CBCS SCHEME

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21BE45

Fourth Semester B.E./B.Tech. Degree Examination, June/July 2023
Biology for Engineers

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.

			M	L	C
		Module – 1			
Q.1	a.	What is a biomolecule? Explain the classification of biomolecule.	07	L2	CO1
	b.	Explain the role of DNA vaccine for rabies and RNA vaccine for COVID-19.	07	L2	CO1
	c.	Write a short note on cellulose based bio-filters.	06	L2	CO1
		OR			
Q.2	a.	Explain the DNA finger printing in forensic applications.	07	L2	CO1
	b.	Explain the role of lipids and its application in cleaning agents.	07	L2	CO1
	c.	Write a short note on biosensors and bioplastics.	06	L2	CO1
		Module – 2			
Q.3	a.	Explain brain as a CPU system.	07	L3	CO1
	b.	Explain eye as a camera system.	07	L3	CO1
	c.	Write a short note on cardiac pacemaker.	06	L2	CO1
		OR			
Q.4	a.	Explain the robotic arms for prosthetics.	07	L3	CO1
	b.	Explain heart as a pump system.	07	L3	CO1
	c.	Write a short note on engineering solutions for Parkinson's disease.	06	L2	CO1
		Module – 3			
Q.5	a.	Explain the lungs as a purification system.	07	L3	CO2
	b.	Explain the kidney as filtration system.	07	L3	CO2
	c.	Write a short note on spirometry and ventilator.	06	L2	CO2
		OR			
Q.6	a.	Explain muscular and skeletal system as scaffolds.	07	L3	CO2
	b.	Explain bio-engineering solutions for muscular dystrophy and osteoporosis.	07	L3	CO2
	c.	Write a short note on Chronic Obstructive Pulmonary Disease (COPD).	06	L2	CO2
		Module – 4			
Q.7	a.	Explain the terms Echolocation Ultrasonography and Sonars.	07	L3	CO3
	b.	Explain the process of Photosynthesis and Photovoltaic cells.	07	L3	CO3
	c.	Write a short note on Bionic leaf, GPS, Bird flight and aircraft.	06	L2	CO3
		OR			
Q.8	a.	Explain the terms Lotus leaf effect, Plant Burrs and Super hydrophobic and self-cleaning surfaces.	07	L3	CO3
	b.	Explain the terms Spark skin and Swimsuits, Bullet train using biological concepts.	07	L3	CO3
	c.	Write a short note on Hemoglobin – Based Oxygen Carriers (HBOC's) and Perfluorocarbons (PFC).	06	L2	CO3
		Module – 5			
Q.9	a.	Explain the DNA Organic and Biocomputing.	07	L3	CO4
	b.	Explain the Bioimaging and Artificial intelligence for Disease Diagnosis.	07	L3	CO4
	c.	Write a short note on Self healing Bioconcrete.	06	L2	CO4
		OR			
Q.10	a.	Explain the importance of Bioimaging.	07	L3	CO4
	b.	Explain Bioremediation and Bio-Mining via microbial surface adsorption.	07	L3	CO4
	c.	Write s short note on Nanomedicines and Bioleaching.	06	L2	CO4

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