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Reg No.: _____

Name: _____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY
Eighth Semester B.Tech Degree Supplementary Examination August 2021

Course Code: CE474

Course Name: MUNICIPAL SOLID WASTEMANAGEMENT

Max. Marks: 100

Duration: 3 Hours

PART A*Answer any two full questions, each carries 15 marks.*

Marks

- 1 a) Differentiate between Hazardous and non hazardous waste. (4)
- b) With a neat schematic diagram explain the functional elements of a solid waste management system. (6)
- c) Estimate the moisture content of a solid-waste sample with the following composition: (5)

| Component | Food wastes | Paper | Cardboard | Plastics | Garden trimmings | Wood | Tin cans |
|------------------|-------------|-------|-----------|----------|------------------|------|----------|
| Percent by mass | 15 | 45 | 10 | 10 | 10 | 5 | 5 |
| Moisture percent | 70 | 6 | 5 | 2 | 60 | 20 | 3 |

- 2 a) Describe the effects on improper disposal of solid waste on human health. (4)
- b) What is solid waste management? Explain 4 R's in waste hierarchy. (6)
- c) What are the chemical characteristics of MSW? (5)
- 3 a) Explain the methods to determine the generation rates of solid waste. (6)
- b) How will you determine the density of municipal solid waste? (4)
- c) Write the factors which affect the solid waste management system. (5)

PART B*Answer any two full questions, each carries 15 marks.*

- 4 a) Define Transfer station? Explain the role and usefulness of transfer station? Also explain the types of transfer station? (9)
- b) Describe Shredding and compaction? (6)
- 5 a) Explain the following processing techniques (6)
- Magnetic separation
 - Hand sorting
 - Air separation

- b) Explain collection vehicle routing. (3)
- c) Discuss the components of a waste collection system. (6)
- 6 a) Differentiate between primary and secondary collection. (2)
- b) What are the objectives of solid waste processing systems? With the help of neat sketches explain any two types of shredding equipments. (8)
- c) Explain about the hauled container system and stationary container system. (5)

PART C

Answer any two full questions, each carries 20 marks.

- 7 a) Define pyrolysis. Explain the process in brief. (6)
- b) Explain the principle and layout of sanitary land filling. Assess the characteristics of an engineered landfill. (10)
- c) Define in vessel composting and windrow method. (4)
- 8 a) What is Pelletization? (2)
- b) What is Vermiculture? Explain the procedure of vermiculture. (6)
- c) With neat sketches, discuss different types of land filling technique for solid waste disposal. (12)
- 9 a) What are the problems associated with incinerator operations? (7)
- b) Compare Bangalore method and Indoor method of composting. (8)
- c) What do you understand by the term leachate? How can it be controlled in landfills? (5)
