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B.Tech DEGREE EXAMINATION, NOVEMBER 2023

Fifth to Seventh Semester

18CEO306T - MUNICIPAL SOLID WASTE MANAGEMENT

(For the candidates admitted during the academic year (2020-2021 & 2021-2022))

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: 100

PART - A (20 × 1 = 20 Marks)

Answer all Questions

	Marks	BL	CO
1. Which of the following contributes the maximum quantity of solid waste? (A) Metal (B) Rubber (C) Paper (D) Steel	1	1	1
2. The term municipal solid waste is used to describe which kind of waste? (A) Hazardous (B) Non-hazardous (C) Toxic (D) Medical	1	2	1
3. As per CPCB, how much solid waste is generated per capita per day in large cities? (A) 0.1 kg (B) 0.5 kg (C) 0.9 kg (D) 1.5 kg	1	1	1
4. Construction and Demolition waste mainly consists of _____. (A) Organic waste (B) Inorganic waste (C) Putrescible waste (D) Combustible waste	1	2	1
5. In solid waste management, waste utilization is achieved by (A) Recover, reclamation and reproduce (B) Reuse, reclamation and recycling (C) Recover, recycling and reproduce (D) Reuse, reproduce and recycling	1	2	2
6. The maximum Carbon/Nitrogen ratio in a MSW compost is (A) 10:1 (B) 30:1 (C) 20:1 (D) 40:1	1	1	2
7. MSW composition of inert materials in INDIA is (A) 30 – 50 % (B) 50 – 60 % (C) 10 – 30 % (D) 20 – 40 %	1	1	2
8. Which of the following are not categorized as hazardous wastes? (A) Industrial wastes (B) Hospital wastes (C) Laboratory wastes (D) Garbage	1	2	2
9. In the one-way method, waste is picked up in clear plastic or paper bags whose volume is limited to a maximum of _____. (A) 110 L (B) 115 L (C) 105 L (D) 120 L	1	1	3
10. The mechanical equipment is used to increase the density of wastes before they are transferred was _____. (A) Transfer station (B) Compaction station (C) Platform station (D) Pit station	1	2	3
11. Macro routing also referred as _____. (A) Narrow down the collection route (B) Restricted times for collection (C) Rerouting (D) Route balancing	1	2	3

12. Higher elevations should be at the _____ of the route. (A) Finish (B) Start (C) Middle (D) Direct	1	2	3
13. The process of crushing and grinding of MSW refuse is known as (A) Pulverization (B) Shredding (C) Collection (D) Solid waste separation	1	2	4
14. The aerobic method of mechanical composting practiced in India is called _____. (A) Indore method (B) Nagpur method (C) Bangalore method (D) Bhopal method	1	1	4
15. Sludge bulking can be controlled by _____. (A) Coagulation (B) Chlorination (C) Aeration (D) Denitrification	1	2	4
16. The bet method of disposal of refuse to ensure complete destruction of pathogenic bacteria is by _____. (A) Land disposal (B) Pulverization (C) Incineration (D) Mechanical composting	1	1	4
17. The wastes burning is not an acceptable practice of solid waste management because _____. (A) It requires a lot of space (B) It requires modern technologies (C) It causes several environmental issues (D) It is very costly	1	2	5
18. When the matter present inside the sanitary landfill breaks down, which of the following gas generates? (A) Methane (B) Nitrogen (C) Hydrogen (D) Carbon dioxide	1	1	5
19. What is the major environmental concern related to landfill? (A) Limited space (B) Limited technology (C) Discharge of leachate (D) Less man-power	1	2	5
20. Which of the following is not the landfill method? (A) Bangalore method (B) Area method (C) Depression method (D) Trench method	1	1	5

PART - B (5 × 4 = 20 Marks)

Answer any 5 Questions

21. Briefly explain about hierarchy of waste management.	4	2	1
22. Discuss on source reduction techniques.	4	2	2
23. Write short notes on hauled containers and stationery containers.	4	2	3
24. Write short notes on drying and dewatering.	4	3	4
25. What are the essential components of landfill site? Brief.	4	2	5
26. How public health was affected by solid waste? Explain	4	2	1
27. Write short notes on waste stream assessment.	4	2	2

PART - C (5 × 12 = 60 Marks)

Answer all Questions

28. (a) Explain in detail about environmental effect due to solid waste generation.	12	4	1
(OR)			
(b) What are the functional elements of solid waste management system? Explain in detail.			

29. (a) Explain in detail about field investigation in MSW management. 12 3 2
(OR)
(b) Explain in detail about the processing equipment for recycling in detail.
30. (a) Describe briefly about transfer station and its types with its importance. 12 3 3
(OR)
(b) Discuss about the activities involves for implementing the collection and transfer system.
31. (a) Explain in details on environmental effects due to composting and bio-gasification. 12 3 4
(OR)
(b) Discuss in detail on air separation and magnetic separation with some examples.
32. (a) Enumerate the salient points on the types and methods of the landfill management with sketches. 12 3 5
(OR)
(b) Explain in detail on landfill remediation and re-habitation of open dumps with relevant significance.

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