

GANPAT UNIVERSITY

B.Tech. Semester IV (BM&I), Regular April-June Examination 2015.

2BM 405 Biomaterials and Implants

Time:- 3 Hours

Marks:- 70

Instructions:

1. Answer to the questions must be written in separate answer books.
2. Figure to the right indicate marks.
3. Assume data, if needed.
4. Conventional terms / notations are used.
5. All the questions are compulsory.

SECTION-I

Q.1 [12]

- (a) Write a short note on the wear and corrosion properties of a metal implants.
- (b) Write a short note on tests for evaluation of biocompatibility.

OR

Q.1 [12]

- (a) Write a short note on physical and chemical properties of metals.
- (b) What is an alloy? Draw and explain the techniques to mix two metals.

Q.2 [11]

- (a) Draw and explain the tilting disc type mechanical heart valve.
- (b) What is cardiac pacemaker? Write a short note on types of pacemaker.

OR

Q.2 [11]

- (a) Explain briefly the applications of metals.
- (b) What is a stent? Write a short note on types of stents with rough sketch.

Q.3 [12]

- (a) Draw and explain the caged ball type mechanical heart valve.
- (b) Draw and briefly explain the different types of orthopedic implants.

SECTION - II

- Q.4.** [12]
- (a) Define Biomaterials. How Biomaterials differs from biological material? Mention the types of Biomaterials With its Examples And Applications.
- (b) What is Osseointegration? Differentiate Between the Endosteal Implant and Subperiosteal Implants.

OR

- Q.4.** [12]
- (a) Explain why the following uses of Bioaterials are not a good idea to implement.
1. Metal tube as Blood vessel replacement
 2. Ceramic as Skin graft
 3. Rubber pin to fix the bone fragments
- (b) Differentiate between Dental crown and Dental Bridges in terms of their Material and Application. Describe the Different Categories of Biomaterials used in Dentistry.

- Q.5.** [11]
- (a) How Nearly inert Ceramics Differs from Completely Resorbable Ceramics? Explain any one Nearly inert Ceramic in detail.
- (b) Mention the Parameters Determining the Physical Properties of Polymers. Is it possible to use Steam Sterilization technique for Polymers? Why? Which other techniques are used for Polymer Sterilization?

OR

- Q.5** [11]
- (a) Explain Any 3 Polymer Processing Techniques in Detail.
- (b) Explain Surface reactive ceramics in detail.

- Q.6.** [12]
- (a) Mention the required material characteristic for Eye Implants. Explain any 2 Eye Implants.
- (b) Explain Biocompatibly of Polylactic acid and Poly Glycolic Acid
Mention the function of following:
1. Dentine
 2. Iris
 3. Epikeratoplasty
 4. Glaucoma Implant

-----END OF PAPER-----