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B.E. / B.Tech. (Full Time) DEGREE ARREAR EXAMINATIONS, APR / MAY 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.
- 2) A non-vegetarian meal provides 32 g protein, 11 g fat and 85 g carbohydrates out of which 7 g is fibre. Calculate the physiological value and potential value of calories provided by the meal and state the reasons for the difference.
- 3) The decimal reduction times D for a spore suspension were measured at several temperatures as follows. Determine the z value.

Temperature (°C)	103	105	109	111	115
D (minutes)	27.4	14.2	7.3	4.0	2.1

- 4) How is the water activity of a mixture determined using Salwin-Slawson equation?
- 5) What are the advantages of freeze concentration over evaporation?
- 6) Draw a hysteresis curve and discuss.
- 7) What is *Chicory* and write its role in coffee processing?
- 8) How is the dosage of radiation estimated while using it for food preservation?
- 9) Write a note on the factors to be considered for sensory evaluation of food quality.
- 10) Differentiate sorting and grading with suitable examples.

Part – B (5 x 16 = 80 Marks)

- 11) i) What are the various types of sorters used in food processing industry? Give sketches wherever necessary. (8)
- ii) Discuss the fruit marketing system with a flow chart. Explain it with respect to mangoes. (8)
- 12) a) i) Describe the various methods by which water content in foods is determined. (8)
- ii) The 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)

(or)

- b) i) What are sorption isotherms? Explain the methods to draw them. (6)
- ii) Discuss the methods to determine the dependence of reaction rate constant on temperature. (10)
- 13) a) i) How are foods concentrated by osmosis and reverse osmosis processes? (8)
- ii) With a neat flow diagram, discuss the 2 stage freeze concentration system. (8)
- (or)
- b) i) Describe in detail the various steps involved in Instant Coffee preparation. (8)
- ii) Explain with a neat sketch the various stages of drying. (8)
- 14) a) i) Explain in detail the manufacture of margarine. (8)
- ii) Compare and contrast microwave heating and conventional heating with suitable examples. (8)
- (or)
- b) i) Explain the principle and process of dielectric heating. (8)
- ii) Discuss the effects of harmful and beneficial microbes in food preservation. (8)
- 15) a) i) Explain in detail the processing of any fruit / vegetable / food product. (8)
- ii) It is proposed to establish a mixed fruit jam factory. As a food engineer, derive the methodology for the project management. (8)
- (or)
- b) i) Discuss the preparative operations in a food processing industry. (8)
- ii) How are flexible pouches used in packaging? Discuss its merits and demerits. (8)
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