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: Civil Engineering **Duration: 3 hrs.**

Course Code: 21CV7BSBFE **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)	With the help of labelled diagram, describe the structure of eukaryotic cell. Explain the function of any four of its organelles.		*CO1*	*PO 1,6*	**10**
	b)	Explain deficiency disorder caused by fat soluble vitamins A,D,E,K		*CO1*	*PO 1,6*	**5**
	c)	What are polysaccharides. Add a note on structural and functional polysaccharides.		*CO1*	*PO 1,6*	**5**
		OR				
2	a)	Write on structure of amino acids and also compare between essential and non-essential amino acids with examples		*CO1*	*PO 1,6*	**10**
	b)	Classify the protein based on its structure and explain it.		*CO1*	*PO 1,6*	**5**
	c)	Why is the nucleus considered as the control center of the cell?. Elaborate on structure of DNA		*CO1*	*PO 1,6*	**5**
		UNIT - II				
3	a)	Discuss in detail about types of reversible enzyme inhibition.		*CO2*	*PO 1,6*	**10**
	b)	Elaborate on the factors that influence the enzyme activity.		*CO2*	*PO 1,6*	**5**
	c)	Explain the mechanism of enzyme action using the induced fit theory.		*CO2*	*PO 1,6*	**5**
		OR				
4	a)	Outline the classification of enzyme their mode of action with examples.		*CO2*	*PO 1,6*	**10**
	b)	Write on the part of enzyme that adjust to the shape of substrate.		*CO2*	*PO 1,6*	**5**
	c)	What is Holoenzyme? Write on importance of enzyme in diagnostic		*CO2*	*PO 1,6*	**5**

			UNIT - III			
	5	a)	What is meant by innate immunity? Explain their role has first line defense against the infectious microorganism.	*CO3*	*PO 1,6*	**10**
		b)	Outline the classification of acquired immunity and write about its importance.	*CO3*	*PO 1,6*	**5**
		c)	Write on organ of immune systems.	*CO3*	*PO 1,6*	**5**
			OR			
	6	a)	Write a note on different types of antibodies and its function.	*CO3*	*PO 1,6*	**10**
		b)	Explain the role of T helper cell in immune response.	*CO3*	*PO 1,6*	**5**
		c)	Highlight the importance of microbiology in human health.	*CO3*	*PO 1,6*	**5**
			UNIT - IV			
	7	a)	"One card or one chip with your life". Give an explanatory note on this statement and its importance.	*CO4*	*PO 1,6*	**10**
		b)	Explain any three unique properties of nanoparticles. Discuss on how surface area to volume ratio influence on its property	*CO4*	*PO 1,6*	**5**
		c)	With labelled diagram explain the components of biosensor and its significance.	*CO4*	*PO 1,6*	**5**
			OR			
	8	a)	Elaborate on the following nano biomolecules and write on its application i. Carbon based material ii. Metal based nano material	*CO4*	*PO 1,6*	**10**
		b)	Explain and illustrate with example on types of biosensors.	*CO4*	*PO 1,6*	**5**
		c)	Discuss why bioinformatics is necessary in biological field	*CO4*	*PO 1,6*	**5**
			UNIT - V			
	9	a)	Explain the steps involved in modification of genome of organism by using recombinant DNA technology	*CO5*	*PO 1,6*	**10**
		b)	Illustrate with example the importance of stem cell in treatment of diseases.	*CO5*	*PO 1,6*	**5**
		c)	Discuss on principle of law of dominance in Mendelian genetics.	*CO5*	*PO 1,6*	**5**
			OR			
	10	a)	Why stem cells are called "magical seeds"? Write on types of stem cell and its importance.	*CO5*	*PO 1,6*	**10**
		b)	What is the difference between supervised and unsupervised learning in the context of neural networks?	*CO5*	*PO 1,6*	**5**
		c)	Describe the Mendelian principle of independent assortment and provide an example.	*CO5*	*PO 1,6*	**5**

****