

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER-V (NEW) EXAMINATION – SUMMER 2024****Subject Code:3152303****Date:21-05-2024****Subject Name:Plastic Recycling & 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.
4. Simple and non-programmable scientific calculators are allowed.

		<b>MARKS</b>
<b>Q.1</b>	(a) Define Pyrolysis and list the advantages of Pyrolysis process.	<b>03</b>
	(b) State the identification codes of the following i) PET ii)PP iii)PVC	<b>04</b>
	(c) Explain the float sink separation technique to separate mixtures of plastics with a neat flow diagram.	<b>07</b>
<b>Q.2</b>	(a) Define the following i)Nuisance Plastics ii)Tertiary Recycling iii) Primary Recycling	<b>03</b>
	(b) Describe the recycling of HDPE containers with a neat flow diagram	<b>04</b>
	(c) Explain the flow of Plastic products and plastic waste with a neat sketch.	<b>07</b>
<b>OR</b>		
	(c) Describe various size reduction methods for municipal solid refuse	<b>07</b>
<b>Q.3</b>	(a) Discuss the technical problems encountered in primary recycling of plastics.	<b>03</b>
	(b) Explain the recycling of PVC film scrap.	<b>04</b>
	(c) List the methods to separate mixture of Paper with Plastic and explain any one.	<b>07</b>
<b>OR</b>		
<b>Q.3</b>	(a) What is Sanitary Landfill? Explain briefly the process of sanitary landfill.	<b>03</b>
	(b) Discuss about concept of 4R's in Recycling of Plastics.	<b>04</b>
	(c) Explain any one Cryogenic Grinding technique for granulating difficult materials with a neat sketch	<b>07</b>
<b>Q.4</b>	(a) Discuss about the use of plastic waste as fillers for secondary Recycling.	<b>03</b>
	(b) Explain the Reverzer equipment used for mechanical reworking of mixed plastic waste by secondary recycling.	<b>04</b>
	(c) Explain the degradation of PET by glycolysis, hydrolysis and methanolysis.	<b>07</b>
<b>OR</b>		
<b>Q.4</b>	(a) Explain the Recycling of PP/HDPE woven sacks to pellets.	<b>03</b>
	(b) Describe the properties used as a basis for separation of solid wastes.	<b>04</b>
	(c) Discuss the Problems associated with the incineration of pure plastic waste	<b>07</b>

- Q.5** (a) Discuss about the Klobbe machine for secondary recycling of plastics. **03**
- (b) Explain the Union Carbide pyrolysis system for the pyrolysis of plastics **04**
- (c) Describe various environmental implications of Recycling and Polymer Degradation. **07**

**OR**

- Q.5** (a) Draw and explain the in-line automatic recycling system for primary recycling of plastic waste. **03**
- (b) Describe the Secondary Recycling of Plastics by Co- Extrusion technique with a neat sketch, **04**
- (c) Explain about medical plastic waste management. **07**

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