

22219

12425

03 Hours / 70 Marks

Seat No.

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- Instructions* –
- (1) All Questions are *Compulsory*.
 - (2) Answer each next main Question on a new page.
 - (3) Illustrate your answers with neat sketches wherever necessary.
 - (4) Figures to the right indicate full marks.
 - (5) Assume suitable data, if necessary.
 - (6) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

1. Attempt any FIVE of the following:

10

- a) Enlist different forms of corrosion.
- b) List any two applications of Ti based alloys.
- c) List four uses of Biomaterials.
- d) Define the term Biocompatibility.
- e) State the need of Cardiac pacemaker.
- f) Suggest implants for following disorder -
To improve appearance of damaged eyes or to change colour
or to enhance eye colour.
- g) Give mechanical properties of teeth.

P.T.O.

- 2. Attempt any THREE of the following:** **12**
- a) Give the types of Polymeric chains with their neat sketches.
 - b) Draw a neat labelled structure of Bone.
 - c) Describe the concept of tissue grafting.
 - d) Draw a neat labelled diagram of stress-strain curve for ductile material and explain it.
- 3. Attempt any THREE of the following:** **12**
- a) Describe mechanical properties of stainless-steel.
 - b) Draw and explain the concept of teeth composition.
 - c) List any two materials used for the following implants.
 - i) Cardiovascular implants
 - ii) Ophthalmic implants
 - d) List any four applications of acrylic polymer.
- 4. Attempt any THREE of the following:** **12**
- a) Explain the factors involved that influence bone formation and resorption.
 - b) Give two properties and two applications of Zivconia.
 - c) List mechanical properties of Bone.
 - d) Enlist different materials used in contact lenses.
 - e) How to measure corrosion rate of metals. Explain any one in detail.
- 5. Attempt any TWO of the following:** **12**
- a) Describe in-vivo and in-vitro methods to test biomaterials.
 - b) Explain the followings:
 - i) Oral implants
 - ii) Dental implants
 - c) Enlist the different methods used for biomaterial surface characterization and explain any one in detail.

6. Attempt any TWO of the following:**12**

- a) Describe different thermal treatments in detail.
 - b) Describe knee joint with neat diagram and also explain the process of knee joint replacement.
 - c) Give any two properties and two applications of hydrogels and biodegradable polymer.
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