Seat No.:	Enrolment No.

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-V (NEW) - EXAMINATION - SUMMER 2017

Subject Code: 2151307 Date:10/05/2017

Subject Name: Municipal and industrial solid waste management

Time: 02:30 PM to 05:00 PM Total Marks: 70

Instructions:

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

MARKS

Q.1 Short Questions

14

- 1 The terms MSW generally used to describe:
 - a) Waste from industrial process, construction site
 - b) Waste from private homes, commercial and institutions
 - c) Waste from mining
 - d) Waste from agriculture
- Which of the following is a practice used to reduce and manage MSW?
 - (a) waste combustion (b) source reduction (c) recycling of materials (d) all of the above
- **3** Which of the following is not a source reduction activity?
 - (a) Products package reuse
 - (b) Reducing use by modifying practices
 - (c) Saving energy by using recycled materials
 - (d) Package or product design that reduces material or toxicity
- 4 Most serious environmental effect posed by hazardous waste is:
 - a) Air pollution
 - b) Ground water contamination
 - c) Increased used of land for land filling
 - d) None of these
- 5 Problem of solid waste disposal can be reduced by
 - (a)Recycling
 - (b)Lesser pollution
 - (c)More timber
 - (d)Population control
- **6** The highest moisture content is in:
 - (a) Garbage
 - (b) Rubbish
 - (c) Hospital waste
 - (d) Agricultural waste

7	Which of the following is a likely characteristic of hazardous waste?
	(a) Ignitability
	(b) Corrosivity
	(c) Reactivity
	(d) all of above
8	High level radioactive waste can be managed in which of the following ways?
	(a) Open dumping
	(b) Composting
	(c) Incineration
	(d) Dumping in sealed containers
9	Biomedical waste may be disposed of by?
	(a) Incineration
	(b) Autoclaving
	(c) Land filling
	(d) Both (b) and (c)
10	Which of the following is a biodegradable organic chemical/substance?
	(a) Plastics
	(b) Oils
	(c) Pesticides
	(d) Garbage
11	Making new containers from crushed glass helps to (a)save materials (b)save fuel
	(c)increase pollution
	(d)both A and B
12	Which of the following is not a method for the disposal of hazardous wastes? (a)ISV (b)Landfills (c)Deep-will injection (d)Surface impoundments
13	Secure landfills require all but one of the following not:
	a. single liners -
	b. groundwater monitoring

c. financial guarantees for post-closure activities

d. a leachate collection system

	14	containers are true, except for the following: (a)Containers must be closed except when removing or adding waste.	
		(b)Containers must be clean on the outside.	
		(c)Contents must be compatible with the type of waste containers.	
		(d) Any type of container, including food containers, can be used to contain hazardous waste	
Q.2	(a)	Draw the flowchart of material flow and solid waste generation.	03
	(b)	Enlist and explain the physical properties of municipal solid waste.	04
	(c)	Explain in detail functional elements of a waste management system.	07
		OR	
	(c)	Write an explanatory note on: integrated solid waste management.	07
Q.3	(a)	Discuss the effect of storage on waste component.	03
	(b)	Explain in detail biological transformation of solid waste.	04
	(c)	Explain in detail hauled container system.	07
		OR	
Q.3	(a)	Enlist the chemical properties of municipal solid waste.	03
	(b)	Write a short note on: waste transformation through aerobic composting.	04
	(c)	Explain in detail various unit operations used for separation and processing of waste material.	07
Q.4	(a)		03
	(b)	Discuss in detail landfill gas management.	04
	(c)	Explain in detail types of transfer stations. OR	07
Q.4	(a)	What is the need for transfer operation?	03
	(b)	Enlist and explain the land filling methods.	04
	(c)	Enlist the factors to be considered for landfill sitting.	07
Q.5	(a)	How to minimize biomedical waste.	03
	(b)	Microwaving methods of disposal of biomedical waste.	04
	(c)	Discus in detail reactions occurring in landfills. OR	07
Q.5	(a)	Give the classification of landfill.	03
-	(b)	Give the different sources of hazardous waste.	04
	(c)	Enlist the categories of bio medical waste.	07
