







**GROUP – B**

**( Short Answer Type Questions )**

Answer any *three* of the following.  $3 \times 5 = 15$

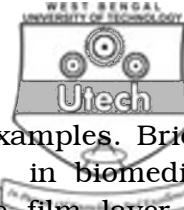
2. What are the primary uses of metallic implant ? Briefly discuss about the corrosion problem of metallic implant.  
 $2 + 3$
3. Define the term 'biocompatibility'. Mention different methods for improving blood and tissue compatibility problems.  $5$
4. Define the term 'biomaterials'. Briefly discuss about the necessity of biomaterials and classify them.  $2 + 3$
5. Classify bio-ceramics with appropriate examples. Give the advantage and disadvantage of ceramic materials.  $2 \frac{1}{2} + 2 \frac{1}{2}$
6. Define composite. What are the important features of composite biomaterials ? Classify composite biomaterials.  
 $1 + 2 + 2$
7. Draw the stress-strain diagram of metallic (ss316L) and ceramic biomaterials. What is the back bone structure of silicone rubber ? What are the applications of polyurethane biopolymer ?  
 $3 + 1 + 1$

**GROUP – C**

**( Long Answer Type Questions )**

Answer any *three* of the following.  $3 \times 15 = 45$

8. What are the different toxicity testing protocols for evaluation of a biomaterial ? Describe one *in vitro* and *in vivo* toxicity screening test for newer biomaterials.  $6 + 9$



9. Classify biomedical polymer with suitable examples. Briefly discuss the uses of biodegradable polymer in biomedical field. What are the importances of passive film layer for tissue adhesion ? Name at least three synthetic polymeric membranes and their application.  $3 + 5 + 3 + 4$
10. a) Name four mechanical testings.  
b) Describe the tensile testing of a metallic biomaterial.  
c) What are the data one can get from such a test regarding the mechanical properties of the material ?  
d) What is fracture toughness ?  $4 + 5 + 4 + 2$
11. Discuss about the uses of Ti and its alloys in dental surgery. Which tests are to be performed for newer biomaterials before clinical trials ? Describe the following terms in the field of polymers :  
a) Syndiotactic  
b) Isotactic  
c) Atactic.  $5 + 6 + 4$
12. a) Name/classify different crystal systems.  
b) Name different crystal defects.  
c) What are the primary uses of metallic implant materials ? Mention the uses of 316L SS, Co-Cr alloy in orthopaedic and dental surgery.  
d) What are the possible biomedical uses of ceramics ?  
e) Why are ceramic materials more advantageous metallic implant ?  $3 \frac{1}{2} + 1 \frac{1}{2} + (2 + 3) + 2 + 3$
13. Write short notes on any *three* of the following :  $3 \times 5$   
a) Orthopaedic implants  
b) Pyrogenicity test  
c) Percutaneous and skin implants  
d) Haemolysis test.  
e) Standards of implant materials.