



**End Term (Even) Semester Examination May-June 2025**

Roll no.....

Name of the Program and semester: B.Tech Civil Engg. - IV Semester

Name of the Course: Municipal Solid Waste Management

Course Code: TCE 411

Time: 3 hour

Maximum Marks: 100

**Note:**

- (i) All the questions are compulsory.
- (ii) Answer any two sub questions from a, b and c in each main question.
- (iii) Total marks for each question is 20 (twenty).
- (iv) Each sub-question carries 10 marks.

**Q1.**

**(2X10=20 Marks) CO1**

- a. Define and classify various types of municipal solid waste. Give examples from Indian urban sectors.
- b. Explain the physical and chemical characteristics of MSW and their significance in disposal technique selection.
- c. What are the major sources of hazardous municipal waste? Discuss its potential environmental impact.

**Q2.**

**(2X10=20 Marks) CO2**

- a. Describe the process and equipment used in the storage and collection of municipal solid waste.
- b. Explain the design considerations and operational aspects of a transfer station.
- c. Discuss the role of rag pickers and informal sector workers in solid waste management.

**Q3.**

**(2X10=20 Marks) CO3**

- a. Describe the principle and process of vermi-composting with a schematic.
- b. Differentiate between Bangalore and Indore methods of composting.
- c. What are the key factors affecting the composting process? Explain their influence.

**Q4.**

**(2X10=20 Marks) CO4**

- a. What is sanitary landfilling? Discuss various methods and environmental safeguards.
- b. Describe the incineration process and compare it with pyrolysis.
- c. Explain the waste management hierarchy and its relevance to Indian waste management practices.

**Q5.**

**(2X10=20 Marks) CO5**

- a. Discuss the classification, treatment, and disposal techniques for hazardous waste.
- b. Write short notes on: (i) Biomedical Waste Segregation (ii) E-waste Recycling Methods.
- c. Explain the characteristics and management practices of industrial solid waste.