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## P.E.S. College of Engineering, Mandya - 571 401

(An Autonomous Institution affiliated to VTU, Belgaum)

Seventh Semester, B.E. - Civil Engineering

Semester End Examination; Dec - 2016/Jan - 2017

**Solid Waste Management**

Time: 3 hrs

Max. Marks: 100

*Note:* i) Answer **FIVE** full questions, selecting **ONE** full question from each unit.  
ii) Assume the data wherever necessary suitably.

### UNIT - I

- 1 a. Discuss the scope and importance of solid waste management. 8  
b. Enumerate and explain the physical, chemical and biological properties of solid waste. 12  
2 a. List the methods used to quantify the solid waste. Explain any two methods. 12  
b. Summarize the sources and types of solid waste. 8

### UNIT - II

- 3 a. Discuss the different methods of collection services used to collect SW from residential area. 10  
b. Estimate the energy value of typical residential SW with average composition as  $C_{763} H_{1982} O_{875} N_{13} S_1$ . 10  
4 a. Discuss the factors considered in selection of transfer station and write the classification of transfer station based on size. 10  
b. Briefly explain the factors that must be considered in the selection of size reduction equipment and compaction equipment. 10

### UNIT - III

- 5 a. Report the elements considered in the design of incinerators. 10  
b. Discuss about the air pollution control equipments used in conjunction with incinerator. 10  
6 a. Explain the design considerations of Aerobic Composting System. 10  
b. Distinguish between the Bangalore method and Indore method of composting. 10

### UNIT - IV

- 7 a. Explain the different phases involved in the generation of land fill gases. 8  
b. With the help of a neat sketch, explain the passive control methods of land fill gases. 12  
8 a. Write about the lining in sanitary land fill. 8  
b. Explain the methods of leachate collection system in sanitary landfill with the aid of sketches. 12

### UNIT - V

- 9 a. Briefly discuss about the consideration in the planning of SWM. 10  
b. Explain the site selection criteria for dumping SW. 10  
10 a. With the aid of sketch, explain the components of energy recovery system. 10  
b. Discuss about; i) The cogeneration system ii) Waste heat boiler. 10