Reg.No.:												

VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN
[AUTONOMOUS INSTITUTION AFFILIATED TO ANNA UNIVERSITY, CHENNAI]
Elayampalayam – 637 205, Tiruchengode, Namakkal Dt., Tamil Nadu.

Question Paper Code: 90015

B.E. / B.Tech. DEGREE END-SEMESTER EXAMINATIONS – NOV. / DEC. 2025
Fifth Semester
Biotechnology
U23BTV11 – WASTE WATER TREATMENT
(Regulation 2023)

Time: Three Hours | Maximum: 100 Marks

Answer ALL the questions

Knowledge Levels (KL)	K1 – Remembering	K3 – Applying	K5 - Evaluating
	K2 – Understanding	K4 – Analyzing	K6 - Creating

PART – A

(10 x 2 = 20 Marks)

Q.No.	Questions	Marks	KL	CO
1.	Give the effect of environmental concerns due to pollutants.	2	K1	CO1
2.	List few SDG and its relation to waste water.	2	K1	CO1
3.	Recall various unit processes used in treating waste water.	2	K1	CO2
4.	Tell how precipitation is used to treat waste water.	2	K2	CO2
5.	Biological treatment of waste water is sustainable. Justify this statement.	2	K2	CO3
6.	Summarize the factors affecting growth of microbes in waste stream.	2	K2	CO3
7.	Write the principle of activated sludge process.	2	K1	CO4
8.	Discuss the advantages of waste stabilization ponds for waste water treatment.	2	K2	CO4
9.	Highlight the need for advanced wastewater treatment system.	2	K2	CO5
10.	Mention the role of desalination in wastewater process.	2	K2	CO5

PART – B

(5 x 13 = 65 Marks)

Q.No.	Questions	Marks	KL	CO
11. a)	Describe various regulations given by Tamil Nadu Pollution Control Board for waste water treatment.	13	K1	CO1

		(OR)			
	b)	Describe the various types of organic and in-organic pollutants in waste water and its impact on environment.	13	K1	CO1
12.	a)	Illustrate the role of flocculation and coagulation in waste water treatment.	13	K2	CO2
		(OR)			
	b)	i. Describe the process of solidification, stabilization in waste water treatment.	8	K2	CO2
		ii. Brief why disinfectants used after treatment.	5		
13.	a)	Explain the principle, mechanism and reactors used for anaerobic treatment.	13	K2	CO3
		(OR)			
	b)	Illustrate the waste water reactors with attached and suspended growth. Discuss its advantages and disadvantages.	13	K2	CO3
14.	a)	Illustrate the working of Sequential Batch reactor and Membrane Bioreactors.	13	K3	CO4
		(OR)			
	b)	Explain the principle and working of Trickling bed filters in waste water treatment.	13	K3	CO4
15.	a)	Explain the role of microfiltration and reverse osmosis in waste water treatment.	13	K3	CO5
		(OR)			
	b)	Evaluate how ion exchange system is used for waste water treatments.	13	K3	CO5

PART – C

(1 x 15 = 15 Marks)

Q.No.		Questions	Marks	KL	CO
16.	a)	Advanced oxidation Process is a tertiary treatment step and eco-friendly method in waste water treatment. Explain the different types of AOPs and their mechanism.	15	K3	CO5
		(OR)			
	b)	India has large number of industries, releasing textile waste water, pharmaceutical industry waste in to water bodies. Even with stringent regulation by pollution control board, the practice still exists. Suggest a cost-efficient work flow to treat waste water from Industries to attain SDG.	15	K4	CO4