U.S.N.										

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

Autonomous Institute Affiliated to VTU

June / July 2025 Semester End Main Examinations

Programme: B.E. **Semester: III**

Branch: Chemical Engineering **Duration: 3 hrs.**

Course Code: 23CH3BSBFE **Max Marks: 100**

Course: Biology for Engineers

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)	Differentiate between prokaryotic and eukaryotic cells based on cell structure.	*CO1*	*PO1*	**10**
	b)	List the applications of microorganisms in different industrial sectors.	*CO1*	*PO1*	**10**
		OR			
2	a)	What is sterilization? Explain the types of sterilization used for microbial growth.	*CO1*	*PO1*	**07**
	b)	With the help of a neat diagram explain the different phases in the growth cycle of microorganisms.	*CO2*	*PO1*	**07**
	c)	Illustrate the sources of nutrients to formulate the growth medium for microbial growth.	*CO2*	*PO1*	**06**
		UNIT - II			
3	a)	What carbohydrates? Explain the classification of carbohydrates in detail.	*CO2*	*PO1*	**07**
	b)	Draw neat, labeled diagram of the lipids and explain the properties of lipids.	*CO2*	*PO1*	**07**
	c)	Explain functions of any three vitamins in detail.	*CO2*	*PO1*	**06**
		OR			
4	a)	With suitable examples differentiate between simple and complex lipids.	*CO2*	*PO1*	**05**
	b)	With the help of neat diagram explain the classification of proteins based on their structure.	*CO2*	*PO1*	**10**
	c)	What are proteins and summarize their functions.	*CO2*	*PO1*	**05**

			UNIT - III			
	5	a)	Explain the importance consideration of Enzyme commissions for Enzyme nomenclature.	*CO2*	*PO1*	**06**
		b)	Explain the lock and key mechanism of enzyme-substrate reaction with a suitable example.	*CO2*	*PO1*	**07**
		c)	Illustrate the difference between Gene and Chromosome.	*CO3*	*PO2*	**07**
			OR			
	6	a)	Explain the different industrial applications of genetic engineering	*CO3*	*PO2*	**10**
		b)	With a neat diagram explain the double helical structure and functions of DNA.	*CO4*	*PO1*	**10**
			UNIT - IV			
	7	a)	Illustrate the principle of cell culture techniques and its applications.	*CO5*	*PO1*	**10**
		b)	Explain the cell culture isolation techniques in detail.	*CO5*	*PO1*	**10**
			OR			
	8	a)	Summarize the steps involved in preparation of growth media for tissue cultures.	*CO4*	*PO1*	**10**
		b)	Elucidate the applications of plant and animal tissue cultures.	*CO5*	*PO1*	**10**
			UNIT - V			
	9	a)	Summarize the importance of Innate and Acquired Immunity in detail with a suitable example	*CO2*	*PO1*	**10**
		b)	With a neat diagram explain the steps involved in the activation of helper T-cells and T- cells activation.	*CO4*	*PO1*	**10**
			OR			
	10	a)	Illustrate the functional properties of antibodies.	*CO4*	*PO1*	**07**
		b)	List the different components explain the working principle of biosensors.	*CO6*	*PO2*	**07**
		c)	What are nano biomolecules and list the types of biomolecules.	*CO6*	*PO2*	**06**

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