Ref. No.: Ex/PG/FTBE/T/111A/2024

M.TECH. FOOD TECHNOLOGY AND BIO-CHEMICAL ENGINEERING FIRST YEAR FIRST SEMESTER EXAM 2024

ADVANCED FOOD TECHNOLOGY

Time : Three hours Full Marks : 100

(50 marks for each Part)

(Use sepatate Answer Script for each Part)

PART I (50 Marks)

Answer 1 and 2 and any one from the rest

1 How plasma can be helpful for drying of Food Material. Explain the mechanism of killing of Microorganism by plasma. Can you use this for complete sterilisation of food? 10+5+5=20

2 Discuss how you can produce plasma using Dielectric barrier discharge. How can you develop a microwave sterilization process- discuss with challenge. 10+10=20

3 Discuss the principle and mechanism of Radio Frequency methods. Discuss its application in food processing. 5+5=10

4 What are the difference of conventional heating process and ohmic heating process? What are the factors which affects the ohmic heating process? 5+5=10

[Turn over

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M.TECH (FTBE) FIRST YEAR, FIRST SEMESTER 2024

ADVANCED FOOD TECHNOLOGY

PART - II (50 MARKS)

Answer Q1 and any Two from the rest

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4 × 5 = 20

Q1.
a. Comparatively evaluate SEM and AFM analyses of a fat-rich food of your choice.
b. Explain the relevance of key elements of waste management and waste minimization in manufacture of apple pectin.
c. The major fatty acids identified in non-irradiated (control) cashew nuts are 59.9% oleic acid (C18:1), 20.9% linoleic acid (C18:2), 9.65% palmitic acid (C16:0) and 9.45% stearic acid (C18:0). Using this data, critically analyze how you would identify a non-labeled package of irradiated cashew nuts.
d. A dry bag-indirect compression HPP unit

Q2. Answer the following (any 3): **3 × 5 = 15**

a. How are wastes from a vegetable processing industry classified? Illustrate the same for a tomato pulp canning plant.
b. Explain how fractal analysis aids in manufacture of cheese and instant coffee.
c. Provide technical specifications of Co-60 source used for industrial scale gamma processing of foods.
d. Comparatively evaluate HPP of Milk. vs. Potatoes.

Q3. Write short notes on (any 5): **5 × 3 = 15**

a. Gamma-irradiation of bananas in laboratory scale using dry source
b. Herschmann equation and its significance
c. Confocal microscopy in food microbiology
d. Electron gun
e. EDAX
f. Energy requirements in Radappertization
g. RVA pasting profiles of Irradiated rice