Reg.No.:												

VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN
[AUTONOMOUS INSTITUTION AFFILIATED TO ANNA UNIVERSITY, CHENNAI]
Elayampalayam – 637 205, Tiruchengode, Namakkal Dt., Tamil Nadu.

Question Paper Code: 90018

B.E. / B.Tech. DEGREE END-SEMESTER EXAMINATIONS – NOV. / DEC. 2025
Seventh Semester
Biotechnology
U19BTV42 – FERMENTATION PRODUCTS
(Regulation 2019)

Time: Three Hours | Maximum: 100 Marks

Answer ALL the questions

Knowledge Levels (KL)	K1 – Remembering	K3 – Applying	K5 - Evaluating
	K2 – Understanding	K4 – Analyzing	K6 - Creating

PART – A

(10 x 2 = 20 Marks)

Q.No.	Questions	Marks	KL	CO
1.	Name two major beneficial biotransformations that occur during the fermentation of a food substrate like cabbage or milk.	2	K1	CO1
2.	Identify the primary raw material used to produce each of the following traditional fermented foods: Tempeh, Soy Sauce, Sourdough Bread, and Kefir.	2	K1	CO1
3.	What is the primary difference between aerobic respiration and fermentation with respect to the final electron acceptor?	2	K1	CO2
4.	Name the two main pathways involved in bacterial sugar metabolism for energy production.	2	K1	CO2
5.	State the primary function of salt (NaCl) in the lactic acid fermentation of vegetables.	2	K1	CO3
6.	What is the primary biochemical process responsible for spoilage that turns wine into vinegar? Name the microbial agent responsible for this defect.	2	K2	CO3
7.	Name two key microorganisms responsible for the fermentation of idli batter and state the primary function of each during the process.	2	K1	CO4
8.	Besides leavening, state two major benefits of fermenting cereal grains for human consumption.	2	K2	CO4
9.	Give two examples of defects that can occur in fermented meats due to incorrect fermentation or drying.	2	K2	CO5
10.	Name two critical factors that must be controlled during the fermentation stage of sausage manufacture.	2	K2	CO5

PART – B

(5 x 13 = 65 Marks)

Q.No.			Questions	Marks	KL	CO
11.	a)	i.	Compare and contrast the fermentation processes involved in producing a dairy product like yogurt and a vegetable product like kimchi.	7	K1	CO1
		ii.	Analyze the major factors that have driven the evolution and growth of the modern fermented foods industry in the twenty-first century.	6	K1	
			(OR)			
	b)		Discuss the key benefits and characteristics of fermented foods that contribute to their unique sensory profiles and extended shelf-life.	13	K1	CO1
12.	a)		Trace the historical development of starter cultures, from their accidental beginnings to their modern, precision-based applications contributing to safety, consistency, and diversity of fermented food products.	13	K2	CO2
			(OR)			
	b)		Outline the primary roles and metabolic characteristics of bacterial, yeast, and mold starter cultures.	13	K2	CO2
13.	a)		Describe the sequential microbial succession that occurs during the traditional production of sauerkraut and explain the role of each microbial group in developing the final product's characteristic flavour, texture, and preservation qualities.	13	K3	CO3
			(OR)			
	b)		Compare the production process of red wine and white wine production.	13	K2	CO3
14.	a)		Describe the manufacturing process of soy sauce (shoyu) in detail. Differentiate between the manufacturing processes of tempeh and natto.	13	K4	CO4
			(OR)			
	b)	i.	List four major categories of fermented cereal products and provide one specific example for each category.	6	K1	CO4
		ii.	Explain the key biochemical changes that occur during the fermentation of idli batter.	7		
15.	a)		Analyze the biochemical origins of this flavor, describing the specific contributions from i. lipid oxidation and breakdown, ii. proteolysis and amino acid degradation, and iii. carbohydrate fermentation.	13	K4	CO5
			(OR)			
	b)		Discuss the various types of seasoned meat products.	13	K4	CO5

PART – C

(1 x 15 = 15 Marks)

Q.No.		Questions	Marks	KL	CO
16.	a)	Discuss the importance of microbial starter culture by integrating the principles of microbial metabolism with the science of starter culture technology.	15	K3	CO2
		(OR)			
	b)	Write a detailed essay on the transition of sausage production from traditional methods to technology based process.	15	K4	CO5