of added sugar (4 Marks)
 - vi. Total kg of added water (2 Marks)