

(3 Hours)

[ Total Marks : 80

- N.B. :** (1) Question No. 01 is compulsory.  
 (2) Attempt any three questions from the remaining five.  
 (3) Figures to the right indicate full marks.

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|--------|--|----|
| 1. (a) | Classify Biomaterials and state their application.   | 5  |
| (b)    | What are thermoplastic and thermosetting resins?   | 5  |
| (c)    | Discuss applications of Bioglass.  | 5  |
| (d)    | Discuss wear of Biomaterials.  | 5  |
| 2. (a) | Explain properties and applications of stainless steel.  | 10 |
| (b)    | Explain properties and applications of Nitinol.  | 10 |
| 3. (a) | Classify polymers.   | 10 |
| (b)    | Discuss properties and applications of degradable polymers.  | 10 |
| 4. (a) | Explain properties of biomaterials used for sutures.   | 10 |
| (b)    | Explain biological testing of Biomaterials.  | 10 |
| 5. (a) | Explain Electron spectroscopy for chemical analysis (ESCA) technique to measure surface properties of biomaterial. | 10 |
| (b)    | Explain corrosion of biomaterials in detail.   | 10 |
| 6.     | Write short notes on:  | 20 |
| (a)    | Hydrogels.   |    |
| (b)    | PMMA.  |    |
| (c)    | Zirconia.  |    |
| (d)    | Composites.  |    |