GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-V (NEW) - EXAMINATION - SUMMER 2016

Subject Code:2152303 Date:06/05/2016 **Subject Name:Plastics Recycling & Waste Treatment** 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. 0.1 (a) Which are benefits of plastics recycling? Give plastics identification codes for 07 recycling with their properties and applications. (b) Explain secondary recycling by co-extrusion and co-injection molding for **07** production of sandwich structure. **Q.2** (a) Define secondary recycling. Discuss segregation of polymers by simple 07 identification technique. (b) Explain degradation mechanism of thermoplastics with suitable examples due 07 to repetitive processing. OR (b) Give various sources of PET bottles. Explain complete process of recycling of 07 Plastics PET bottles by flow diagram. 0.3 Write notes on (1) Use of plastics waste as filler (2) Solvent separation 07 technique for separation of mixed plastic waste Which are the 3 R's of waste management? Discuss in detail about the effects 07 of recycling of plastics waste on Environment. Discuss In-line automatic recycling systems along with feeder of the automatic Q.3 07 (a) recycling system. **(b)** Discuss chemical modification of mixed plastics waste. 07 **Q.4** Explain in detail about biodegradable plastics. 07 (a) (b) How recycling of multilayer packaging film waste is carried out? Discuss. 07 OR **Q.4** (a) Write a note on: Medical plastics waste management. **07** (b) Explain rectangular furnace incinerator with neat diagram. Give various 07 problems associated with the incineration of pure plastics waste. Explain hydrolysis of Polyurethane and write about continuous hydrolysis Q.5 07 apparatus with neat diagram. (b) Draw flow diagrams for (i) Conversion of PP/HDPE woven sacks (ii) HDPE 07 containers waste to molded Products. (a) Explain PET Glycolysis process with neat flow diagram. 07 **Q.5** (b) Describe in detail about the Plastics Roads. With the help of flow sheet describe 07 the road manufacturing process using plastics.
