

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER- IV(NEW) EXAMINATION – SUMMER 2023****Subject Code:3141311****Date:17-07-2023****Subject Name:Municipal & 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.
4. Simple and non-programmable scientific calculators are allowed.

- Q.1** (a) Define “Waste” & enlist different types of solid waste based on its sources of generation. **03**
 (b) Draw the flowchart of material flow and solid waste generation. **04**
 (c) Discuss the environmental effects caused by the poor management of solid waste. **07**
- Q.2** (a) Enlist the factors affecting solid waste generation rates & explain any two in detail. **03**
 (b) Differentiate between hauled container & stationary container solid waste collection system. **04**
 (c) Enlist various volume reduction equipment and explain with neat sketch. **07**
- OR**
- (c) Write down the significance of solid waste processing & discuss the solid waste processing techniques. **07**
- Q.3** (a) Draw symbols used for biomedical waste labelling along with its significance. **03**
 (b) Explain the Manifest system. **04**
 (c) Explain the biomedical waste categories. **07**
- OR**
- Q.3** (a) What do you mean by Refused Derive Fuel (RDF)? **03**
 (b) Write down the categorization of E – waste. **04**
 (c) Write down the full form of TDSF & explain the activities carried out on TSDF site. **07**
- Q.4** (a) Define the following terms; **03**
 1. Proximate analysis 2. Ultimate analysis 3. Leachate
 (b) Discuss the sitting criteria for municipal solid waste landfill. **04**
 (c) Name the thermal waste treatment technologies & explain any one in detail. **07**
- OR**
- Q.4** (a) Discuss in detail landfill gas management. **03**
 (b) Differentiate between sanitary & secured landfill sites for waste disposal. **04**
 (c) Explain the solid waste composting along with its merits & demerits. **07**
- Q.5** (a) Categorize Landfill Liner system. **03**
 (b) Calculate solid waste generation per annum of a city having population 10 lakh and per capita generation rate of solid waste is 0.528 kg / day. **04**
 (c) Enlist the important factors to be considered while designing & operation of solid waste landfill. **07**
- OR**
- Q.5** (a) Write down the hierarchy of integrated solid waste management. **03**
 (b) Enlist the physical properties of municipal solid waste. **04**
 (c) A city has a population of 20 lakh & average per day solid waste generation is average 0.60 kg/d. Assume density of the municipal solid waste generated is 320 kg/m³ & capacity of the container 10 m³ & calculate the number of containers required in a city. **07**
