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BBOK407

Fourth Semester B.E./B.Tech. Degree Examination, Dec.2025/Jan.2026

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.

Module – 1				M	L	C
Q.1	a.	Explain Eukaryotic and Prokaryotic cell structures with neat diagrams.	10	L2	CO1	
	b.	What are Stem Cells? Explain their applications and classification in detail.	10	L2	CO1	
OR						
Q.2	a.	Explain the properties and functions of the following biomolecules i) Proteins ii) Lipids.	10	L2	CO1	
	b.	Illustrate different types of vitamins mentioning its significance and deficiency disorders.	10	L2	CO1	
Module – 2						
Q.3	a.	Applying the knowledge of nucleic acids, explain the role of DNA in preparation of Rabies vaccine with necessary diagrams.	10	L3	CO2	
	b.	Outline the role of carbohydrates in making of PLA's and PHA's bioplastics with necessary diagram.	10	L4	CO2	
OR						
Q.4	a.	Describe all the key characteristics, advantages and limitations of cellulose based water filter.	10	L2	CO2	
	b.	Evaluate the role of lipids in the production of biodiesel with neat diagram.	10	L4	CO2	
Module – 3						
Q.5	a.	Compare the architecture of human brain with CPU using necessary tabulations.	10	L3	CO2	
	b.	Explain the architecture of lungs as purification system with necessary diagrams, including the gas exchange mechanism.	10	L2	CO2	

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OR						
Q.6	a.	Draw human eye and label its parts and explain the rods and cone cells in detail.	10	L2	CO2	
	b.	Describe the design of stents and also explain the reasons for blockages of blood vessels.	10	L2	CO2	
Module – 4						
Q.7	a.	Apply the concept of echolocation to ultrasonography and sonar technology.	10	L3	CO3	
	b.	Illustrate the following bioinspired materials and mechanisms. i. Photo voltaic cell ii. Bionic leaf iii. GPS technology with bird flying and aircraft.	10	L2	CO3	
OR						
Q.8	a.	Articulate Human blood substitutes using HBOC's and PFC's.	10	L3	CO3	
	b.	Apply the concept of lotus leaf effect to explain super hydrophobic and self cleaning surfaces.	10	L3	CO3	
Module – 5						
Q.9	a.	Evaluate the role of Bio imaging and Artificial Intelligence for disease diagnosis.	10	L4	CO4	
	b.	Describe with necessary diagrams the concepts of DNA Origami and Biocomputing.	10	L2	CO4	
OR						
Q.10	a.	Write short notes on : i. Bioremediation ii. Biomining via microbial surface adsorption.	10	L2	CO4	
	b.	Develop some of the bioengineering solutions for muscular dystrophy and osteoporosis with necessary diagrams.	10	L3	CO4	

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