

GUJARAT TECHNOLOGICAL UNIVERSITY**B.E SEM-VII Examination-Nov/Dec.-2011****Subject code: 172303****Date: 24/11/2011****Subject Name: Medical Plastics****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) Give a summary of important factors that can be considered in selecting a material for a biomedical application with its 1. Chemical 2. Physical characteristics and 3. Mechanical characteristics. **07**
- (b) Give a classification of main types of bio composites according to their reinforcement forms. Give sketch of screw, hip endoprosthesis stem and bone plates. **07**

- Q.2** (a) Give a complete classification of manmade polymer bio composites based on bio degradability. **07**
- (b) Discuss various sterilization techniques and testing of bio compatibility. Give a composition of sterilization method. **07**

OR

- (b) Discuss complete testing of Bio compatibility by explaining all the 3 levels of testing. **07**

- Q.3** (a) Write short note on 1. Carbon fibers and 2. Glass Fibers. Give a list of Reinforcement fibers. **07**
- (b) Write short note on 1. Armide Fibers and 2. Other Polymer fibers. **07**

- Q.3** (a) With the help of Design Process Chart, explain the Conceptual Design and Detailed Design steps for making products from the Fibrous Composite Materials. **07**
- (b) Write in detail about--Material Selection for Fibrous Composite Material and Biomedical applications of Polymer composites for making Bone Plates. **07**

- Q.4** (a) Give a complete list of various materials used for making Medical Implants. **07**
- (b) Explain the Polymer Formation and Structure with reference to medical implants. List the typical polymers and its applications in medical field. **07**

OR

- Q.4** (a) Discuss the additives used to process polymers in to engineering materials along with its functions in medical applications **07**
- (b) Write in detail about the medical application of various metals. List the elements found in metallic implants. **07**

- Q.5** (a) Give detail of treatments used to modify mechanical properties of metals **07**
- (b) Explain the importance of elements in Stainless steel, Cobalt and Titanium based alloys. List the composition of all 3 alloys. **07**

OR

- Q.5** (a) Discuss the Synthetic implant materials used for facial Implants. Discuss the Injectable Implant Material in detail. **07**
- (b) Discuss the Collagen as widely used material in the Dentistry. Give the various types of Collagen, used at various stages of Dentistry. **07**
