

THE KAVERY ENGINEERING COLLEGE
(An Autonomous Institution)
UG/PG DEGREE END SEMESTER THEORY EXAMINATIONS, APRIL-MAY 2026
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.	What are progenitor cells? How do they differ from stem cells?	L1	1	2
2.	Mention the role of cell surface receptors in cell signaling.	L1	1	2
3.	Define angiogenesis.	L1	2	2
4.	Enlist the steps of wound healing process.	L1	2	2
5.	List any two types of stem cells.	L1	3	2
6.	Give the importance of induced pluripotent stem cells (iPSCs).	L1	3	2
7.	State the method of self-assembled monolayer (SAM).	L1	4	2
8.	How can solvent casting be used to create porous scaffolds?	L2	4	2
9.	Justify that bioartificial pancreas improves the diabetic patients' lives.	L4	5	2
10.	Why commercialization is important for replacement engineering?	L2	5	2

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

Q.No	Questions	BLT	CO	Marks
11. a	Discuss the importance of growth factors in cell growth and differentiation. Provide examples of different growth factors for families and their specific functions.	L2	1	16
	Or			
b	Explain the importance of cell adhesion molecules in tissue formation and function. Discuss the role of integrins, cadherins, and selectins in cell adhesion.	L2	1	16
12. a	Compare and contrast epithelial and connective tissues, highlighting their structural and functional differences.	L4	2	16
	Or			
b	Express the composition and function of the extracellular matrix, including the various matrix molecules and their ligands.	L4	2	16
13. a	Analyze the process of differentiation, dedifferentiation, and maturation in stem cell biology.	L4	3	16
	Or			
b	Analyze the various sources of hematopoietic stem cells, including bone marrow, cord blood, and fetal liver.	L4	3	16
14. a	Describe the working principle of laminar flow patterning in microfluidic devices and their applications in cell biology and tissue engineering	L2	4	16
	Or			
b	Enumerate the microfabrication of cell-seeded scaffolds, including the techniques used to pattern cells within the scaffold structure.	L2	4	16

- | | | | | | |
|-----|---|---|----|---|----|
| 15. | a | Explicate the current state of bone and cartilage replacement engineering, highlighting the materials, techniques, and challenges involved. | L2 | 5 | 16 |
| | | Or | | | |
| | b | Explain the methods that are used to regenerate nerve tissue. What are the current obstacles to overcome for regaining full functionality after nerve damage? | L2 | 5 | 16 |
