

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER– V (New) EXAMINATION – WINTER 2019****Subject Code: 2151307****Date: 29/11/2019****Subject Name: Municipal and industrial solid waste management****Time: 10:30 AM TO 01:00 PM****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

- Q.1** (a) Enlist and explain various types of Solid waste. **03**
(b) Draw the flowchart of material flow and solid waste generation. **04**
(c) Write down the hierarchy of integrated Solid Waste Management. **07**

- Q.2** (a) Define the following terms: **03**
Compost, Cell, Sanitary landfill
(b) What is proximate analysis and ultimate analysis? **04**
(c) Explain in brief factors affecting solid waste generation rates. **07**

OR

- (c) Describe the physical properties of municipal solid waste. **07**
- Q.3** (a) Why a proper solid waste management system is required for urban area? **03**
(b) What are the principles of 4R's? **04**
(c) Write a short note: Solid waste collection systems. **07**

OR

- Q.3** (a) What is the need for transfer operation? **03**
(b) What do you mean by the term TSDF? **04**
(c) Draw a neat sketch of countercurrent direct-heat rotary drum dryer. **07**

- Q.4** (a) Explain colour coding of biomedical waste. **03**
(b) Give the different sources of hazardous waste. **04**
(c) Explain in detail methods used for land filling along with neat sketches. **07**

OR

- Q.4** (a) How to minimize bio-medical waste? **03**
(b) Explain in detail biological transformation of solid waste. **04**
(c) Draw Schematic diagram of landfill? Explain each essential Component of it. **07**

- Q.5** (a) Discuss the effect of storage on waste component. **03**
(b) Write a note on Incineration. **04**
(c) Explain categories of Bio-medical waste. **07**

OR

- Q.5** (a) Which are the important criteria for landfill siting? **03**
(b) Write a note on Pyrolysis. **04**
(c) Explain the important characteristics of hazardous waste **07**
