



USN

10CV757

Seventh Semester B.E. Degree Examination, Jan./Feb. 2021
Solid Waste Management

Time: 3 hrs.

Max. Marks: 100

- Note:** 1. Answer any FIVE full questions, selecting atleast TWO questions from each part.
2. Missing data, if any, may be suitably assumed.

PART - A

- 1 a. Define Solid Waste. List out the different sources of Municipal Solid Waste. (04 Marks)
b. Explain the functional elements of solid waste management system with a flow chart. (08 Marks)
c. Estimate the moisture content of a solid waste sample with the following composition, based on 100 kg sample of waste. (08 Marks)

Component	Percentage of mass	Moisture content %
Food waste	15	70
Paper	45	6
Card board	10	5
Plastics	10	2
Garden trimmings	10	60
Wood	5	20
Tin cans	5	3

- 2 a. Explain the different types of collection systems, with neat schematic diagram. (10 Marks)
b. Mention the factors that must be considered in the design of transfer station. (04 Marks)
c. Explain different types of transfer stations. (06 Marks)
- 3 a. Explain the factors to be considered in evaluating onsite process techniques. (10 Marks)
b. Explain the processing techniques of volume reduction and component separation in the treatment of Municipal Solid Waste. (10 Marks)
- 4 a. What is Incineration process? What are the products of incineration? (06 Marks)
b. What is Pyrolysis? Briefly explain the process of pyrolysis. (08 Marks)
c. Explain the role of 3T's in incineration. (06 Marks)

PART - B

- 5 a. Explain briefly the factors that must be considered for the design of Aerobic Composting process. (10 Marks)
b. Determine the amount of air required to oxidize one tone of waste having the chemical equation $C_{50}H_{100}O_{40}N$. [Take unit weight of C = 12, H = 1, O = 16, N = 14].
Use $C_a H_b O_c N_d + \left[\frac{4a + b - 2c - 3d}{4} \right] O_2 \rightarrow aCO_2 + \left[\frac{b - 3d}{2} \right] H_2O + dNH_3$. (10 Marks)
- 6 a. Explain the various factors that must be considered in Evaluating a potential land fill site. (08 Marks)
b. What are the gases generated in landfills? Explain the methods for control of gas movement in landfills? (12 Marks)

7 Write a brief notes on the following :

- a. Open dumping.
- b. Ocean disposal.
- c. Hog feeding.
- d. Bio – medical wastes disposal.

(20 Marks)

8 a. Discuss the importance of Recycle and Reuse in Solid Waste Management.
b. Explain briefly the materials and energy recovery systems of Solid wastes.

(10 Marks)

(10 Marks)
