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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