

THE KAVERY ENGINEERING COLLEGE
(An Autonomous Institution)

B.E/B.TECH DEGREE END SEMESTER THEORY EXAMINATIONS, NOV/DEC 2025

Second Semester

Biomedical Engineering

BM3251 / UBMT24201 - Biosciences for Medical Engineering

Regulations – 2021 & 2024

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.	Explain the role of water as a biological solvent.	L2	1	2
2.	What is the Henderson-Hasselbalch equation, and how is it used?	L1	1	2
3.	Classify carbohydrates and give one example for each class.	L2	2	2
4.	What are nucleosides and nucleotides? Briefly differentiate between them.	L2	2	2
5.	Compare between apoptosis and necrosis.	L2	3	2
6.	Define cellular adaptations and give two examples.	L1	3	2
7.	Define edema and its primary causes.	L1	4	2
8.	What is thrombosis, and how does it differ from embolism?	L2	4	2
9.	Name two structural components of bacterial cell walls.	L1	5	2
10.	Classify the basic difference between innate and adaptive immunity.	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 physiological importance of buffers in maintaining pH in biological systems.	L2	1	10
	ii Outline some examples of physiological buffers.	L2	1	6
	Or			
	b Explain the Henderson-Hasselbalch equation, calculate the pH of a solution containing 0.1 M acetic acid and 0.01 M acetate ions. Explain each step.	L2	1	16
12.	a Explain the structural organization of proteins, including primary, secondary, tertiary, and quaternary structures, and their significance.	L2	2	16
	Or			
	b Explain in detail about classification and properties of Amino acid.	L2	2	16
13.	a Outline the different types of cell injuries, distinguishing between reversible and irreversible injuries. Explain their implications in pathological conditions.	L2	3	16
	Or			
	b Explain the process of neoplasia, including the characteristics and differences between benign and malignant tumors.	L2	3	16

14.	a	Summarize -Embolism, Infarction, Shock and Chronic venous congestion.	L2	4	16
		Or			
	b	Explain in detail about haematological and bleeding disorders.	L2	4	16
15.	a i	Summarize different microscopy techniques (TEM, SEM).	L2	5	8
	ii	Outline strength and limitations of SEM and TEM.	L2	5	8
		Or			
	b	Outline the mechanisms of antibody-mediated and cell-mediated cell injury.	L2	5	16