U.S.N.										

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

Autonomous Institute Affiliated to VTU

January 2024 Semester End Main Examinations

Programme: B.E. **Semester: VII**
Branch: Chemical Engineering **Duration: 3 hrs.**
Course Code: 22CH7BSBFE **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)		Provide detailed classification of carbohydrates with examples. List its functions and applications.	*CO1*	*PO1*	**10**
	b)		What are lipids? Give the structural importance and significance of lipids with examples.	*CO1*	*PO1*	**10**
			UNIT - II			
2	a)		"The immune system is a complex network of organs, cells and proteins that defends the body against infection". Substantiate this statement by providing the detailed mechanism involved in activation of T cells.	*CO5*	*PO1*	**10**
	b)		Deliberate on the beneficial and pathogenic microorganisms with examples.	*CO3*	*PO1*	**10**
			OR			
3	a)		There are various types of immune system in our body. Discuss the types with relevant examples	*CO5*	*PO1*	**10**
	b)		What are monoclonal antibodies?	*CO5*	*PO1*	**5**
	c)		List the function of helper T cell.	*CO5*	*PO1*	**5**
			UNIT - III			
4	a)		What are nanobiomolecules? Name the types of nano biomolecules with their specific applications.	*CO6*	*PO2*	**10**
	b)		Elaborate on the principle, mechanism and applications of biosensors with relevant examples.	*CO6*	*PO2*	**10**
			UNIT - IV			
5	a)		Describe the role of neural networks and stem cells in biological cell.	*CO2*	*PO2*	**10**

		b)	"Cells generate and maintain mechanical forces within their environment as a part of their physiology". Provide suitable justifications.	***CO2***	***PO2***	**10**
			OR			
	6	a)	Enumerate on the different types of genetic mutations. Give examples.	***CO2***	***PO2***	**10**
		b)	"Genetic engineering aims to modify the genes to enhance the capabilities of the organism beyond what is normal". Provide suitable justifications.	***CO2***	***PO2***	**10**
			UNIT - V			
	7	a)	Animal cell culture has its own limitations. Give justification for the above statement.	***CO4***	***PO1***	**5**
		b)	List the applications of animal cell culture.	***CO4***	***PO1***	**5**
		c)	"It's important to produce a new culture with a lower density of cells than the originating culture, fresh nutrients and no toxic metabolites allowing continued growth of the cells without risk of cell death". Substantiate this statement by providing the methodology involved.	***CO4***	***PO1***	**10**

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