

Total No. of Questions : 8]

SEAT No. :

P4227

[4860]-607

[Total No. of Pages : 2

**M.E. (Civil) (Water Resource and Environmental Engg.)
d - SOLID & HAZARDOUS WASTE MANAGEMENT
(Elective - I) (2012 Pattern) (Semester - I)**

Time : 3 Hours]

[Max. Marks : 100

Instructions to the candidate:

- 1) Answers to the two sections should be written in a separate answer books.*
- 2) Attempt three Questions from each section.*
- 3) Figures to the right indicates full marks.*
- 4) Neat diagrams must be drawn wherever necessary.*

SECTION - I

Q1) What is source reduction? What can people do to support source reduction?
Is source reduction good for the environment? **[16]**

Q2) What are the types of solid wastes? Discuss the composition of solid waste.
Also differentiate between biodegradable and non-biodegradable solid wastes. **[16]**

Q3) a) Estimate the moisture content of solid waste sample with following
composition : **[10]**

| Component | Per cent by mass | Moisture (%) |
|------------------|------------------|--------------|
| Food wastes | 20 | 70 |
| Paper | 40 | 6 |
| Card board | 10 | 5 |
| Plastics | 5 | 2 |
| Garden trimmings | 5 | 60 |
| Wood | 5 | 20 |
| Tin cans | 5 | 3 |

b) Explain with neat sketch deep well injection method of liquid-solid waste disposal. **[6]**

P.T.O.

Q4) Write notes on:

- a) Water Balance in Landfills. [6]
- b) Pyrolysis. [6]
- c) Incineration. [6]

SECTION - II

Q5) Classify the solid waste, giving suitable examples for each of them. Also explain the different methods of disposal of solid waste. [16]

Q6) a) Define Hazardous waste and draw decision tree to define Hazardous waste for phase - I [8]

b) Explain the term Solidification and encapsulation in case of Hazardous waste. [8]

Q7) Explain Household hazardous waste and discuss various locations of hazardous household waste. [16]

Q8) Write notes on :

- a) TCLP tests. [6]
- b) Handling and storage of Hazardous waste. [6]
- c) Geo-technical aspects of landfill sites. [6]

