Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–V • EXAMINATION – WINTER • 2014

Subject Code: 152303 **Date: 03-12-2014**

Subject Name: Plastics Recycling and Waste Treatment

Time: 10.30 am - 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.**

Q.1	**(a)**	Define: Primary recycling, secondary recycling, tertiary recycling, and quaternary recycling.	**07**
	(b)	Write a note on float/sink (density) separation method for plastics waste.	**07**
Q.2	**(a)**	Which are the sources of plastics waste? Explain in detail.	**07**
	(b)	Describe solvent extraction technique for separation of mixed plastic waste.	**07**
		OR	
	(b)	Explain various size reduction techniques in detail with suitable diagram.	**07**
Q.3	**(a)**	Describe in detail about the Plastics Roads. With the help of flow sheet describe the road manufacturing process using plastics.	**07**
	(b)	What is Biodegradable Polymer? Give its examples. Give Block diagram for "Cradle to Grave concept for Biodegradable materials in fast-food restaurant packaging applications.	**07**
		OR	
Q.3	**(a)**	Give plastics identification codes with their properties and applications.	**07**
	(b)	Explain glycolysis for chemical decomposition of PET with suitable flow diagram.	**07**
Q.4	**(a)**	Draw flow diagrams for (i) conversion of PP/HDPE woven sacks into ropes (ii) conversion of PP/HDPE woven sacks into injection molded suit cases.	**07**
	(b)	Write a note on: Recycling of multilayer packaging film waste.	**07**
		OR	
Q.4	**(a)**	Discuss in detail about the effects of recycling of plastics waste on Environment.	**07**
	(b)	Define pyrolysis. List various pyrolysis reactions and also give advantages of pyrolysis.	**07**
Q.5	**(a)**	Discuss polymer degradation and write various factors affecting degradability.	**07**
	(b)	Explain Vertical shaft reactor and Rotary kiln pyrolysis reactor with neat diagram.	**07**
		OR	
Q.5	**(a)**	What do you mean by incineration? Give various problems associated with the incineration of pure plastics waste.	**07**
	(b)	Discuss medical plastics waste management.	**07**

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