U.S.N.										

B.M.S. College of Engineering, Bengaluru-560019

Autonomous Institute Affiliated to VTU

July 2024 Semester End Main Examinations

Programme: B.E. **Semester: V**
Branch: Biotechnology **Duration: 3 hrs.**
Course Code: 22BT5PEFMB **Max Marks: 100**
Course: Food Microbiology

Instructions: 1. Answer any FIVE full questions, choosing one full question from each unit.
2. Missing data, if any, may be suitably assumed.

Important Note: Completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages. Revealing of identification, appeal to evaluator will be treated as malpractice.

		UNIT – I	CO	PO	Marks
1	a)	Several factors affect the growth and survival of microorganisms in food. Justify the statement by elaborating on each of the factors using suitable examples.	*CO 1*	*PO 1*	**10**
	b)	Raw foods of animal origin, that is, raw meat and poultry, raw eggs, unpasteurized milk, and raw shellfish are most likely to be contaminated. Several foodborne illnesses are caused by consuming contaminated foods or beverages. Substantiate this statement by providing detailed synopsis of food borne microbes.	*CO 1*	*PO 1*	**10**
		UNIT – II			
2	a)	Identify the common indicators and sources of microorganisms in following food samples 1. Bread 2. Milk 3. Raw meat 4. Banana 5. Eggs	*CO 2*	*PO 2*	**05**
	b)	Enumerate on the biochemical reactions leading to spoil the products like milk and fish in the presence of microflora.	*CO 2*	*PO 2,6*	**07**
	c)	Interaction of microbes with food biomolecules can sometimes lead to undesirable metabolic activities and deleterious effects in the body. Comment on the statement.	*CO 2*	*PO 2,6*	**8**
		UNIT – III			
3	a)	Twenty-eight kindergarten children and seven adults visited a raw milk bottling plant, where they were given ice cream and raw milk. Three to six days later, nine children and three adults developed gastroenteritis. The only foods eaten by all these children (ill and well) were in the school-provided lunches. No one else in the school became sick. Stool cultures showed one bacterium in common to nine of the ill children and not present	*CO 3*	*PO 2,5*	**10**

			in samples from nine well children. This bacterium is a curved gram-negative rod; it neither ferments nor oxidizes lactose. 1. Identify the etiologic agent of this outbreak of food poisoning. 2. Was it food infection or intoxication? 3. How would have the food got contaminated, and what item was contaminated? 4. What could be done to prevent this type of outbreak? 5. Briefly explain how you arrived at your conclusions.			
		b)	Compare and contrast conventional and advanced culture techniques.	***CO3***	***PO*** *2,5*	**10**
			OR			
	4	a)	A 13-year-old boy presents to his primary care provider with a 5-day history of abdominal pain and a 2-day history of vomiting and watery stools. He describes the quality of the abdominal pain as sharp, originating in the epigastric region and radiating to his back, and exacerbated by movement. He admits to decreased oral intake throughout the duration of his symptoms. He denies any episodes of fever, weight loss, fatigue, night sweats, or chills. 1) Describe the disease condition. 2) Explain the clinical features and pathogenesis of the condition. 3) What could have led to this condition? 4) List the organisms involved in this disease? 5) What can be done for prevention of such diseases?	***CO 3***	***PO*** *2,5*	**10**
		b)	Elaborate on the following techniques: i) MBRT ii) RRT iii) Electrical Methods iv) ATP determination	***CO3***	***PO*** *2,5*	**10**
			UNIT - IV			
	5	a)	Elaborate on the role of fungi in cheese processing. Discuss on the various types of cheese and its suitable composition in detail.	***CO3***	***PO 2***	**10**
		b)	Every human body is home to trillions of microorganisms that live with us and help support our bodily functions and health. Not all of the microbes we may carry are helpful to us — some types (germs) can be harmful. But beneficial microbes help to control the potentially harmful types and also improve gut health. Provide suitable justifications based on the statement.	***CO3***	***PO 2***	**10**

			OR			
	6	a)	Provide the experimental methodology involved in production of fermented vegetables. Mention their applications.	***CO3***	***PO 2,5***	**10**
		b)	Easily spoilt sources of valuable proteins and lipids include products like fish and meats. They are preserved by fermentation process in many cultures. Substantiate this statement by depicting the biochemical reactions involved in fermentation of fish.	***CO3***	***PO 2,5***	**10**
			UNIT - V			
	7	a)	Holding the food material at low temperature in cold storage slows down and sometimes prevents microbial activity. Comment on the statement.	***CO3***	***PO 2***	**10**
		b)	Provide suitable equations to quantify the thermal death of organisms. List the significance of D and z value.	***CO3***	***PO 2***	**05**
		c)	There are certain substances added to food to fight spoilage caused by bacteria, molds, fungus, and yeast. They can be either artificial or natural. With examples discuss on their types.	***CO3***	***PO 2,5***	**05**

*****