

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-V • EXAMINATION – SUMMER • 2014****Subject Code: 150301****Date: 17-06-2014****Subject Name: Biomaterials and Implants****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)** What is Biocompatibility? Discuss different failure factors associated with Implants. and determine the equation to check the reliability of Implants. **07**
- (b)** Short Note: NITINOL **07**
- Q.2 (a)** Enlist Different types of Metallic body implants and explain Properties and Manufacturing Process of SS based Implants. **07**
- (b)** Explain Endosseous Tooth Implants in Detail. **07**
- OR**
- (b)** Short Note: Glass Ceramics **07**
- Q.3 (a)** Enlist different types of polymeric Implants. Write a short note on Polyethylene with its necessary Polymerization process. **07**
- (b)** Short Note: Intraocular Lenses **07**
- OR**
- Q.3 (a)** Short Note: Hydrogels **07**
- (b)** Describe Design consideration of Artificial Heart Valves. **07**
- Q.4 (a)** Describe Fibrous and Particulate composites used in Orthopedic Implants. **07**
- (b)** Short Note: Hip Joints **07**
- OR**
- Q.4 (a)** Draw the block diagram of synchronous and asynchronous pacemaker and also Explain components used in pacemaker. **07**
- (b)** Explain Corrosion of Metallic Implants in detail. **07**
- Q.5 (a)** Discuss different Mechanical properties of Biomaterials and Implants **07**
- (b)** Short Note: Bone Cement **07**
- OR**
- Q.5 (a)** Give short Note on Cellular response to implants **07**
- (b)** Describe structure and manufacturing process of TI based alloys. **07**
