

**IV B.Tech II Semester Regular Examinations, Apr/May 2006**  
**BIO MATERIALS**  
**(Bio-Medical Engineering)**

**Time: 3 hours**

**Max Marks: 80**

**Answer any FIVE Questions**  
**All Questions carry equal marks**

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1. What is the need for biomaterial? Explain four major types of biomaterials in terms of interfacial response of tissues. [8+8]
2. Discuss in detail the favorable mechanical properties of Titanium and its alloys. [16]
3. Give the classification of elastomers. Give the list of polymers under this category and their applications. [16]
4. What is a dialyser? Explain the desirable features of an ideal dialyser membrane. [16]
5. Explain the reaction, which occurs at the metal-tissue interface of metallic implant. Compare the behaviors of different metals at the metal tissue interaction site. [16]
6. Compare in vivo and in vitro testing of biomaterials. [16]
7. Describe the design considerations of endosseous devices. [16]
8. What are the problems encountered with fixation devices? What are the methods by which we minimize the problems encountered with the fixation devices? [8+8]

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1. Explain the concept of contact angle and what are the factors on which the contact angle depends upon. [16]
2. Explain the difficulties that are encountered while designing metallic implants.[16]
3. Explain the special properties of PMMA and give its medical applications. [16]
4. Discuss the performance of poly glycolic acid, poly lactic acid as resorbable polymeric bio materials. [16]
5. Explain the desirable properties of implantable bioceramics used for medical applications. [16]
6. Compare in vivo and in vitro testing of biomaterials. [16]
7. What are alveolar bone replacements? Explain their functional requirements. [16]
8. What are the problems associated with the artificial joints? How are the problems associated with the artificial joints minimized? [16]

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1. What is the need for biomaterial? Explain four major types of biomaterials in terms of interfacial response of tissues. [8+8]
2. Explain the mechanical properties of Co-Cr alloys. [16]
3. Explain the special properties of PMMA and give its medical applications. [16]
4. Discuss the performance of poly glycolic acid, poly lactic acid as resorbable polymeric bio materials. [16]
5. Discuss the deterioration process of ceramics. Compare their performance with polymeric biomaterials. [16]
6. Explain in detail the variables to be considered while performing in vivo testing of biomaterials. [16]
7. Compare the functional features of the two categories of oral implants. [16]
8. What are temporary fixation devices? Explain their functions. [8+8]

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1. What is the need for biomaterial? Explain four major types of biomaterials in terms of interfacial response of tissues. [8+8]
2. List the factors, which cause metallic corrosion and explain their significance. [16]
3. Classify biopolymers. Give the characteristics of each group. [16]
4. Explain the special features of polymers to be used as drug delivery systems. Give example of such polymers. [16]
5. Explain the reaction, which occurs at the metal-tissue interface of metallic implant. Compare the behaviors of different metals at the metal tissue interaction site. [16]
6. Explain in detail the variables to be considered while performing in vivo testing of biomaterials. [16]
7. Discuss the features of allogenic tooth transplants. What are the advantages and disadvantages of allogenic tooth transplants? [8+8]
8. What are temporary fixation devices? Explain their functions. [8+8]

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