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B.TECH/ M.Tech (Integrated) DEGREE EXAMINATION, MAY 2025

Sixth Semester

21CEO403T - INTEGRATED WASTE MANAGEMENT

(For the candidates admitted during the academic year 2021-2022 to 2024-2025)

Note:

i. **Part - A** should be answered in OMR sheet within first 40 minutes and OMR sheet should be handed over to hall invigilator at the end of 40th minute.
ii. **Part - B** and **Part - C** should be answered in answer booklet.

Time: 3 hours **Max. Marks: 75**

PART - A (20 × 1 = 20 Marks) — Answer **all** Questions

		Marks	BL	CO
1.	These wastes result from diverse agricultural activities such as planting, harvesting, production of milk, rearing of animals for slaughter and the operation of feedlots (A) Construction waste (B) Demolition waste (C) Farm waste (D) Hazardous waste	1	1	1
2.	The major constituents of waste are (A) Metal, glass, ceramics. (B) Paper and decomposable organic materials. (C) Urban wastes. (D) Plastics.	1	1	1
3.	Factors, which affect the present as well as the future waste quantity and composition are (A) Geographic location (B) Collection frequency (C) Density (D) Size	1	1	1
4.	The pathways of pathogen transmission from wastes to humans are mostly (A) Through air (B) Through water (C) Indirectly through flies, rodent (D) From human itself	1	1	1
5.	An analysis of waste to determine the proportion of carbon, hydrogen, oxygen, nitrogen and sulphur is called (A) Proximate analysis (B) Ultimate analysis (C) Bomb calorimeter test (D) Heating analysis	1	1	2
6.	Only about _____ of the municipal waste gets collected. (A) Below 50 % (B) 50-60 % (C) 60-70 % (D) 75-80 %	1	1	2
7.	A centralized sorting and recovery of recyclable materials are also carried out at (A) Collection vehicle routing (B) Transfer station (C) Small scale collection (D) Door step collection	1	1	2
8.	Which physical property will help recover materials from solid waste? (A) Specific weight (B) Moisture content (C) Particle size and size distribution (D) Field capacity	1	1	2
9.	Curb side pick-up facility is provided for (A) Single residences (B) Medium-rise apartments (C) High-rise apartments (D) Institutional	1	1	3
10.	Small-scale collection and muscle-powered vehicles are generally used in (A) Small towns (B) Rural hilly areas (C) Narrow road (D) Village	1	1	3
11.	_____ are used to minimize costs when waste is hauled long distances.			

(A) Larger truck (B) Larger container (C) Compactors (D) Transfer Stations		1	1	3
12. In Communities with pay-as-you-throw (PAYT) programs, residents are charged (A) Based on the amount they throw away. (B) Monthly (C) Yearly (D) Quarterly		1	1	3
13. The process of decomposition of biodegradable solid waste by earthworms is called (A) Land fills (B) Shredding (C) Vermi-composting (D) Composting		1	1	4
14. Most commonly used equipment used for size reduction (A) Hydropulper (B) Shredders (C) Rasp mill (D) Hammer mill		1	1	4
15. Air separation is used (A) to separate metal parts (B) to separate lighter materials from heavier (C) to separate small size from large size (D) to separate bulky waste		1	1	4
16. In which of the following processes is the limited oxygen maintained? (A) Incineration (B) Combustion (C) Mass burn (D) Pyrolysis		1	1	4
17. The size, type and number of buildings required at a landfill depend on factors such as (A) Earthwork (B) Waste (C) Slope level (D) Expected life of site		1	1	5
18. _____is an important factor in site selection of disposal site (A) Political commitment (B) Public commitment (C) Location i.e distance from town (D) Composting facility		1	1	5
19. _____is a fully engineered disposal option (A) Composting (B) Sanitary landfill (C) Soak pit (D) Pyrolysis		1	1	5
20. Which of the following will lead to the ground water contamination? (A) Incineration (B) Leachate (C) Pyrolysis (D) Composting		1	1	5
PART - B (5 × 8 = 40 Marks) Answer **all** Questions		**Marks**	**BL**	**CO**
21. (a) Discuss the salient features of Indian legislation on integrated waste management **(OR)** (b) Discuss the factors affecting the generation of solid waste		8	1	1
22. (a) Explain in detail about source reduction of solid waste with an example. **(OR)** (b) Explain the chemical characteristics of solid waste.		8	2	2
23. (a) Explain about the different types of solid waste collection system with its neat sketch. **(OR)** (b) Discuss in detail the importance of transfer stations and its types.		8	3	3
24. (a) Explain about the thermal conversion technologies in solid waste.				

	(OR)			
	(b) Explain in detail about the various types of composting with a neat sketch.	8	4	4
25.	(a) Explain the various factors to be considered in selection of site for a sanitary landfill and enlist the facilities required for landfill operation.	8	1	5
	(OR)			
	(b) Discuss in detail about the various methods of solid waste disposal.			

	PART - C (1 × 15 = 15 Marks) Answer **any 1** Questions	**Marks**	**BL**	**CO**
26.	Brief the functional elements of integrated waste management.	15	3	1
27.	Explain in detail the function of components of sanitary landfill with neat sketch.	15	3	5

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