

M.TECH (FTBE) FIRST YEAR, FIRST SEMESTER 2025

ADVANCED FOOD BIOTECHNOLOGY

PART - I (50 MARKS)

Answer Q1 and any Two from the rest

- Q1. a. Explain the switching over of the microbial consortium that aids in production of yogurt and sauerkraut. 5
b. Explain the metabolic engineering strategies adopted for overproduction of diacetyl by homofermentative LAB. 7
c. With the aid of flow sheets and block diagrams, describe the production of a protein-rich food using a suitable algae as a competitor of "Protinex". 8
- Q2. a. Why is submerged fermentation process preferred over trickling generator process for vinegar production? 7
b. Explain industrial manufacture of L-glutamic acid production method indicating the CCPs. 8
- Q3. Distinguish between (any 3): $3 \times 5 = 15$
a. Action of amylases in Baking vs. Brewing
b. Enzymatic clarification of Beer vs. Fruit juices
c. LAB fermentation process in production of Fermented meats vs. Fermented vegetables
d. General scheme for enzyme production and downstream processing of Extracellular enzymes vs. Intracellular enzymes
- Q4. Write short notes on (any 3): $3 \times 3 = 15$
a. *Chlorella* biscuits
b. Helical BIOCOIL
c. Fringes Acetator
d. Technical enzymes

[Turn over

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**M.TECH. FOOD TECHNOLOGY AND BIO-CHEMICAL ENGINEERING FIRST
YEAR FIRST SEMESTER EXAM- 2025**

Subject : ADVANCED FOOD BIOTECHNOLOGY

Time: 3hr

Full Marks: 100

Part II (50 marks)

Answer any **five** of the following: 10x5=50

1. What is the difference between traditional, second and third generation food biotechnology for the value addition in food- explain with suitable example. How yield and shelf life of food materials can be improved with the tools of biotechnology- explain with suitable example. 5+5=10

2. How lactic acid bacteria helps in food preservation? Explain the mode of action of a bacteriocin? How bacteriocins produced by gram negative bacteria are classified? 5+3+2=10

3. What should be the features of an ideal biopreservative? What do you mean by probiotic? Explain the mechanism of action of a probiotic. 3+1+6=10

4. How nutraceuticals are classified on the basis of chemical nature? What is the importance of it? Give two examples each of Terpenoid and phenolic group of nutraceuticals. 4+3+3=10

5. What is biofortification? How it differs from food fortification? What are the different techniques of biofortification? How biofortification improves protein content and mineral content of crops? 1+1+5+3=10

6. What is hidden hunger? How biofortification solves the problem of hidden hunger? Mention the challenges of biofortification. 1+5+4=10

7. What do you mean by prebiotics? What are the two types of prebiotics- mention one example of each. What are the criteria needed to classify a compound as prebiotic? Give two examples of synthesized prebiotics. 1+3+5+1=10