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: VII**
Branch: Biotechnology **Duration: 3 hrs.**
Course Code: 19BT7BSBIE **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)		Compare the pressure driven membrane-based bio-separation processes based on the size of the permeable species.	CO1	PO 1	10
	b)		With necessary details, highlight the principal differences between prokaryotic cells and eukaryotic cells.	CO1	PO1	10
			OR			
2	a)		With a schematic representation, deliberate on the active and passive processes across the cell membrane.	CO1	PO1	05
	b)		Explain the various types of vitamins and diseases caused due to its deficiency.	CO1	PO1	10
	c)		List the functions of carbohydrates.	CO1	PO1	05
			UNIT - II			
3	a)		With a schematic representation, demonstrate the mechanism of an enzyme catalyzed reaction.	CO2	PO1, 2	05
	b)		Deliberate on the numerous types of enzyme inhibition with a schematic representation.	CO2	PO1, 2	10
	c)		Discuss the applications of enzymes in clinical medicine.	CO2	PO1, 2	05
			OR			
4	a)		What is an enzyme? How do classify the enzymes as recommended by IUBMB with one example under each class?	CO 2	PO1, 2	10
	b)		Give a detailed account on enzyme cofactors and their importance in biological system.	CO 2	PO1, 2	10
			UNIT - III			
5	a)		With a schematic representation, deliberate on how antibodies work in different ways to fight against antigens.	CO3	PO1, 2	10
	b)		Explain the mechanism of innate immunity in detail.	CO3	PO1, 2	06

		c)	Discuss the consequences if there is a failure in immune response.	***CO3***	***PO1, 2***	**04**
			OR			
	6	a)	Discuss the importance of microbiology in dairy and food industry.	***CO 3***	***PO1, 2***	**10**
		b)	Examine steps involved in T cell activation process.	***CO 3***	***PO1, 2***	**10**
			UNIT - IV			
	7	a)	What are nano biomolecules? Explain in detail in any one medical applications of nano biomolecules.	***CO4***	***PO1, 2***	**10**
		b)	Deliberate the various classes of biosensor depending upon transducers, bioactive components and different types of interaction.	***CO4***	***PO1, 2***	**10**
			OR			
	8	a)	With a schematic illustration, demonstrate the quantitative measurement of glucose by biosensor.	***CO4***	***PO1, 2***	**07**
		b)	"Bioinformatics requires knowledge of the domain such as of biology, mathematics and computation". Validate the statement with a suitable case or example.	***CO4***	***PO1, 2***	**06**
		c)	With a neat flowchart, explain the steps involved in DNA chip design, operation and analysis of data.	***CO4***	***PO1, 2***	**07**
			UNIT - V			
	9	a)	What is a lever? With a suitable illustration of biomechanics of human body, describe the various classes of lever.	***CO4***	***PO1, 2***	**10**
		b)	With a schematic representation, discuss the construction of neural network for decision functions.	***CO4***	***PO1, 2***	**10**
			OR			
	10	a)	With suitable examples discuss the applications of plant and microbial genetic engineering.	***CO 4***	***PO1, 2***	**10**
		b)	Examine the types and applications of stem cells. What are the ethical issues associated with usage of embryonic stem cells?	***CO 4***	***PO1, 2***	**10**

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