Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE – SEMESTER V • EXAMINATION – WINTER - 2012

Subject code: 150301 **Date: 16-01-2013**

Subject Name: Biomaterial & Implants

Time: 02:30 pm to 05:00 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 following terms: 1) Shape memory effect 2) Biological material 3) Prosthesis 4) Autografts 5) Filler 6) Bone cement 7) Biocompatibility	**07**
	(b)	Explain tissue response to implants.	**07**
Q.2	**(a)**	Explain the structure & composition of long bone.	**07**
	(b)	Write a short note on biomaterial hydrogels.	**07**
		OR	
	(b)	Explain biocompatibility of synthetic vascular implant material.	**07**
Q.3	**(a)**	Explain polymerization in detail.	**07**
	(b)	Write a note on soft composites & dental composites.	**07**
		OR	
Q.3	**(a)**	Explain surface properties of biomaterials & their testing.	**07**
	(b)	Write a short note on stainless steel.	**07**
Q.4	**(a)**	Describe heart valve in detail.	**07**
	(b)	1. Comment on the condition in the oral cavity & the requirements for the prosthetic dental material.	**04**
		2. Give benefits of IOL's.	**03**
		OR	
Q.4	**(a)**	What is biodegradable ceramics? Explain any one in detail.	**07**
Q.4	**(b)**	Write a short note on drug incorporation polymer gels.	**07**
Q.5	**(a)**	Write a short note on titanium based alloys.	**07**
	(b)	Explain material selection criteria for biomaterial.	**07**
		OR	
Q.5	**(a)**	Draw the block diagram of synchronous and asynchronous pacemaker & also explain components used in pacemaker.	**07**
	(b)	Explain corrosion of metallic implants.	**07**

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