PSG COLLEGE OF ARTS & SCIENCE (AUTONOMOUS)

MSc DEGREE EXAMINATION MAY 2025

(Third Semester)

Branch- ENVIRONMENTAL SCIENCE

MAJOR ELECTIVE COURSE- I: ENVIRONMENTAL ENGINEERING

Time: Three Hours

Maximum: 75 Marks

SECTION-A (10 Marks)

Answer ALL questions

No.	Question	ALL questions carry EQUAL marks $(10 \times 1 = 10)$					
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Cont..

SECTION - B (35 Marks)

Answer ALL questions

Question No.	Question	K Level	СО
11.a.	Explain the different stages involved in wastewater treatment.		COI
	(OR)	K2	
11.b.	Explain the role of coagulants in wastewater treatment and list commonly used coagulants.		
12.a.	Apply the concept of aerobic treatment and describe how it is used in treating municipal wastewater.		CO1
	(OR)	K3	
12.b.	Identify the major operational parameters that influence the efficiency of the activated sludge process.		
13.a.	Analyze the factors affecting the efficiency of anaerobic sludge digestion.		CO2
	(OR)	K4	
13. b.	Compare and contrast UASB reactors with other anaerobic reactors in terms of design, operational efficiency, and cost-effectiveness.		
14.a.	Analyze the differences between slow sand filtration and rapid sand filtration in water treatment.		CO2
	(OR)	K4	
14.b.	Compare the effectiveness of chemical disinfection and UV disinfection.	1	
15.a.	Demonstrate how a cyclone separator removes particulate matter from industrial emissions.	-	
(OR)		K3	CO3
15.b.	Apply your knowledge of air pollution control equipment to propose a control system for a cement industry.		

SECTION -C (30 Marks)

Answer ANY THREE questions

ALL questions carry EQUAL Marks

 $(3 \times 10 = 30)$

Question No.	Question	K Level	CO
16	Discuss the principles and key design criteria that should be considered while designing a wastewater treatment plant.	K6	CO1
17	Examine the role of microbial communities in the activated sludge process and their impact on wastewater treatment efficiency.	K4	CO1
18	Evaluate the economic and environmental feasibility of anaerobic treatment for wastewater management.	K5	CO2
19	Justify the use of filtration over other treatment methods in industrial wastewater treatment.	'K5	CO2
20	Analyze the efficiency differences between wet scrubbers and electrostatic precipitators for particulate removal.	K4	CO3