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B.E. / B.Tech. (Full Time) DEGREE EXAMINATIONS, NOV / DEC 2013

AGRICULTURAL AND IRRIGATION ENGINEERING BRANCH

Seventh Semester

AI 9403 – FOOD PROCESSING ENGINEERING

(Regulation 2008)

Time: 3 hours

Answer ALL Questions

Max Marks: 100

Part – A (10 x 2 = 20 Marks)

- 1) Classify foods based on their perishability with suitable examples.
- 2) Write short notes on pigments and colours in food.
- 3) How the water activity of a mixture is determined using Salwin-Slawson equation?
- 4) State the first order reaction kinetics.
- 5) Why are sorting and grading necessary before processing of foods? Give suitable examples.
- 6) Differentiate freeze drying and freeze concentration with suitable examples.
- 7) Substantiate why irradiation and pasteurization are necessary for preservation of certain foods.
- 8) How is the dosage of radiation estimated while using it for food preservation?
- 9) List the factors to be considered for the success or failure of a packaging system.
- 10) How are nutritional and sanitary qualities ensured in food for consumer safety?

Part – B (5 x 16 = 80 Marks)

- 11) a) The percentage composition of a milk khova is as follows – Moisture – 24.7, Protein – 17.7, Ash (NaCl) - 2.8, Fat – 28.7, Lactose – 26.1. Find out the water activity and determine the quantity of sugar to be added to reduce the water activity to 0.75. (8)
 - b) Explain sorption isotherms and the methods to draw them. Where are they applied? (8)
 - 12) a) i) Classify the food industries based on raw materials. Give examples under each category (8)
 - ii) Write short notes on Pasteurisation and Sterilisation of foods. (8)
- (or)
- b) i) What are the various types of sorters used in food processing industry? Give sketches wherever necessary. (8)
 - ii) Enumerate the various causes of food spoilage with examples. (8)

- 13) a) i) Explain the various stages of drying with a neat sketch. Also derive an expression to calculate the total drying time. (8)
- ii) Describe in detail the various steps involved in Instant Coffee preparation. (8)
- (or)
- b) i) How are foods concentrated by osmosis and reverse osmosis processes? (8)
- ii) Derive the mass balance in freeze concentration. (8)
- 14) a) i) Discuss extrusion cooking in detail and how is the net output of an extruder found? (8)
- ii) Tabulate the various doses of irradiation for food safety and preservation with examples. (8)
- (or)
- b) i) Explain with a flowchart the solvent extraction process of rice bran oil production. (8)
- ii) Compare and contrast microwave heating and conventional heating with suitable examples. (8)
- 15) a) i) Explain the factors to be considered for sensory evaluation of food quality. (6)
- ii) Discuss the various issues to be considered in a rational process to design a food processing industry. (10)
- (or)
- b) i) Discuss the preparative operations in a food processing industry. (8)
- ii) With a neat flow chart, explain all the processes involved in the preparation of coca-cola. (8)
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