Reg. No.															

Question Paper Code	13491

B.E. / B.Tech. - DEGREE EXAMINATIONS, APRIL / MAY 2025

Sixth Semester

Civil Engineering

20CEEL601 - MUNICIPAL SOLID WASTE MANAGEMENT

Regulations - 2020

Duration: 3 Hours Max. Marks: 100

PART - A (MCQ) (10 × 1 = 10 Marks)

Answer ALL Questions

		Marks	K – Level	CO
1.	Which analysis is important in evaluating the combustion properties of wastes? (a) Proximate analysis (b) Ultimate analysis (c) Combustion analysis (d) Fusing point of ash	1	K1	CO1
2.	The organic material of the solid waste will decompose by the (a) Flow of water (b) Soil particles (c) Action of microorganisms (d) Oxidation	1	K1	CO1
3.	The number of functional components of solid waste management is (a) 5 (b) 3 (c) 6 (d) 4	1	K1	CO2
4.	Under which rule of government, guidelines for solid waste management are followed today? (a) Municipal Solid Waste Rules,2000 (b) Municipal Solid Waste Rules,2016 (c) Solid Waste Rules,2000 (d) Solid Waste Rules,2016	1	K1	CO2
5.	Which of the following can be considered as source reduction? (a) Material substitution (b) Treating offsite (c) Analysis (d) Landfill disposal	1	K1	CO3
6.	Why it is difficult to recycle plastics? (a) It is very hard (b) It comes in different size (c) It is adhesive (d) It contains different types of polymer resins	1	K1	CO3
7.	The alley and curb are the most common methods in (a)Container system (b) Communities (c) Collection systems (d) Industrial communities	1	K1	CO4
8.	The route balancing is also known as (a) Pathway routing (b) Micro routing (c) Macro routing (d) Detailed routing	1	K1	CO4
9.	The process of burning municipal solid wastes in a properly designed furnace under suitable temperature and these operating conditions is called (a) Landfill (b) Incineration (c) Recycling (d) Vermicomposting	1	K1	CO5
10.	The sanitary landfills have _____ to prevent leachate from getting into groundwater. (a) Liners (b) Collection systems (c) Daily layers of soil (d) Garbage	1	K1	CO6

PART - B (12 × 2 = 24 Marks)

Answer ALL Questions

11.	Interpret the factors affecting the solid waste generation rates.	2	K2	CO1
12.	Recall the methods adopted for sampling of municipal solid waste material under Indian condition.	2	K1	CO1
13.	Infer the salient features of solid waste management.	2	K2	CO2
14.	Define integrated solid waste management.	2	K1	CO2
15.	Classify the different kind of materials used for making containers to store the solid waste.	2	K2	CO3
16.	Show the role of segregation in construction and demolishing waste.	2	K1	CO3
17.	Outline the necessity of man power in collection of solid waste.	2	K2	CO4
18.	Compare stationary container system and hauled container system.	2	K2	CO4

19.		Outline the objectives of waste processing.	*2*	*K2*	*CO5*
20.		Show two options for thermal processing of wastes.	*2*	*K2*	*CO5*
21.		List the various gases generated in sanitary landfill.	*2*	*K1*	*CO6*
22.		What is the role of geomembrane in landfill capping?	*2*	*K2*	*CO6*

PART - C (6 × 11 = 66 Marks)

Answer ALL Questions

23.	a)	Describe the sources and types of solid wastes generated in a community.	*11*	*K2*	*CO1*
		OR			
	b)	Explain in detail about the sampling techniques for characterization of solid waste.	*11*	*K2*	*CO1*
24.	a)	With neat flow diagram, explain the various elements of municipal solid waste management.	*11*	*K2*	*CO2*
		OR			
	b)	Categorize and explain the social and financial aspects of solid waste (management and handling) rules in detail.	*11*	*K2*	*CO2*
25.	a)	Describe the various methods of on-site storage. Critically evaluate the best options under Indian conditions.	*11*	*K2*	*CO3*
		OR			
	b) (i)	Predict the advantages of onsite segregation of solid wastes.	*5*	*K2*	*CO3*
	(ii)	Differentiate between reuse and recycling of plastic waste.	*6*	*K2*	*CO3*
26.	a) (i)	Explain the methods of residential and commercial waste collection system with suitable examples.	*6*	*K2*	*CO4*
	(ii)	Summarize the heuristics guidelines that should be taken into consideration when laying out the collection routes.	*5*	*K2*	*CO4*
		OR			
	b)	Explain the selection of location, operation and maintenance of transfer station with suitable sketch.	*11*	*K2*	*CO4*
27.	a)	With neat sketch, develop on the various physical processing techniques in detail.	*11*	*K3*	*CO5*
		OR			
	b)	Construct on the different types of composting techniques with suitable sketches.	*11*	*K3*	*CO5*
28.	a)	Build the step by step procedure involved in site selection and design aspects of sanitary landfills.	*11*	*K3*	*CO6*
		OR			
	b)	Identify the different components of landfill bioreactor with suitable sketch.	*11*	*K3*	*CO6*