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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 substitutes.	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
