

**GUJARAT TECHNOLOGICAL UNIVERSITY****B.E. Sem-V<sup>th</sup> Examination December 2010****Subject code: 150301****Subject Name: Biomaterials & implants****Date: 18 /12 /2010****Time: 03.00 pm - 05.30 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) Describe heart valves in detail. **07**  
 (b) 1) Describe the anatomy of hip joint. **03**  
 2) Explain the reasons for failure of hip joints. **04**
- Q.2** (a) Define following terms: **07**  
 1. Homografts      2. Xenografts      3. Autografts      4. Biocompatibility  
 5. Biological material      6. Prostheses      7. implants  
 (b) Give the short note on stainless steels **07**
- OR**
- (b) Explain polymerization in detail. **07**
- Q.3** (a) Draw the block diagram of synchronous and asynchronous pacemaker and also explain components used in pacemakers. **07**  
 (b) 1) Give the short note on cellular response to implants. **04**  
 2) Explain stents in brief. **03**
- OR**
- Q.3** (a) Describe the structure and composition of tooth and also explain the different types of dental implants. **07**  
 (b) 1) Comment on the condition in the oral cavity and the requirements for the prosthetic dental material. **04**  
 2) Explain types of contact lenses. **03**
- Q.4** (a) Short note on calcium phosphate. **07**  
 (b) Describe the different categories of biomaterials having application in dentistry. **07**
- OR**
- Q.4** (a) Enlist polymeric implants materials. Explain any two in detail. **07**  
 (b) 1) Enlist materials used in IOLs. Explain any two in detail. **04**  
 2) Give the benefits of IOLs. **03**
- Q.5** (a) 1) What is composites? Explain fibrous and particulate composites in orthopedic implants. **04**  
 2) Give the properties of glass-ceramics. **03**  
 (b) Describe considerations for the design of heart valves. **07**
- OR**
- Q.5** (a) 1) Explain the structure and composition of long bone. **04**  
 2) Give the short note on VADs. **03**  
 (b) 1) What is blood compatibility? **02**  
 2) Enlist dental metals. Explain any two in details. **05**

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