

GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER-VII • EXAMINATION – WINTER 2013

Subject Code: 172303**Date: 07-12-2013****Subject Name: Medical Plastics****Time: 10:30 TO 01:00****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) List the advantages of Plastics for its use as medical devices. **07**
(b) Give a comparison of Plastics properties to Metals, Ceramics and Glass. **07**

- Q.2** (a) Give a classification of thermoplastics used in medical applications **07**
(b) Give a classification of thermoset used in medical applications **07**

OR

- (b) Give a comparison of thermoplastics and thermoset plastics , used in medical applications **07**

- Q.3** (a) List the various methods of sterilization of plastics material. Discuss the Steam Sterilization method of Plastics in detail. **07**

- (b) What will be the effect of Electron-Beam Radiation on plastics? Discuss the Radiation stability of various plastics. **07**

OR

- Q.3** (a) Define Leachable Plastics and Extractable Plastics. With the help of various solvents and temperature conditions explain the mechanism of Leachable and Extractable Plastics. **07**

- (b) Explain ISO 10993 as series of standards that detail all characterization and biocompatibility tests needed for medical plastics **07**

- Q.4** (a) Write short note on (i) ISO 10993 Biocompatibility Evaluation Decision Tree. **07**
(ii) Self Life and Aging of Plastics in medical application

- (b) List the methods used to join Plastics using heat and friction. Discuss each of them in short **07**

OR

- Q.4** (a) Explain the various Polymer Additives used to enhance medical properties for medical device applications **07**

- Q.4** (b) Discuss the various precautions to be considered when additives are to be used for medical plastics **07**

- Q.5** (a) How the carbon nano tubes are superior materials in medical plastics. Give its applications, advantages and disadvantages. **07**

- (b) Discuss PVC as commodity thermoplastics used in medical field. List the areas where it can be used. **07**

OR

- Q.5** (a) Give Applications, Requirements and materials used as medical device applications for the Polyethylene group materials. **07**

- (b) List the special properties of Cyclo-olefin copolymers that are suitable for medical plastics. **07**
