17543

15162

3 Hours / 100 Marks Seat No. | | | | | | | | |

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. A) Attempt **any three.** **12**

a) Define :

1) Biomaterial

2) Biocompatibility.

b) Give classification of polymers. List biomedical application of polymers (any 4).

c) Draw labelled structure of kidney.

d) List four biomaterials used in dental implants.

B) Attempt **any one.** **6**

a) State the material used in filling and restoration in tooth. Give its mechanical properties.

b) Draw and explain structure of bone state factors affecting bone formation.

2. Attempt **any four** : **16**

a) Define contact angle and give Young's equation.

b) Describe invitro method used to test biomaterials biologically.

c) List properties of alumina (any 4).

d) Describe composition of titanium based alloys.

e) List four types of prostnetic heart-values and draw two among them.

f) List any four mechanical properties of teeth.

P.T.O.

Marks

3. Attempt **any four** : **16**

a) Give significance of biocompatibility.

b) Classify biomaterials in brief.

c) Give four bio applications of Zirconia.

d) Describe formation of blood clot.

e) Describe composition of materials used as bone substitute.

4. A) Attempt **any three** : **12**

a) Describe the crystal structure of solids.

b) Give significance of biocompatibility of polymers.

c) State different functions of lungs.

d) Explain hip orthosis.

B) Attempt **any one**. **6**

a) Give the structure of tooth. Compare the mechanical properties of enamel of dentin.

b) Explain total knee replacement.

5. Attempt **any four** : **16**

a) Define concept of corrosion and wear.

b) Draw labelled experimental setup used for measurement of corrossion rate. List any two effects that affect metallic implants on surrounding tissue.

c) Metals are less biocompatible than polymers. Justify your answer.

d) List four types of hip replacement devices and draw neat diagram of two.

e) Draw neat labelled stress-train curve for a ductile material.

f) State mechanical properties of bone.

6. Attempt **any four** : **16**

a) Draw fig. of bone heiling assisted by resorbable bone plate and describe.

b) State the function of eye shields and list polymers used for its manufacturing.

c) Classify electrometric lenses and state material used for the same.

d) State function of pacemaker. Give biomaterials used for different parts of cardiac pacemaker.

e) Draw neat labelled structure of heart.
