

# 22219

**11920**

**3 Hours / 70 Marks**

Seat No.

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- Instructions* –
- (1) All Questions are *Compulsory*.
  - (2) Illustrate you answers with neat sketches wherever necessary.
  - (3) Figures to the right indicate full marks.
  - (4) Assume suitable data, if necessary.
  - (5) Use of Non-programmable Electronic Pocket Calculator is permissible.
  - (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 various surface properties.
  - b) Enlist mechanical properties of stainless steel. (any four).
  - c) Enlist different types crystal structure of solids.
  - d) Define sterilization
  - e) Name the implant which is used in case of failure of SA node.
  - f) Enlist the materials used in contact lenses.
  - g) Give mechanical properties of Dental and Amalgum.
  
- 2. Attempt any THREE of the following:** **12**
  - a) State any four applications of Hydrogel polymers in biomedical field.
  - b) State mechanical properties of Bone.
  - c) List various types at catheters used in cardio vascular implants also list materials used for them.
  - d) Draw neat labelled stress - strain curve for ductile material and explain it.

P.T.O.

**3. Attempt any THREE of the following: 12**

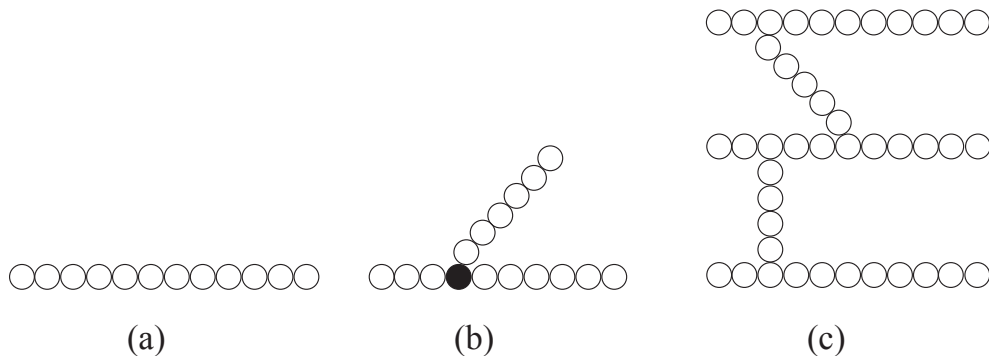
- a) Give any four mechanical properties of Ti based alloys.
- b) Describe various testing and evaluation process for different dental implants.
- c) List the properties of any two materials used for contact lenses.
- d) List any two properties and two applications of silicon rubber.

**4. Attempt any THREE of the following: 12**

- a) List the use of collagen in dentistry (any four)
- b) Give two properties and two applications of zirconia.
- c) List different factors affecting bone formation and bone resorption and their Role in Bone Formation and Resorption.
- d) Describe the concept of ophthalmic implants.
- e) List the materials used for following.
  - (i) Dental crown, bridges.
  - (ii) Bone Plates
  - (iii) Endosseous implants.
  - (iv) Screws.

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

- a) Describe testing method used to test biomaterials biologically.
- b) Describe the process of total hip replacement.
- c) Identify and write down the name of following polymer chain.



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[ 3 ]

**Marks**

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

**12**

- a) Describe different thermal treatments in detail.
  - b) Draw a neat labelled diagram of Bone. Describe the structure of osteon.
  - c) Draw labelled experimental setup for measurement of corrosion rate and give use of potentiometer in it.
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