

**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: **07**  
 1) Shape memory effect 2) Biological material  
 3) Prosthesis 4) Autografts 5) Filler 6) Bone cement  
 7) Biocompatibility
- (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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