

Register No : _____

THE KAVERY ENGINEERING COLLEGE

(An Autonomous Institution)

B.E/B.TECH DEGREE END SEMESTER THEORY EXAMINATIONS, NOV/DEC 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)*

<i>Q.No</i>	<i>Questions</i>	<i>BLT</i>	<i>CO</i>	<i>Marks</i>
1.	List out the types of cell culture.	L1	1	2
2.	State the function of cell surface markers	L2	1	2
3.	Write the key challenges in the scope of tissue engineering.	L1	2	2
4.	What are the factors affecting wound healing?	L1	2	2
5.	List the features of multipotency and pluripotency.	L1	3	2
6.	How are cancer stem cells detected?	L1	3	2
7.	Recall the application of soft lithography.	L1	4	2
8.	Identify the role of scaffolds in tissue engineering.	L2	4	2
9.	What is the procedure for cartilage replacement?	L1	5	2
10.	Classify the stages of muscle regeneration.	L2	5	2

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

<i>Q.No</i>	<i>Questions</i>	<i>BLT</i>	<i>CO</i>	<i>Marks</i>
11.	a i Explain the importance of cell expansion in cell culture.	L2	1	8
	ii Outline the factors that influence successful cell expansion, and how can these factors be optimized?	L2	1	8
	Or			
	b i Outline the methods used for characterizing cultured cells.	L2	1	8
	ii Summarize the role of cell surface markers in tissue engineering. How can these markers influence cell behavior and integration in engineered tissues?	L2	1	8
12.	a Examine the significance of vascularization in engineered tissues. How does the organization of blood vessels contribute to tissue viability and function?	L4	2	16
	Or			
	b Categorizethe phases of wound healing and what are the key biological processes involved at each stage?	L4	2	16
13.	a Select the implications of understanding differentiation and dedifferentiation in cancer biology. How can insights into these processes inform strategies for cancer treatment and prevention?	L3	3	16
	Or			
	b Identify the discovery and development of induced pluripotent stem cells (iPSCs).	L3	3	16

14.	a	i	Explain the principles and techniques of soft lithography.	L2	4	8
		ii	Illustrate the various applications of soft lithography in biomedical engineering.	L2	4	8
Or						
	b	i	Summarize the principles and mechanisms of electrospinning.	L2	4	8
		ii	Explain the properties that make certain polymers suitable for electrospinning process.	L2	4	8
15.	a		Examine the role of 3D bioprinting in pancreas replacement engineering. How does this technology enhance the potential for developing functional pancreatic tissues for transplantation?	L4	5	16
	Or					
	b		Analyze the current strategies employed in peripheral nerve regeneration therapies.	L4	5	16