

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

MSc DEGREE EXAMINATION MAY 2025
(Second Semester)

Branch - ENVIRONMENTAL SCIENCE

INTEGRATED WASTE MANAGEMENT

Time: Three Hours

Maximum: 75 Marks

SECTION-A (10 Marks)

Answer ALL questions

ALL questions carry EQUAL marks

(10 × 1 = 10)

Module No.	Question No.	Question	K Level	CO
1	1	Name the distance from the source of waste to the disposal site. a) Haul distance b) Excavator distance c) Borrow distance d) Specific distance	K1	CO1
	2	Outline the estimated recycling rate of municipal solid waste in India. a) 5% b) 10% c) 30% d) 70%	K2	CO1
2	3	What is the term used to describe the ratio of the weight of waste to its volume? a) Volume density b) Specific gravity c) Bulk density d) Mass concentration	K1	CO2
	4	Infer from biological treatment processes, volatile solids reduction is a sign of a) Increased waste volume b) Stabilization of organic waste c) Poor waste decomposition d) Increased inorganic	K2	CO2
3	5	Which shape the organic waste is arranged in windrow composting? a) Circular piles b) Long rows c) Square heaps d) Small bins	K1	CO3
	6	Outline the ideal temperature range for optimal biogas production? a) 10-20°C b) 50-60°C c) 30-40°C d) 70-80°C	K2	CO3
4	7	Ignitable waste has a flashpoint of less than which temperature? a) 100°F (37.8°C) b) 140°F (60°C) c) 200°F (93.3°C) d) 400°F (204°C)	K1	CO4
	8	How leachate is typically managed in a secured landfill? a) By allowing it to evaporate naturally b) By treating it before discharge or recycling c) By adding it to the waste pile d) By diverting it to an open pit	K2	CO4
5	9	In which year did India first notify the Construction and Demolition Waste Management Rules? a) 2005 b) 2010 c) 2016 d) 2020	K1	CO5
	10	Which of the following oxides contributes to the pozzolanic properties of fly ash? a) Sodium oxide (Na ₂ O) b) Iron oxide (Fe ₂ O ₃) c) Aluminum oxide (Al ₂ O ₃) d) Phosphorus pentoxide (P ₂ O ₅)	K2	CO5

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SECTION - B (35 Marks)

Answer ALL questions

ALL questions carry EQUAL Marks (5 × 7 = 35)

Module No.	Question No.	Question	K Level	CO
1	11.a.	Analyze the role of public awareness and participation in reducing the quantity of solid waste generated in India.	K4	CO3
	(OR)			
	11.b.	Examine the role of technology in improving the efficiency of both primary and secondary solid waste collection systems.		
2	12.a.	Discuss how different waste quantification methods influence the design of waste management strategies.	K4	CO3
	(OR)			
	12.b.	Compare the challenges in conducting proximate and ultimate analysis for heterogeneous waste streams like industrial and hazardous wastes.		
3	13.a.	Explain the process involved in gasification.	K5	CO4
	(OR)			
	13.b.	Evaluate the effectiveness of leachate management systems during and after the closure of a landfill.		
4	14.a.	Analyze the impact of hazardous waste characteristics on the selection of disposal methods.	K5	CO4
	(OR)			
	14.b.	Assess the challenges associated with the long-term storage and disposal of hazardous waste in secure landfills.		
5	15.a.	Discuss the status of e-waste management in developing countries and propose sustainable solutions to bridge the gap in effective handling and disposal.	K6	CO5
	(OR)			
	15.b.	Evaluate the impact of International regulations and agreements on radioactive waste management practices, focusing on the Basel Convention.		

SECTION - C (30 Marks)

Answer ANY THREE questions

ALL questions carry EQUAL Marks (3 × 10 = 30)

Module No.	Question No.	Question	K Level	CO
1	16	Analyze the challenges associated with developing and implementing an indicative list for household waste segregation.	K4	CO3
2	17	Compare the chemical recycling and material recovery facilities (MRFs), on the recovery rates of different types of solid waste.	K4	CO4
3	18	Assess the impact of EPR policies on waste management infrastructure development.	K4	CO4
4	19	Critically evaluate the effectiveness of incineration, chemical neutralization and bioremediation on treatment of hazardous waste.	K5	CO5
5	20	Evaluate the challenges of implementing extended producer responsibility (EPR) programs for plastic waste management.	K5	CO5

Z-Z-Z

END