22219

21718

3 Hours / 70 Marks Seat No. | | | | | | | | |

Instructions – (1) All Questions are *Compulsory.*

(2) Illustrate your answers with neat sketches wherever necessary.

(3) Figures to the right indicate full marks.

(4) Assume suitable data, if necessary.

(5) 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 stainless steel.

c) Enlist different types of biomaterials.

d) Define biocompatibility.

e) Enlist the materials used in sutures.

f) Name the implants which are related to fixation devices.

g) Give mechanical properties of teeth.

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

a) List any two properties and two applications of biodegradable polymers in biomedical field.

b) List any four mechanical properties of bone.

c) Describe different types of catheters in detail.

d) Describe in-vitro method used to test biomaterial biologically.

Marks

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

a) Give any four applications of Ti-based alloys.

b) Describe various testing and evaluation process for different dental implants.

c) Describe the concept of tissue grafting.

d) List any two properties and applications of silicon rubber.

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

a) Explain the use of collagen in detistry.

b) Give any two properties and two applications of biopolymers.

c) List and explain different factors affecting bone formation and bone resorption.

d) Describe different types of sutures.

e) Relate the following application with stainless steel alloy, Ti based alloys.

(i) Hip prostheses

(ii) Cardiac pacemaker

(iii) Bone plate

(iv) Screws

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

a) Describe different types of corrosion in detail.

b) Explain the process of total knee replacement.

c) Identify and write down the name of following polymer chain.

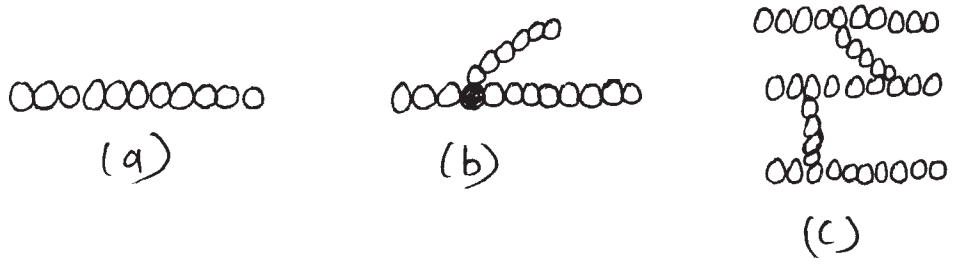

Fig. No. 1

Marks

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

a) Describe electrokinetic theory in detail.

b) Explain the process of total hip replacement.

c) Draw labelled experimental setup for measurement of corrosion rate and give use of potentiometer in it.
