



Continuous Assessment Test – I

Programme Name & Branch: M.Tech Energy and Environmental Engg.

Course Name & Code: Solid and Hazardous Waste Management (CLE6005)

Class Number: 3700

Slot: F1 +TF1

Exam Duration: 90 min

Maximum Marks: 50

Answer All the Questions

1. Solid waste management rules were formulated in the year 2000 after intervention of Supreme Court. Describe the historic development of formulation of solid waste management rules in India. (6 Marks)
2. Why characterization of solid waste is to be done? How is municipal solid waste classified? (8 Marks)
3. Describe the Vellore Model developed by Mr. Shrinivasan to manage the waste of Vellore city. (6 Marks)
4. Explain integrated solid waste management and the importance of recycling. Explain the role of shipbreaking industry in recycling and reuse of waste. (8 Marks)
5. As a student of Solid waste class you have been asked to determine the solid waste composition and generation of VIT campus, what steps would you follow? (6 Marks)
6. Determine as-discarded density of the given waste sample (6 Marks)

Component	Dry Mass	Density on Wet Basis (kg/m ³)	Moisture content (%)
Food waste	4.5	290	70
Paper	42.3	85	6
Cardboard	9.5	50	5
Plastics	9.8	65	2
Garden Trimmings	4.8	105	60
Wood	6.4	240	20

7. An incinerator was constructed by spending 2 crores. The idea was to burn 1000 kg of waste that is generated from the city and generate energy. The design of the incinerator was by a German company. Energy content while designing the incinerator was taken as 24 MJ/kg. This incinerator worked hardly for two weeks and it was decided to close this unit because of the cost incurred towards burning the waste. A committee was set to find the reason behind this and you were assigned the task to find the reason for failure of this incinerator. After the preliminary study it has been found that the ash content of the waste is 5%. The composition of the waste generated in the city is given in the table below. Find the reason for the failure of the incinerator giving proper reason. (10 marks)

Component	Wet mass (kg)	Moisture (%)	Ash Content (%)	Energy (MJ/ kg)
Food Waste	15	70	5	4.65
Paper	35	6	6	16.75
Cardboard	12	5	5	16.30
Plastics	11	2	10	32.60
Garden Trimmings	17	60	4.5	6.50
Wood	10	20	1.5	18.60