Total number of printed pages: 01 **Programme (UG)/4th Semester/UFET404**

2025

Food Microbiology and Food Biotechnology

Full Marks: 100

Time: Three hours

The figures in the margin indicate full marks for the questions.

*Answer **ANY FIVE** questions.*

1.	a)	What is "genetically modified (GM)" food? Elaborate on application of Ti-plasmid for development of genetically engineered "golden" rice – Use a schematic diagram to enrich your answer.	2 + 10
	b)	Detail sauerkraut fermentation by *Lactobacillus plantarum* and by *Leuconostoc mesenteroides*. What is an "operon", and what is its significance in genetic characteristics of an organism?	5 + 3
2.	a)	Describe "malting" of cereal grains for beer processing. What is its significance in beer fermentation?	8 + 2
	b)	What is the difference between homo- and heterolactic fermentations? Describe homofermentative lactic acid fermentation using a flow-diagram.	2 + 8
3.	a)	Classify (with examples) the parasitic pathogens that cause foodborne diseases? List **any four** sanitary / hygienic practices to be ensured in a food processing unit.	8 + 4
	b)	Elaborate on processing flow-diagram of fermented sausage.	8
4.	a)	What is the major difference between milk coagulations in yogurt and cheese. Elaborate on the following three components of rDNA technology – (i) restriction enzyme, (ii) cloning vector, and (iii) ligation.	2 + 8
	b)	Define "foodborne outbreak". What is the difference between foodborne "intoxication" and "infection"? Describe the pathogenesis of staphylococcal intoxication.	2 + 3 + 5
5.	a)	What is transduction? Elaborate the translation process that occurs in cell ribosome – Use a schematic diagram in your elaboration.	2 + 8
	b)	What is "Koumiss"? Describe on the process flow-diagram for koumiss.	2 + 8
6.	a)	Write short-notes on **any four** of the following. (i) Diacetyle flavor, (ii) Toxicoinfection, (iii) Unripened cheese, (iv) Humulin, (v) Cider vinegar	4 × 2.5
	b)	Give the reaction scheme for acetic acid fermentation along with the enzymes that catalyze the biochemical process. Elaborate on ethanol and malolactic fermentations in wine.	4 + 6