

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER-V (NEW) EXAMINATION – WINTER 2021****Subject Code:3152303****Date:27/12/2021****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) Write the identification codes of the following i) HDPE ii)PVC iii)PET	<b>03</b>
	(b) Describe about the sources of Plastic Waste.	<b>04</b>
	(c) With a neat sketch explain the flow of Plastic products and plastic waste.	<b>07</b>
<b>Q.2</b>	(a) Define the following Terminologies i)Tertiary Recycling ii)Nuisance plastics iii) Primary Recycling	<b>03</b>
	(b) Explain the recycling of HDPE containers with a neat flow diagram.	<b>04</b>
	(c) With a neat flow diagram, explain the float sink separation technique to separate mixtures of plastics.	<b>07</b>
<b>OR</b>		
	(c) Explain the recycling of medical plastic waste	<b>07</b>
<b>Q.3</b>	(a) List and explain the physical properties used as a basis for separation of solid wastes .	<b>03</b>
	(b) Define Pyrolysis. List the advantages of Pyrolysis process	<b>04</b>
	(c) With a neat sketch describe any one Cryogenic Grinding technique for granulating difficult materials	<b>07</b>
<b>OR</b>		
<b>Q.3</b>	(a) Explain the Recycling of PP/HDPE woven sacks to pellets.	<b>03</b>
	(b) Write a short note on the Mitshubishi Reverzer equipment used for mechanical reworking of mixed plastic waste through secondary recycling	<b>04</b>
	(c) List and explain the Problems associated with the incineration of pure plastic waste	<b>07</b>
<b>Q.4</b>	(a) Explain the use of plastic waste as fillers for secondary Recycling	<b>03</b>
	(b) With a neat sketch explain briefly the types of pyrolysis systems used for pyrolysis of municipal solid waste	<b>04</b>
	(c) Write a short note on techniques used for Recycling of PET.	<b>07</b>
<b>OR</b>		
<b>Q.4</b>	(a) Write a short note on Granulators used for Primary Recycling of Plastics.	<b>03</b>
	(b) Describe with a neat sketch, the Secondary Recycling of Plastics by Co Extrusion technique	<b>04</b>

- (c) List the methods to separate Paper/Plastic Mixtures and explain any one. **07**
- Q.5** (a) Explain the working of a Klobbe machine for secondary recycling of plastics. **03**
- (b) List and explain briefly the parts of an incinerator **04**
- (c) Explain the environmental implications of Recycling and Polymer Degradation. **07**
- OR**
- Q.5** (a) What is Sanitary Landfill? Explain briefly the process of sanitary landfill **03**
- (b) Explain briefly the concept of 4R's in Recycling of Plastics **04**
- (c) Explain the separation of plastics from plastic-coated fabric **07**

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