

GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER-VIII • EXAMINATION – SUMMER 2013

Subject Code: 182305**Date: 09/05/2013****Subject Name: Biopolymers****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.

- Q.1** (a) Define Bio-polymers. Depending on physical and chemical properties, classify the different types of biopolymers. 07
- (b) Explain in detail about the method of production of PLA in industry. Give its chemical properties, physical properties and applications. 07
- Q.2** (a) How is biodegradable plastic made? What are the various types of compounds or materials are used to make biodegradable plastics? 07
- (b) Give a comparison between the Polymer, Biopolymer, and Bioplastics? 07
- OR**
- (b) Explain in details about the Engineering Applications of Bioplastics and Biocomposites. 07
- Q.3** (a) Write in detail about the Cellulose Based Green Bioplastics for Biomedical Engineering. 07
- (b) Write a short note on (i) Natural biodegradable polymer & (ii) Synthetic biodegradable polymer. 07
- OR**
- Q.3** (a) List out the different thermal analysis techniques used to characterize Bio-polymer. Explain in detail about any one of it. 07
- (b) Write short note on (i) Scanning Electron Microscope (SEM) (ii) Transmission Electron Microscopy (TEM). 07
- Q.4** (a) Are biodegradable plastic bags a solution to the plastic carrying bag problem? Give proper scientific explanations. 07
- (b) Describe the principles and applications of differential scanning calorimetry with respect to Bio-polymers. 07
- OR**
- Q.4** (a) Give the advantages and disadvantages of Synthetic Polymer and Biodegradable Polymer and their Impact on the Environment. 07
- (b) Explain in details about the mixing of biomaterials with plastics. Give its equipments details and process details. 07
- Q.5** (a) Discuss the various advantages and disadvantages of biodegradable plastics? 07
- (b) Write short notes on (i) Non-biological degradable polymer & (ii) Biological degradable polymer. 07
- OR**
- Q.5** (a) Explain in details Starch as a Biopolymer in Construction and Civil Engineering. 07
- (b) Write short note on Cellulose Based Green Bioplastics for Biomedical Engineering. 07
