| Reg. No. | | | | | | | | | | | | | | | |
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**B.Tech. DEGREE EXAMINATION, MAY 2024**

Fifth to Seventh Semester

18CEO306T – MUNICIPAL SOLID WASTE MANAGEMENT

*(For the candidates admitted during the academic year 2018-2019 to 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 & 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 | PO |
|---|---|---|---|---|
| 1. The development of odour in onsite storage is more significant when it is _____. | 1 | 1 | 1 | 1 |
| (A) Cold (B) Warm | | | | |
| (C) Freezy (D) Rainy | | | | |
| 2. The rate of biodegradation of lipids is relatively slow because of | 1 | 1 | 1 | 1 |
| (A) Low solubility in water (B) High solubility in water | | | | |
| (C) In-soluble in water (D) Dissolvable in water | | | | |
| 3. Which of the following is inert waste? | 1 | 1 | 1 | 1 |
| (A) Leather, tin, alumunium (B) Brick, sand, concrete | | | | |
| (C) Carry bag, food container, straw (D) Card board, paper bag, diaper | | | | |
| 4. Waste from dwelling apartment is referred as _____. | 1 | 1 | 1 | 1 |
| (A) Commercial waste (B) Residential waste | | | | |
| (C) Municipal waste (D) Agricultural waste | | | | |
| 5. Porosity of solid waste typically vary from | 1 | 1 | 2 | 1 |
| (A) 0.2 – 0.3 (B) 0.4 – 0.67 | | | | |
| (C) 0.8 – 0.98 (D) 1.2 – 1.4 | | | | |
| 6. Non recyclable waste having calorific value of _____ or more, shall not be disposed on landfills. | 1 | 1 | 2 | 1 |
| (A) 1000 K/ cal/ kg (B) 1200 K/ cal/ kg | | | | |
| (C) 1500 K/ cal/ kg (D) 2000 K/ cal/ kg | | | | |
| 7. In communities with pay-as-you throw programs, are changed by | 1 | 2 | 2 | 1 |
| (A) Based on the amount they throw away (B) Monthly | | | | |
| (C) Yearly (D) Quarterly | | | | |
| 8. Which physical property will help in recovering materials from solid waste? | 1 | 2 | 2 | 1 |
| (A) Specific weight (B) Moisture content | | | | |
| (C) Field capacity (D) Particle size distribution | | | | |

9. Liners are used in storage container to 1 1 3 1

(A) Imply material recovery (B) Avoid washing of container
(C) Reduce aesthetic purpose (D) Separate the solid waste

10. To separate the different kinds of waste in India, generally used colours for bins are 1 1 3 1

(A) Yellow and blow (B) Blue and green
(C) Red and yellow (D) Yellow and green

11. Small transfer station capacities are generally receive wastage of _____ tonnes/ per day. 1 2 3 1

(A) Less than 100 (B) Greater than 200
(C) 300-400 (D) 500-760

12. Which factor to be considered for determination of crew size? 1 1 3 1

(A) Hauling cost (B) Type of containers
(C) Labour cost (D) Traffic volume

13. For aerobic composting of refuse, it is mandator to maintain the C/N ratio between _____. 1 1 4 1

(A) 20-30% (B) 30-40%
(C) 50-60% (D) 60-70%

14. Dewatered sludge can be mixed with other solid waste, and the resulting mixture can be _____. 1 1 4 1

(A) Dumped off (B) Dried in drying beds
(C) Energy recovery (D) Incinerated to reduce volume

15. Which of the following can be considered as source reduction? 1 1 4 1

(A) Material substitution (B) Treating offsite
(C) Analysis (D) Landfill disposal

16. The heterogeneous wastes generated in residential areas must be removed with-in _____ days. 1 2 4 1

(A) 8 (B) 15
(C) 20 (D) 30

17. Which of the following relates to mechanism for gas to leave the landfill? 1 2 5 1

(A) Clay liners (B) Perforated drains
(C) Pressure gradient (D) Wells

18. Landfill capping is required to control and minimize 1 1 5 1

(A) Landfill gas (B) Leachate
(C) Odour (D) Surface runoff

19. In order to dispose hazardous waste, where there are no abundant lands, the method adopted is _____. 1 1 5 1

(A) Land disposal (B) Burning
(C) Floats in water bodies (D) Incineration

| | | | | | |
|---|---|---|---|---|---|
| 20. | The aesthetic sensibility is offended by the unsightliners of piles of wastes on the roadside is<br>(A) Land pollution (B) Visual pollution<br>(C) Noise pollution (D) Water pollution | 1 | 1 | 5 | 1 |

**PART – B (5 × 4 = 20 Marks)**
Answer **ANY FIVE** Questions

| | | Marks | BL | CO | PO |
|---|---|---|---|---|---|
| 21. | Mention the objectives of solid waste management. | 4 | 2 | 1 | 1 |
| 22. | What are the sources of solid waste? | 4 | 2 | 1 | 1 |
| 23. | Explain the importance of waste stream information. | 4 | 3 | 2 | 1 |
| 24. | Mention few examples for source reduction. | 4 | 2 | 2 | 1 |
| 25. | Explain the collection frequency of solid waste. | 4 | 2 | 3 | 1 |
| 26. | Explain about hydro pulper. | 4 | 3 | 4 | 1 |
| 27. | Write short notes on leachate generation. | 4 | 2 | 5 | 1 |

**PART – C (5 × 12 = 60 Marks)**
Answer **ALL** Questions

| | | Marks | BL | CO | PO |
|---|---|---|---|---|---|
| 28. a. | Explain in detail about the chemical characteristics of solid waste. | 12 | 3 | 1 | 1 |
| | **(OR)** | | | | |
| b. | Explain in detail about the various environmental effect caused due to improper waste management. | 12 | 3 | 1 | 1 |
| 29. a. | Explain in detail about the onsite segregation and source recovery on solid waste. | 12 | 3 | 2 | 1 |
| | **(OR)** | | | | |
| b. | Explain the significance of recycling the solid waste. | 12 | 3 | 2 | 1 |
| 30. a. | Explain in detail about the various waste collection methods. | 12 | 3 | 3 | 1 |
| | **(OR)** | | | | |
| b. | Explain in detail about the types of transfer station. | 12 | 4 | 3 | 1 |
| 31. a. | Explain the waste processing techniques in detail and its significances. | 12 | 4 | 7 | 1 |
| | **(OR)** | | | | |
| b. | Explain in detail about anaerobic composting process with a neat sketch. | 12 | 3 | 4 | 1 |
| 32. a. | Explain in detail about the various techniques for disposal of waste. | 12 | 3 | 5 | 1 |
| | **(OR)** | | | | |
| b. | Write about linear and explain in detail about the types of linear. | 12 | 4 | 5 | 1 |

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