Q. Code: 471438

Reg. No. | | | | | | | | | | | | | |

M.E / M.TECH. DEGREE

EXAMINATIONS, MAY 2024

Second Semester

BY22008 – ADVANCED FOOD PROCESSING AND PACKAGING TECHNOLOGIES

(Biotechnology)

(Regulation 2022)

TIME: 3 HOURS **MAX. MARKS: 100**

CO 1 Identify the various food constituents and the role of microorganisms in food processing.
CO 2 Apply the knowledge gained on various thermal food processing methods to improve the shelf life of food products.
CO 3 Choose the non-thermal food processing methods for producing food products with enhanced shelf life.
CO 4 Select the appropriate preservation techniques used in food preservation.
CO 5 Opt the suitable packaging media and packaging type for storing food products.

PART- A (20 x 2 = 40 Marks)

(Answer all Questions)

		CO	RBT LEVEL
1.	Discuss how carbohydrates affect the organoleptic properties of food.	**1**	**3**
2.	Name two microorganisms commonly responsible for causing foodborne infections.	**1**	**2**
3.	Explain the difference between foodborne infections and foodborne intoxications.	**1**	**3**
4.	List the steps that could be taken to prevent food spoilage.	**1**	**2**
5.	What are some advantages of ohmic heating in food processing?	**2**	**2**
6.	How do infra-red microwaves contribute to food processing?	**2**	**3**
7.	Describe a key difference between batch and continuous thermal processing methods.	**2**	**3**
8.	What are the key technical advancements in the manufacture of ready-to-eat food products?	**2**	**2**
9.	What is the primary principle behind preservation by ionizing radiations?	**3**	**2**

10.	Name two chemical preservatives commonly used in food preservation.	**3**	**2**
11.	Define curing in the context of food preservation.	**3**	**2**
12.	How does smoking contribute to food preservation?	**3**	**3**
13.	Explain the difference between sterilization and pasteurization in food processing.	**4**	**3**
14.	Define blanching and explain its significance in food preservation.	**4**	**2**
15.	List two factors that can affect the quality of frozen foods.	**4**	**2**
16.	Why are the characteristics of a freezing curve important in frozen storage?	**4**	**3**
17.	Explain the concept of box-in-box packaging.	**5**	**3**
18.	Differentiate between CAP and MAP.	**5**	**3**
19.	Explain why wood packaging may not be suitable for certain products.	**5**	**3**
20.	What are the advantages of using paperboard as a packaging material?	**5**	**2**

PART- B (5 x 10 = 50 Marks)

			Marks	CO	RBT LEVEL
21. (a)	Discuss how different constituents of food contribute to its texture, flavour, and organoleptic properties. Provide examples to illustrate each.		**(10)**	**1**	**3**
	(OR)				
(b)	Discuss the role of microorganisms in the fermentation of food products. Provide examples of fermented foods and explain how microorganisms contribute to their flavour, texture, and preservation.		**(10)**	**1**	**3**
22. (a)	**(i)**	Examine the recent advances in extrusion and co-extrusion processes in the food industry.	**(5)**	**2**	**4**

	(ii)	How do these advancements enhance the production of various food products?	**(5)**	**2**	**4**
		(OR)			
	(b)	Discuss the advancements in newer methods of thermal processing, comparing batch and continuous techniques. How do these methods contribute to the efficiency and quality of food processing?	**(10)**	**2**	**4**
23.	**(a)**	Describe the pickling process, and its effects on food preservation and flavour enhancement.	**(10)**	**3**	**2**
		(OR)			
	(b)	Explain the principles of membrane technology in food preservation. Discuss the different membrane processes, such as ultrafiltration and reverse osmosis, and their applications in removing contaminants, concentrating products, and extending shelf life.	**(10)**	**3**	**2**
24.	**(a)**	Describe the stages of freezing and how factors such as temperature, time, and packaging influence the freezing process.	**(10)**	**4**	**4**
		(OR)			
	(b)	Analyze the principles and applications of irradiation preservation of foods. Discuss the benefits and drawbacks of irradiation in terms of food safety, shelf life extension, and consumer acceptance.	**(10)**	**4**	**4**
25.	**(a)**	**(i)** Discuss the properties and applications of primary packaging media, focusing on paper boards, metals, plastics, wood and plywood, and glass.	**(5)**	**4**	**4**
		(ii) Discuss emerging trends in food packaging design and materials, considering factors such as sustainability, convenience, and consumer preferences.	**(5)**	**4**	**4**
		(OR)			
	(b)	Analyze the significance of vacuum packaging and gas flush packaging in the food industry. Compare and contrast their principles, applications, and effectiveness in preserving food quality and extending shelf life.	**(10)**	**5**	**4**

PART- C (1 x 10 = 10 Marks)

(Q.No.16 is compulsory)

		Marks	CO	RBT LEVEL
26.	Describe three cutting-edge food processing techniques that have emerged in recent years. Design a zero-waste packaging solution for a specific food product or category.	**(10)**	**4**	**5**

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