

THE KAVERY ENGINEERING COLLEGE*(An Autonomous Institution)***B.E/B.TECH DEGREE END SEMESTER THEORY EXAMINATIONS, NOV/DEC 2025***Seventh Semester**Civil Engineering***OBT355 – Biotechnology for Waste Management****(Common to Chemical 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>BTL</i>	<i>CO</i>	<i>Marks</i>
1.	Define anaerobic process in biological treatment.	L1	1	2
2.	State the difference between batch and continuous fermentation.	L2	1	2
3.	What is solid waste management?	L1	2	2
4.	What is meant by biotransformation of biomass?	L1	2	2
5.	Name two biofuels produced from waste materials.	L1	3	2
6.	Differentiate between single stage and two stage anaerobic digestion.	L2	3	2
7.	List three organic acids produced from waste materials.	L1	4	2
8.	What are Pectinolytic enzymes?	L1	4	2
9.	Define composting process.	L1	5	2
10.	State two benefits of composting organic wastes.	L1	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 Explain the fundamentals of anaerobic and aerobic processes, and discuss the pretreatment methods used in anaerobic treatment systems. Or	L4	1	16
	b Analyze the factors affecting process efficiency in biological treatment and compare solid state fermentation with submerged fermentation.	L4	1	16
12.	a Discuss various types of waste biomass and the nature of biomass feedstock. Or	L5	2	16
	b Evaluate biotransformation of marine processing wastes.	L5	2	16
13.	a Analyze biohydrogen production through dark and photo fermentative processes. Or	L4	3	16
	b Evaluate enzymatic hydrolysis technologies for waste conversion.	L4	3	16

14.	a	Discuss the production of lactic acid, succinic acid, citric acid from waste materials.	L4	4	16
		Or			
	b	Examine the production of industrial enzymes from wastes including amylases, lignocellulolytic enzymes.	L4	4	16
15.	a	Explain the role of microorganisms and the factors affecting the composting process.	L4	5	16
		Or			
	b	Analyze the waste materials suitable for composting and explain various composting technologies.	L4	5	16