

GUJARAT TECHNOLOGICAL UNIVERSITY**BE- SEMESTER-V EXAMINATION – WINTER 2025****Subject Code:3152303****Date:21-11-2025****Subject Name:Plastic Recycling & 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.

		MARKS
Q.1	(a) Define i) Nuisance plastics ii) Primary Recycling iii) Secondary Recycling	03
	(b) Discuss about the concept of 4R's in Recycling of Plastics	04
	(c) With a neat diagram explain the flow of plastic products and plastic waste.	07
Q.2	(a) State the identification codes of the following i) PET ii)PVC iii)LDPE	03
	(b) Explain the float sink separation technique to separate mixtures of mixed plastic waste.	04
	(c) List the methods of separation of paper/plastic mixture and explain the wet separation process to separate paper/plastic mixture.	07
OR		
	(c) Explain different size reduction methods for converting municipal solid refuse into smaller pieces.	07
Q.3	(a) Define Pyrolysis. List the advantages of Pyrolysis process.	03
	(b) Explain the construction and working of Reverzer equipment for mechanical reworking of plastics	04
	(c) List and explain the problems associated with incineration of pure Plastics Waste.	07
OR		
Q.3	(a) List and explain the sources of plastic waste	03
	(b) Describe the technical approaches to secondary recycling.	04
	(c) Discuss about Granulating difficult materials and explain any one Cryogenic Grinding technique for recycling them.	07
Q.4	(a) List the technical problems encountered in primary recycling.	03
	(b) Discuss about Granulators used in Primary Recycling of plastic waste.	04
	(c) Explain the Co injection molding technique for secondary recycling of plastics	07
OR		
Q.4	(a) Explain the Recycling of PP/HDPE woven sacks to pellets.	03
	(b) Describe the environmental implications of Recycling and Polymer Degradation	04
	(c) List the problems encountered in Pyrolysis of plastic waste. With a neat sketch, explain the Union Carbide apparatus for the continuous pyrolysis of plastics	07

- Q.5** (a) Describe the recycling of HDPE containers with a neat flow diagram **03**
- (b) Discuss Landfill? List techniques of Landfilling and explain Sanitary Landfill. **04**
- (c) Define Incineration. With a neat sketch explain the parts of a typical incinerator **07**
- OR**
- Q.5** (a) Discuss about the Klobbe machine for secondary recycling of plastics. **03**
- (b) Discuss about different techniques for PET Recycling **04**
- (c) Describe the separation method to separate plastics from plastic-coated fabric. **07**
