

B.Tech/M.Tech (Integrated) DEGREE EXAMINATION, JULY 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)

Marks BL CO

Answer all Questions

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|-----|---|---|---|---|
| 1. | Which of the following contributes the maximum quantity of solid waste? | 1 | 1 | 1 |
| | (A) Metal | | | |
| | (B) Rubber | | | |
| | (C) Paper | | | |
| | (D) Steel | | | |
| 2. | Construction and Demolition waste mainly consists of | 1 | 1 | 1 |
| | (A) Organic waste | | | |
| | (B) Inorganic waste | | | |
| | (C) Putrescible waste | | | |
| | (D) Combustible waste | | | |
| 3. | As per CPCB, how much solid waste is generated per capita per day in large cities? | 1 | 1 | 1 |
| | (A) 0.1 kg | | | |
| | (B) 0.5 kg | | | |
| | (C) 0.9 kg | | | |
| | (D) 1.5 kg | | | |
| 4. | Which of the following plans is used as a waste management plan? | 1 | 1 | 1 |
| | (A) Plan for reuse | | | |
| | (B) The integrated plan | | | |
| | (C) Plan for recycling | | | |
| | (D) Plan for reducing | | | |
| 5. | MSW composition of inert materials in INDIA is | 1 | 1 | 2 |
| | (A) 30 – 50 % | | | |
| | (B) 50 – 60 % | | | |
| | (C) 10 – 30 % | | | |
| | (D) 20 – 40 % | | | |
| 6. | Which of the following is not a method of source reduction? | 1 | 1 | 2 |
| | (A) Bulk purchase | | | |
| | (B) Double-sided copying in paper | | | |
| | (C) Circulars through mail | | | |
| | (D) Use of tissue paper | | | |
| 7. | Waste stream analysis reduces _____ | 1 | 1 | 2 |
| | (A) Improper handling | | | |
| | (B) Import | | | |
| | (C) Export | | | |
| | (D) Analysis | | | |
| 8. | Which one of the following is not a method to estimate waste quantities? | 1 | 1 | 2 |
| | (A) Load-count analysis | | | |
| | (B) Weight-volume analysis | | | |
| | (C) Material balance analysis | | | |
| | (D) Proximate analysis | | | |
| 9. | Which of the following is NOT a type of container system used in solid waste collection and transportation? | 1 | 1 | 3 |
| | (A) Hauled container systems | | | |
| | (B) Stationary container systems | | | |
| | (C) Mobile container systems | | | |
| | (D) Roll – off container systems | | | |
| 10. | Higher elevations should be at the _____ of the route during solid waste collections. | 1 | 1 | 3 |
| | (A) Finish | | | |
| | (B) Start | | | |
| | (C) Middle | | | |
| | (D) Direct | | | |
| 11. | Which of the following colour bins was used for paper waste | 1 | 1 | 3 |
| | (A) black | | | |
| | (B) blue | | | |
| | (C) red | | | |
| | (D) green | | | |

12. Which of the following is the most common mode of transportation for solid waste in the United States?	1	1	3
(A) Truck			
(B) Rail			
(C) Barge			
(D) Pipeline			
13. The process of crushing and grinding MSW refuse is known as	1	1	4
(A) Pulverization			
(B) Shredding			
(C) Collection			
(D) Solid waste separation			
14. The aerobic method of mechanical composting practiced in India is called _____.	1	1	4
(A) Indore method			
(B) Nagpur method			
(C) Bangalore method			
(D) Bhopal method			
15. Waste burning is not an acceptable practice of solid waste management because _____?	1	1	4
(A) It requires a lot of space			
(B) It requires modern technologies			
(C) It causes several environmental issues			
(D) It is very costly			
16. Which of the following is not an objective of composting?	1	1	4
(A) Reduction of mass			
(B) Elimination of toxic substances			
(C) Stabilization			
(D) Incineration			
17. When the matter present inside the sanitary landfill breaks down, which of the following gas generates?	1	1	5
(A) Methane			
(B) Nitrogen			
(C) Hydrogen			
(D) CO ₂			
18. The best method of disposal of refuse to ensure destruction of pathogenic bacteria is by	1	1	5
(A) Land disposal			
(B) Pulverization			
(C) Incineration			
(D) Mechanical composting			
19. What is the major environmental concern related to landfill	1	1	5
(A) Limited space			
(B) Limited technology			
(C) Discharge of leachate			
(D) Less man-power			
20. Which of the following is not the landfill method?	1	1	5
(A) Bangalore method			
(B) Area method			
(C) Depression method			
(D) Trench method			

PART - B (5 × 8 = 40 Marks)

Answer all Questions

	Marks	BL	CO
21. (a) Explain in detail about classification of solid waste based on type. (OR) (b) Explain in detail about the factors affecting solid waste management system.	8	3	1
22. (a) Brief the source reduction of solid waste with an example. (OR) (b) Explain about physical characteristics of solid waste.	8	4	2
23. (a) Explain about the different types of solid waste collection system with its neat sketch. (OR) (b) Explain storage, collection, and transport of MSW at your native town and give suggestions to improve the same.	8	1	3
24. (a) Discuss in detail about the physical process and technologies adopted in solid waste management. (OR) (b) What are the factors affecting the composting process and explain in detail.	8	1	4

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|-----|---|---|---|---|
| 25. | (a) Discuss in detail about the various methods of solid waste disposal with its merits and demerits. | 8 | 4 | 5 |
|-----|---|---|---|---|

(OR)

- | | | | | |
|--|--|--|--|--|
| | (b) Write a short note on methods of landfilling and its advantages and disadvantages. | | | |
|--|--|--|--|--|

PART - C (1 × 15 = 15 Marks)

Marks BL CO

Answer **any 1** Questions

- | | | | | |
|-----|---|----|---|---|
| 26. | Explain the various health and environmental impacts of improper disposal of solid waste. | 15 | 3 | 1 |
| 27. | Explain in detail the function of components of sanitary landfill with neat sketch. | 15 | 3 | 5 |

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