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B. TECH.
(SEM-V) THEORY EXAMINATION 2018-19
SOLID WASTE MANAGEMENT

Time: 3 Hours *Total Marks: 70*

Note: Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1. Attempt *all* questions in brief. 2 x 7 = 14

a. Discuss various types of composting.
b. Define sanitary landfill and secured landfill.
c. What do you understand by integrated waste management policy?
d. Define solid waste with examples.
e. Explain biomedical waste management.
f. What are the factors influencing acid formation phase in landfills?
g. What is landfill process?

SECTION B

2. Attempt any *three* of the following: 7 x 3 = 21

a. What are the constraints imposed on the distribution of the refuse collected from an urban area among various operating disposal sites?
b. What are the various impacts of medical and agricultural solid waste on human health and ecosystem?
c. What do you mean by assimilation capacity of environment? How solid wastes affect environment?
d. Explain material flow and waste generation process in the environment. What are the factors that affect solid waste generation?
e. Discuss the following unit operations, used for separation and processing of waste materials with their neat and clean diagrams :
(i) Size Reduction
(ii) Air Classification

SECTION C

3. Attempt any *one* part of the following: 7 x 1 = 7

(a) Define hazardous waste and list the various types of hazardous wastes. Discuss the characteristics of hazardous wastes. What are the precaution to be taken while handling and transport of hazardous wastes.
(b) What is Sanitary Landfill? What are its advantages over open dumping? Calculate area required for a sanitary landfill for a city having 10 lac populations. The waste generation rate is 1200 g/capita per day and specific weight of solid waste is 1700 kg/m^3. Water table lies at about 20.0 meters depth in the area.

4. Attempt any *one* part of the following: 7 x 1 = 7

(a) Explain various problems related to solid waste management. Also describe different waste minimization techniques which can be adopted in solid waste management.
(b) Describe different types of collection services employed in solid waste management system. What are the methods of collecting solid waste from a community? Give an arrangement to be provided for collecting solid waste

form a group of high rise buildings?

5. Attempt any *one* part of the following: 7 x 1 = 7

(a) Explain on-site handling and storage of solid waste. Write a brief note on storage system adopted in you city with special emphasis on human health and aesthetic.

(b) Explain in detail hauled container collection system and stationary container collection system with neat and clean diagram.

6. Attempt any *one* part of the following: 7 x 1 = 7

(a) What do you understand by composting? Write operational considerations and design parameters for aerobic composting process. Also explain the characteristics of good compost.

(b) Explain the components of electronic waste (E-waste). What environmental impacts are related with E-waste? Being an environmental engineer, suggest its possible treatment option.

7. Attempt any *one* part of the following: 7 x 1 = 7

(a) Mismanagement of Municipal Solid Waste (MSW) is the curse to humanity and ecosystem. Comment and justify with suitable illustration.

(b) Describe layout and section of a typical sanitary landfill with the help of a neat sketch. Write down the characteristics of leachate generated from a sanitary landfill.