CBCS SCHEME

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BBOC407

Fourth Semester B.E./B.Tech. Degree Examination, Dec.2024/Jan.2025
Biology for Engineers (CSE)

Time: 3 hrs. Max. Marks: 100

Note: 1. Answer any FIVE full questions, choosing ONE full question from each module.
2. M : Marks , L: Bloom's level , C: Course outcomes.

		Module – 1	M	L	C
Q.1	a.	What is stem cell? Explain its types and list its applications.	7	L2	CO1
	b.	Explain in detail the properties and functions of nucleic acids.	6	L2	CO1
	c.	Explain the importance of special biomolecules.	7	L2	CO1
		OR			
Q.2	a.	What is a biomolecule? Explain the classifications of biomolecule.	7	L2	CO1
	b.	Explain the properties and functions of carbohydrates.	6	L2	CO1
	c.	Describe the structure and functions of a cell with a neat diagram.	7	L3	CO1
		Module – 2			
Q.3	a.	What is the role of lipids? Outline the process of obtaining biodiesel from lipids.	7	L3	CO2
	b.	Differentiate between PHA and PLA as a bioplastic materials.	6	L4	CO1
	c.	Explain the role of DNA vaccine for rabies and RNA vaccine for COVID-19.	7	L2	CO1
		OR			
Q.4	a.	What are the key properties, advantages and limitations of cellulose based water filters.	7	L3	CO2
	b.	How can DNA finger printing be applied to evaluate its effectiveness and reliability in forensic applications.	6	L4	CO1
	c.	Describe the use of meat analogue and plant protein as food.	7	L2	CO2
		Module – 3			
Q.5	a.	Deliberate the functioning of brain as CPU system.	7	L3	CO2
	b.	Write a short note on spirometry and ventilator.	6	L2	CO2
	c.	Explain heart as pump system.	7	L3	CO2

		OR			
Q.6	**a.**	Explain eye as a camera system.	**7**	**L3**	**CO2**
	b.	Write a short note on cardiac pacemaker.	**6**	**L2**	**CO2**
	c.	Explain kidney as purification system.	**7**	**L3**	**CO2**
		Module – 4			
Q.7	**a.**	Describe the materials used and engineering applications of Velcro technology.	**7**	**L3**	**CO3**
	b.	Compare the process of photosynthesis to the functioning of photovoltaic cells.	**6**	**L4**	**CO3**
	c.	Explain the HBOCs and PFCs as human blood substituents.	**7**	**L3**	**CO3**
		OR			
Q.8	**a.**	Explain the terms lotus leaf effect and bird flying.	**7**	**L3**	**CO3**
	b.	Compare biological echolocation and technological echolocation highlighting their applications in navigation and detection.	**6**	**L4**	**CO3**
	c.	Explain the terms shark skin, swim suits and bullet train using biological concepts.	**7**	**L3**	**CO3**
		Module – 5			
Q.9	**a.**	Compare the functioning of electrical tongue and human tongue.	**7**	**L4**	**CO4**
	b.	Explain muscle cells as scaffold for tissue growth.	**6**	**L2**	**CO4**
	c.	Explain bioremediation and biomining via microbial surface adsorption.	**7**	**L2**	**CO4**
		OR			
Q.10	**a.**	Illustrate the basic steps of bioprinting process and list the various types of bioprinting techniques.	**7**	**L4**	**CO4**
	b.	Write a short note on: i) Importance of DNA origami ii) Self healing bioconcrete.	**6**	**L2**	**CO4**
	c.	Discuss the applications of artificial intelligence in the diagnosis of disease.	**7**	**L2**	**CO4**

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