

(3 Hours)

[Total Marks : 80]

Notes :

1. Question 1 is compulsory
2. Attempt any 4 out of six questions
3. Assume any suitable data wherever required

Q1. Attempt (Any 4)

- a) What are the Heuristic guidelines for laying collection route? 05
- b) Explain various characteristics of hazardous waste. 05
- c) Explain how you will manage the construction and demolition waste. 05
- d) Describe 7R principle in solid waste management. 05
- e) Calculate energy content of solid waste sample with following composition 05
C- 38%, H-9.5%, O-41.5%, N-6%, S-2%

- Q2. a)** Estimate the theoretical volume of methane produced from 1 tonne of waste having chemical composition $C_{65}H_{120}O_{40}N_2$ 10
- $$CaHbOcNd + \left(\frac{4a-b-2c+3d}{4}\right) H_2O \longrightarrow \left(\frac{4a+b-2c-3d}{8}\right) CH_4 + \left(\frac{4a-b+2c+3d}{8}\right) CO_2 + dNH_3$$
- b)** What are the methods of collection of solid waste? Explain the stationary container system. 10

- Q3. a)** What are the factors to be consider in selection of landfill site? Explain leachate control method in the landfill. 10
- b)** Explain in detail the factors affecting composting process. 10

- Q4. a)** Explain how hazardous waste handling, collection, storage and minimization is carried out. 10
- b)** Explain the treatment and disposal methods for biomedical waste management. 10

- Q5. a)** What are the factors affecting the generation rate of solid waste? Explain methods of volume reduction at the source. 10
- b)** What do you understand by pyrolysis process? What are its end products? Also explain the limitations of this process. 10

- Q6.** Write a short note on 20
- a) Transfer station
 - b) Recovery of E- waste
 - c) Plastic waste management rules and regulation
 - d) Legal aspect of solid waste management
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