M.Tech Even Semester Examination, May, 2025

Agricultural Engineering

(2nd Semester)

Course No: 3AG-152

(Food Process and Products Technology)

Full Marks: 70
Pass Marks: 28
Time: 3 hours

Note:

1. Attempt any five questions taking one from each unit.
2. Begin each answer in a new page
3. Answer parts of a question at a place
4. Assume reasonable data wherever required
5. The figure in the right margin indicates full marks for the question
6. All the mathematical symbols and abbreviations have their usual meanings.

UNIT-I

1. (a) Write short notes on

   (i) Homeostasis

   (ii) Asepsis

   (iii) Reverse osmosis

   (iv) Ultrafiltration [4x2.5=10]

   (b) Write down the status of fruits and vegetable Industry of India in global perspective. [4]

2. (a) Hurdle Technology with its applications. [5]

   (b) Write down the potential hurdle in food industries. [5]

(c) The initial inoculated in concentration of 5×10^7 per g of food with $D_{121.1}$= 1.2 min. It is assumed that only one spore remains visible at the end of the process if the total mass of food is 400g. Calculate the F value. [4]

UNIT-II

3. (a) Write down problems associated with Jelly preparation. [6]

   (b) Write down the difference between Jam, Jelly and Marmalade. [8]

4. (a) Define the terms with proper examples:

   (a) Net Zero waste processing

   (b) Food Irradiation

   (c) Drop test

   (d) Acidity test

   (e) Blanching [2x5=10]

   (b) A milk can be sterilized either at 135 °C for 6s or at 140 °C for 2s. Find the Z value of the microorganism to destroy in the process. [4]

UNIT-III

5. (a) Explain the role of pectin while preparing the Jam. [7]

   (b) Explain the process of cheese production process with neat flow chart. [7]

6. (a) Explain First order of Thermal death kinetics equation. Define the term F value, D value and Z value with neat diagram. [10]

   (b) Write down in brief the difference between pasteurization and sterilization. [4]

UNIT-IV

7. (a) Explain in detail the utilisation of rice by-products for waste management. [6]

   (b) Write down the post-harvest operations of spices with a description/principle/purpose, and examples of each. [8]

8. (a) Write down the decontaminations of spices. [8]

   (b) Write down the different type of revolutions and their associated term. [6]

UNIT-V

9. (a) Define by-products. What are the by-products of the milling industry? Mention their utilization. [8]

   (b) What do you mean by cryogenic grinding? Draw a neat sketch [6]

10. (a) Explain the SWOT analysis of food processing industries in India. Justify its usefulness in the food industry. [10]

    (b) What do you mean by Green technologies? [4]

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