

THE KAVERY ENGINEERING COLLEGE*(An Autonomous Institution)***B.E/B.TECH DEGREE END SEMESTER THEORY EXAMINATIONS, APRIL-MAY****2025*****Sixth Semester******Biomedical Engineering*****CBM362 - Principles of Tissue Engineering*****Regulations - 2021******Duration : 3 Hrs******Maximum : 100 Marks******PART – A (ANSWER ALL QUESTIONS) (Marks 10*2=20)***

Q.No	Questions	BLT	CO	Marks
1.	List the different types of cells.	L1	1	2
2.	Write a short on differential cell adhesion.	L2	1	2
3.	List the different types of tissue.	L1	2	2
4.	Outline the process of wound healing.	L2	2	2
5.	Define stem cell.	L1	3	2
6.	What the source of stem cells?	L1	3	2
7.	What is laminar flow patterning?	L2	4	2
8.	What is meant by soft lithography?	L2	4	2
9.	List any three applications of tissue engineering.	L1	5	2
10.	How do propose to commercialize the product of tissue engineering?	L2	5	2

PART – B (ANSWER ALL QUESTIONS) (Marks 5*16 = 80)

Q.No	Questions	BLT	CO	Marks
11.	a i Outline the hierarchy of cell types from stem cells to fully differentiated cells.	L2	1	6
	i Discuss the various cell attachment mechanisms.	L2	1	10
	Or			
	b i Discuss the role of cell signaling molecules and growth factors in regulating cellular behavior.	L2	1	6
	i Describe how cell surface markers are used to identify and isolate specific cell populations.	L2	1	10
12.	a i Describe the structural and functional organization of tissues in the human body.	L2	2	8

	i	Explain the role of vascularity and angiogenesis in tissue engineering.	L2	2	8
		Or			
	b i	Discuss the biological processes involved in wound healing and their relevance to tissue engineering.	L2	2	8
	i	Explain the role of the extracellular matrix (ECM) in tissue function and regeneration.	L2	2	8
13.	a	Classify the different types of stem cells and compare their potential for differentiation and therapeutic application.	L2	3	16
		Or			
	b	Describe the cellular processes of differentiation, dedifferentiation, maturation, and proliferation in the context of stem cell biology.	L2	3	16
14.	a	Compare and analyze laminar flow patterning with microfluidic patterning in the context of engineered tissue design.	L4	4	16
		Or			
	b	Compare the methods of electrospinning, solvent casting with particulate leaching, and microfabrication for scaffold construction.	L4	4	16
15.	a	Analyze the advancements and limitations in cardiac and muscle tissues regenerative engineering.	L4	5	16
		Or			
	b	Examine the various tissue engineering approaches for peripheral nerve regeneration.	L4	5	16