

ONE TIME EXIT SCHEME

USN

--	--	--	--	--	--	--	--	--	--

CMRIT LIBRARY
BANGALORE - 560 037

19CV757

Seventh Semester B.E. Degree Examination, April 2018

Solid Waste Management

Time: 3 hrs.

Max. Marks:100

Note: Answer any FIVE full questions, selecting atleast TWO questions from each part.

PART – A

- 1 a. What is Land Pollution? Highlight the major sources of land pollution. (06 Marks)
- b. With a flow diagram, explain the functional elements of solid waste management. (07 Marks)
- c. Estimate the energy content of solid waste sample with following composition. Assume moisture content = 21% , Ash content = 5%. What is the energy content on dry basis and on ash free dry basis? (07 Marks)

Component	Food waste	Paper	Card board	Plastic	Garden waste	Wood	Tin cans
% by mass	15	45	10	10	10	05	05
Energy content kJ/kg	4650	16750	16300	32600	6500	18600	700

- 2 a. Distinguish between Hauled container and stationary container system with a schematic diagram. (08 Marks)
- b. An area consisting of 800 homes contributes solid waste. Estimate the unit waste generation rate. If the observation location is a local transfer station and period of generation is one week. The waste is carried out in two types of vehicles viz. compactor trucks and flat bed trucks whose volumes are 15 and 1.15m³ respectively. The densities of the materials are 300kg/m³ and 100kg/m³ for compactor and flat bed trucks respectively. Assume 6 persons per home , 10 compactor loads and 25 flat bed truck load/week. (06 Marks)
- c. Write explanatory note on : i) Garbage chutes ii) Route optimization. (06 Marks)
- 3 a. Explain briefly different processing techniques used for solid waste management. (12 Marks)
- b. Discuss the importance of waste transformation in solid waste management. (08 Marks)
- 4 a. Explain the parameter 3T's factor affecting the Incineration process. (06 Marks)
- b. Explain Incineration process. What are the products of Incineration? (06 Marks)
- c. List and explain effect of common hazardous gaseous emission from an Incineration process. (08 Marks)

PART – B

- 5 a. Explain the physical , chemical and biological process involved in composting of organic solid waste. (08 Marks)
- b. Write brief note on Vermi Composting. (04 Marks)
- c. Determine the amount of air required to oxidize completely 1 Tonne of waste having the chemical equation C₅₀ H₁₀₀ O₄₀ N. (08 Marks)

CMRIT LIBRARY
BANGALORE - 560 037

CMRIT LIBRARY
BANGALORE - 560 037

10CV757

- 6 a. With the help of a neat diagram, explain the salient features of a sanitary landfill. (08 Marks)
b. Write a brief note on "Landfill Gas Collection and use". (04 Marks)
c. Estimate the required landfill area for a community with a population of 31000. Assume the following:
i) Solid waste generation = 2.9 kg/capita/day.
ii) Compacted density of solid waste in landfill = 474.6kg/m³.
iii) Uncompacted density of solid waste is 907.2 kg/m³.
iv) Average depth of compacted waste = 3.1m. (08 Marks)
- 7 a. Explain the characteristics of biomedical waste and its disposal method. (07 Marks)
b. Write brief note on Process of pyrolysis with neat sketch. (08 Marks)
c. Write note on Ocean disposal of solid waste. (05 Marks)
- 8 a. Explain with a flow diagram, the recovery of waste components from municipal solid waste. (06 Marks)
b. Explain Environmental significance of plastic waste. (07 Marks)
c. Describe the reuse and recycling of solid waste material. (07 Marks)

CMRIT LIBRARY
BANGALORE - 560 037
