U.S.N.										

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

Autonomous Institute Affiliated to VTU

January / February 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.

				CO	PO	Marks
			UNIT - I			
1	a)		Explain with a neat sketch the growth kinetics curve.	CO1	PO1	**10**
	b)		What is microorganism? Classify and explain its importance.	CO1	PO1	**10**
			OR			
2	a)		Explain in detail the various sources of nutrients for formulation of the growth medium.	CO1	PO1	**10**
	b)		Expound sterilization and classify the same for microorganisms.	CO2	PO1	**10**
			UNIT - II			
3	a)		What is a biomolecule? Classify the same.	CO2	PO1	**08**
	b)		Explain the structure and function of carbohydrates with examples.	CO2	PO1	**12**
			OR			
4	a)		Explain the structural significance and functions lipids with a neat sketch.	CO2	PO1	**12**
	b)		What is the role of proteins? Discuss the structure of proteins with its function.	CO2	PO1	**08**
			UNIT - III			
5	a)		What are enzymes? Explain the components of enzymes with examples.	CO4	PO1	**06**
	b)		How are enzymes classified? Give examples.	CO4	PO1	**08**
	c)		What is an enzyme substrate? Explain briefly.	CO4	PO1	**06**

			OR			
	6	a)	Briefly explain the mechanisms of enzyme substrate interaction.	*CO2*	*PO1*	**06**
		b)	Differentiate the DNA and RNA.	*CO3*	*PO2*	**10**
		c)	How does genetic mutations occur?	*CO3*	*PO2*	**04**
			UNIT - IV			
	7	a)	Which stage of stem cell development is best suited for tissue engineering? Why?	*CO4*	*PO1*	**08**
		b)	What are various cell culture techniques? Explain any two methods.	*CO4*	*PO1*	**06**
		c)	Enlist the applications of tissue engineering.	*CO5*	*PO1*	**06**
			OR			
	8	a)	How is harvesting and isolation of the plant tissue cells carried out? Briefly explain the steps.	*CO4*	*PO1*	**10**
		b)	Explain hormones and growth factors in tissue engineering.	*CO4*	*PO1*	**10**
			UNIT - V			
	9	a)	What are antibiotics? Explain its functional properties in detail.	*CO2*	*PO1*	**10**
		b)	Elucidate the detailed mechanisms involved in activation of T cells with neat diagram.	*CO6*	*PO2*	**10**
			OR			
	10	a)	What are biosensors? Explain any five types with a neat sketch.	*CO6*	*PO2*	**10**
		b)	Differentiate between the innate and adaptive immune system.	*CO6*	*PO2*	**10**

****