

CBCS SCHEME

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21CV734

Seventh Semester B.E./B.Tech. Degree Examination, Dec.2024/Jan.2025 Solid Waste Management

Time: 3 hrs.

Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

- 1 a. Define solid waste management. Explain the various functional elements of solid waste management. (10 Marks)
- b. Estimate the density of the given solid waste sample, considering weight of solid waste as 1000 kg.

Component	Percentage by mass	Density (kg/m ³)
Food waste	20	290
Paper	35	85
Cardboard	10	55
Plastic	12	70
Graden trimmings	10	110
Wood	08	240
Tin cans	05	90

(10 Marks)

OR

- 2 a. Define solid waste. Describe the various type – based classification of solid waste. (10 Marks)
- b. From the following data, estimate the per capita waste generation rate per day for a residential area consisting of 1500 houses. The observation period is one week number of occupants per house is 4.

Vehicle type	No. of loads	Volume of vehicle(m ³)	density of solid waste (kg/m ³)
Compactor	10	15.3	296.5
Flat bed load	08	1.5	133.4
Private truth	25	0.25	100

(10 Marks)

Module-2

- 3 a. With neat sketches, explain the operational sequence of hauled container system and stationary container system. (10 Marks)
- b. What are transfer stations? What are the needs for a transfer station? (10 Marks)

OR

- 4 a. Explain the various collection components of solid waste management. (10 Marks)
- b. Write short notes on :
 - i) Route optimization
 - ii) Different means of solid waste transport. (10 Marks)

Module-3

- 5 a. Explain the different methods of component separation in municipal solid waste management. (10 Marks)
 b. Discuss about the composting process. What are the factors affecting the process of composting. (10 Marks)

OR

- 6 a. Describe the Indore and Bangalore methods of composting. (10 Marks)
 b. Explain the different methods of volume and size reduction. (10 Marks)

Module-4

- 7 a. Determine the landfill area required for a municipality with a population of 1,00,000. Given that :
 i) Solid waste generation = 500 g persons day
 ii) Compacted density of landfill = 504 kg/m³
 iii) Average depth of compacted SW = 3m. (10 Marks)
 b. Write a note on 3 T's of incineration and the factors affecting incineration process. (10 Marks)

OR

- 8 a. What are landfill gases and leachates? How can we control it? (10 Marks)
 b. Write a note on
 i) Types of sanitary landfill
 ii) Prevention of air pollution in incineration. (10 Marks)

Module-5

- 9 a. Explain the sources, effects and treatments of biomedical waste. (10 Marks)
 b. Discuss about the sources and recycling of E-waste. (10 Marks)

OR

- 10 a. Write an explanatory note on the reuse and recycle of materials in solid waste management. (10 Marks)
 b. Discuss on the environmental significance of disposal of plastic wastes. (10 Marks)

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