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

Autonomous Institute Affiliated to VTU

## July 2023 Semester End Main Examinations

**Program: B.E.**

**Branch: Biotechnology**

**Course Code:19BT6DE4FBT**

**Course: Food Biotechnology**

**Semester: VI**

**Duration: 3 hrs.**

**Max Marks: 100**

**Date: 19.07.2023**

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

			<b>UNIT – I</b>		<b>CO</b>	<b>PO</b>	<b>Marks</b>
<b>Important Note:</b> Completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages. Revealing of identification, appeal to evaluator will be treated as malpractice.	1	a)	What are the long-term effects of consuming food which comprises of “readily digestible starch (RDS)” on a daily basis? Give examples of breakfast items that are included in this category.		<i>CO1</i>	<i>PO1</i>	<b>05</b>
		b)	What is rancidity and slime formation in milk products? Which organisms are responsible for these kinds of spoilage?		<i>CO1</i>	<i>PO1</i>	<b>05</b>
		c)	From a rheological perspective, when a force is applied to food material, what are the two extreme behaviours seen? Elaborate empirical/imitative tests used to determine rheological properties.		<i>CO1</i>	<i>PO1</i>	<b>06</b>
		d)	What are anti nutritional factors? Cite three examples of anti nutritional factors found in food and their effects.		<i>CO1</i>	<i>PO1</i>	<b>04</b>
			<b>UNIT – II</b>				
	2	a)	Which are most common bacteria used as probiotic? Taking vitamins as an example, emphasize on the importance of antioxidants present in food.		<i>CO2</i>	<i>PO1</i> <i>PO5</i>	<b>05</b>
		b)	What are the natural sources of pectinase? Give examples of pectinases. Elaborate on how these enzymes are used in food industry to develop viable products.		<i>CO2</i>	<i>PO1</i> <i>PO5</i>	<b>08</b>
		c)	Hazard Analysis and Critical Control Point (HACCP) ensures food safety and gives utmost importance to analysis and control. What are the components of HACCP due to which this is possible?		<i>CO2</i>	<i>PO1</i> <i>PO5</i>	<b>07</b>
			<b>OR</b>				
	3	a)	What is the difference between a functional food and a nutraceutical? Highlight the main methods used in biofortification.		<i>CO2</i>	<i>PO1</i> <i>PO5</i>	<b>05</b>

	b)	With the help of examples, exemplify the significance of saccharification in the food industry. What are the different processes used?	CO2	PO1 PO5	<b>07</b>
	c)	Under which act was the FSSAI established? Elucidate its regulatory framework.	CO2	PO1 PO5	<b>08</b>
		<b>UNIT-III</b>			
4	a)	What is “ropiness” of milk? Elaborate on rancidity as a prime cause of food spoilage.	CO3	PO2 PO5	<b>06</b>
	b)	Expand RODAC. Present a detailed account of its usage in microbiological analysis.	CO3	PO2 PO5	<b>06</b>
	c)	What is FISH method of molecular identification? Illustrate the mechanism of FISH and write the advantages of this method which helped gain widespread acceptance in various fields.	CO2	PO1 PO5	<b>08</b>
		<b>UNIT -IV</b>			
5	a)	What are the most commonly used radiations employed for food preservation and different applications of radiations based on the dosage? How do food irradiators ensure that irradiated food does not become radioactive?	CO2	PO1 PO5	<b>07</b>
	b)	What are the effects of irradiation on food constituents? Can all types of food be irradiated?	CO2	PO1 PO5	<b>05</b>
	c)	Estimation of freezing time for food and beverages is very critical. What are the criteria for estimation? How freezing time is computed using Planck's equation?	CO2	PO1 PO5	<b>08</b>
		<b>OR</b>			
6	a)	Elaborate on the important thermal properties of frozen food. List few examples of equipment used in food freezing.	CO2	PO1 PO5	<b>08</b>
	b)	What are the different methods of food dehydration? How does food dehydration affect the nutritional value of the food product?	CO2	PO1 PO5	<b>07</b>
	c)	Represent fixed tray dehydration and cabinet drying methods with labelled diagrams.	CO2	PO1 PO5	<b>05</b>
		<b>UNIT - V</b>			
7	a)	Highlight the major steps involved in cheese preparation.	CO3	PO2 PO5	<b>06</b>
	b)	Give examples of different types of cheese. Identify the following fermented product: “Mix shredded cabbage with salt, pack into container. Brining solution will be produced by cabbage over few days. The cabbage is allowed to be submerged for few weeks. <i>Lactobacillus</i> begin to convert sugars in the cabbage into lactic acid. The final product is a crunchy and sour condiment.”	CO3	PO2 PO5	<b>04</b>

	c)	What makes the correct combination of acidity, sugar level and pectin content in jams & jellies a vital factor in obtaining a satisfactory product?	CO3 PO2 PO5	<b>06</b>
	d)	What is “pickling”? Name a few preservatives added during this process at the industrial level and at home preparation level.	CO3 PO2 PO5	<b>04</b>

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B.M.S.C.E. - EVEN SEM 2022-23