B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2012.

Seventh Semester

Civil Engineering

CE 2039 — MUNICIPAL SOLID WASTE MANAGEMENT

(Regulation 2008)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What is integrated solid waste management?

2. Define hazardous waste.

3. What is the purpose of reduction in volume of solid waste?

4. What is the essential of proper storage of MSW?

5. Write down the methods of collection of solid waste.

6. What are the objectives of using transfer stations?

7. Mention the process parameters of composting.

8. Define in-vessel composting.

9. Define leachate.

10. What do you mean by pyrolysis?

PART B — (5 × 16 = 80 marks)

11. (a) Enumerate the methods to determine the generation rates of solid waste and explain the factors affecting the generation rates. (16)

Or

(b) (i) Explain the properties of MSW. (8)

(ii) Describe the effects and improper disposal of solid waste on human health and environment. (8)

12. (a) Explain the types of storage method and the materials used for the storage containers. (16)

Or

(b) How would you segregate the solid waste and write down the requirements and methods of separation of solid waste? (16)

13. (a) Describe in detail the methods of collection system with flow diagram and the type of vehicles used for collection system. (16)

Or

(b) Discuss the methods being adopted in India for collection and disposal of refuse. What changes would you recommended in these methods, so as to make the process more hygienic and aesthetic, particularly for big metropolitan cities like Chennai. (16)

14. (a) Explain the term composting. Give the different types of composting in use, and describe with the aid of sketches, their working. (16)

Or

(b) Write short notes on:

(i) Shredding and pulverizing

(ii) Vermi-composting

(iii) Incineration

(iv) In Vessel composting (16)

15. (a) Explain the term sanitary land filling and how is it practiced? Draw a neat sketch and explain the filling process adopted in such filling practices. (16)

Or

(b) (i) What do you understand the term leachate? What problems are posed by leachate and how would you overcome? (8)

(ii) Determine the area required for a new landfill site with a projected life of 20 yrs for a population of 150000 generating 25 kg per household per week. Assume the density of waste is 500kg/m^3. A planning restriction limits the height of the landfill to 10m. (8)