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

Autonomous Institute Affiliated to VTU

May / June 2025 Semester End Main Examinations

Programme: B.E. **Semester: VIII**

Branch: Biotechnology **Duration: 3 hrs.**

Course Code: 22BT8PEFWM **Max Marks: 100**

Course: Food Waste Management

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.

				CO	PO	Marks
			UNIT - I			
1	a)		Explain the sources and types of waste generated in the food industry. How do these wastes impact the environment?	*1*	*1,1 2*	**10**
	b)		Describe the physical, chemical, and biological characteristics of food industry wastewater. Why is it important to analyze these parameters?	*1*	*1,12*	**10**
			OR			
2	a)		Discuss the major environmental standards applicable to food industry waste in India. How do these standards influence waste management practices?	*1*	*1,12*	**10**
	b)		Explain the need for regulatory compliance in managing food industry waste. What are the consequences of non-compliance for industries?	*1*	*1,12*	**10**
			UNIT - II			
3	a)		Explain how fruits and vegetable by-products can be used for value addition in the food processing industry. Provide relevant examples.	*2*	*2,4*	**10**
	b)		Discuss the extraction and applications of phytochemicals from fruit and vegetable waste. How is this approach sustainable and holistic?	*2*	*2,4*	**10**
			OR			
4	a)		Fruit peels are often considered waste but offer vast potential in agro-waste utilization. Explain various uses of fruit peels with suitable examples.	*2*	*2,4*	**10**
	b)		Describe the potential for value addition from by-products of cereals, pulses, and oil-seed processing industries. Provide industry-relevant examples.	*2*	*2,4*	**10**

			UNIT - III			
	5	a)	Discuss the various ways to convert meat industry by-products and waste into wealth. Give suitable examples of value-added products.	*2*	*2,4*	**10**
		b)	What are climacteric fruits? Explain the post-harvest management techniques for these fruits in India to minimize loss and enhance utilization.	*2*	*2,4*	**10**
			OR			
	6	a)	Explain the strategies for utilization and management of agricultural waste in India. How can this support sustainable food processing industries?	*2*	*2,4*	**10**
		b)	Describe the concept and benefits of bio-based packaging made from food industry waste. Give examples of materials and their applications.	*2*	*2,4*	**10**
			UNIT - IV			
	7	a)	Explain how mushroom cultivation serves as a potential tool for managing food industry waste. Include types of waste used and end benefits.	*2*	*2,4*	**10**
		b)	What is bioremediation? Describe its application as a sustainable tool in food waste management with suitable microorganisms and processes.	*2*	*2,4*	**10**
			OR			
	8	a)	Discuss the recovery of bioactive components from food processing waste. How does this approach contribute to sustainable waste management?	*3*	*1,5*	**10**
		b)	How can food processing waste be converted into biofuels? Explain different technologies involved and their sustainability benefits.	*3*	*1,5*	**10**
			UNIT - V			
	9	a)	Discuss the major sources and characteristics of waste generated from dairy industries.	*3*	*1,5*	**10**
		b)	Explain different treatment methods for milk waste. Describe their principles and suitability.	*3*	*1,5*	**10**
			OR			
	10	a)	Describe the various methods to prevent and manage dairy waste before treatment.	*3*	*1,5*	**10**
		b)	What are rinsings, washings, and standard maximum load in dairy waste management? How can spillage and overflow be controlled?	*3*	*1,5*	**10**

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