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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: 22BT7PEBNB **Max Marks: 100**

Course: Biological and Biopharmaceuticals

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)	List and explain various pharmacological studies during the drug development process.	*CO1*	*PO 6*	**12**
	b)	Explore the several ethical and legal issues during the study of investigational new drugs.	*CO1*	*PO8*	**08**
		OR			
2	a)	Explain in details on various observational studies performed during the drug pharmacovigilance process.	*CO1*	*PO8*	**12**
	b)	Discuss the various steps involved in development of biopharmaceuticals.	*CO1*	*PO6*	**08**
		UNIT - II			
3	a)	Investigate on various methods required to improve the self-life of protein therapeutics materials.	*CO2*	*PO 6*	**10**
	b)	Elucidate on various types of excipients used in biopharmaceuticals industries.	*CO2*	*PO4*	**10**
		OR			
4	a)	What are the factors to be considered to ensure stability and enhance shelf life of protein-based therapeutics?	*CO2*	*PO6*	**10**
	b)	With a schematic representation, demonstrate the diverse strategies applied to enhance the solubility and stability of protein aggregates in the development of protein-based therapies.	*CO2*	*PO6*	**10**

			UNIT - III			
	5	a)	With neat diagram discuss about production of human insulin by using recombinant technology.	*CO3*	*PO3*	**10**
		b)	Explore on neurotropic factors, their roles and mechanism in the support of growth and differentiation of neurons.	*CO 2*	*PO 6*	**10**
			OR			
	6	a)	Write a detailed note on the following: i. Asparaginase ii. Insulin like growth factors iii. Epidermal growth factors	*CO3*	*PO 6*	**06** **06** **08**
			UNIT - IV			
	7	a)	List and explain on cytokines used in various therapeutics purposes with suitable example.	*CO3*	*PO1,6*	**10**
		b)	Write a detailed note on various adjuvants used in development of vaccines.	*CO3*	*PO1,6*	**10**
			OR			
	8	a)	Give a detailed note on interferons, their types and clinical applications.	*CO 3*	*PO1,6*	**07**
		b)	Discus how a vaccine works in our body and giving protection against both bacteria and virus.	*CO 3*	*PO1,6*	**06**
		c)	Discuss on various biologicals used in the treatment of autoimmunity.	*CO3*	*PO1,6*	**07**
			UNIT - V			
	9	a)	Discuss the various approaches of drug delivery systems used in the treatment of AIDS and Tuberculosis.	*CO4*	*PO 6*	**10**
		b)	Write a note various approaches used in smart drug delivery systems. i) Liposomes ii) Hydrogels iii) Implantable drug-eluting stents	*CO4*	*PO 6*	**03** **03** **04**
			OR			
	10	a)	Differntiate between targeted and conventional drug delivery system with their development, mechanism, mode of delivery and clinical applications.	*CO 4*	*PO 6*	**10**
		b)	Deliberate the mechanism of action of different rate controlled drug delivery systems.	*CO4*	*PO1, 6*	**10**

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