Seat No.: _____ Enrolment No._____

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**

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