

**B.TECH. SEM -V BIO MEDICAL 2014 COURSE (CBCS) :**  
**SUMMER - 2018**  
**SUBJECT: BIOMATERIALS**

Day : **Friday**  
Date : **25/05/2018**

**S-2018-2379**

Time : **10.00 AM TO 01.00 PM**  
Max. Marks: 60

**N.B.**

- 1) All questions are **COMPULSORY**.
- 2) Figures to the right indicate **FULL** marks.
- 3) Assume suitable data if necessary.

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**Q.1** a) How would you classify acoustic and ultrasonic properties of biomaterials? **(05)**

b) Summarize various parameters used to determine surface properties of biomaterials. **(05)**

**OR**

a) Write with the perfect words the term "Biomaterial and Biocompatibility". Also correlate both the terms with suitable example. **(05)**

b) Categorize electrical properties based on design of biomaterial and explain any two in detail. **(05)**

**Q.2** a) What is the importance of stainless steel alloy? Compare the composition of stainless steel alloy in tabular form for its various types. **(05)**

b) List various devices made from stainless steely alloy and give its application. **(05)**

**OR**

a) How the rate of corrosion is measured? Draw and explain corrosion rate measurement technique. **(05)**

b) Describe a typical three-electrode system for electro chemical testing of corrosion rate with suitable diagram. **(05)**

**Q.3** a) Write a note on surface reactive ceramics. **(05)**

b) Write chemical composition of alumina and its applications in dentistry. **(05)**

**OR**

Give the examples of nearly insert ceramic. Draw and explain the schematic representation of poorly crystalline carbons. What are the mechanical properties of carbon? **(10)**

**Q.4** a) List the factors that influence the mechanical properties of polymers. **(05)**

b) Write note on silicon rubber and its applications. **(05)**

**OR**

Give the specific properties and biomedical use of following polymers. **(10)**

i) Polypropylene      ii) Polyvinyl Chloride      iii) Polyamide  
iv) **Polyurethane**.

**Q.5** a) Explain significance of response of body to implant materials. **(05)**

b) Explain the process of inflammation in wound healing process. **(05)**

**OR**

a) What is the necessity of blood compatibility of implant materials? **(05)**

b) Write note on carcinogenicity. **(05)**

**Q.6** a) What do you mean by intra medullary devices? Explain any two. **(05)**

b) Write a note on heart valve implants. **(05)**

**OR**

a) What are the minimum requirements for soft tissue implant biomaterials? **(05)**

b) Explain the types of pins and screws used in bone healing. **(05)**

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