Registration No. : | | | | | | | | | | |

Total number of printed pages – 2

B. Tech

PEBT 5303

Sixth Semester Regular Examination – 2014

BIOMATERIALS

BRANCH : BIOTECH

QUESTION CODE : F 294

Full Marks – 70

Time : 3 Hours

*Answer Question No. **1** which is compulsory and any **five** from the rest.*
The figures in the right-hand margin indicate marks.

1. Answer the following questions: 2×10

   (a) Define ceramic materials.

   (b) List the three major mechanisms of adhesion.

   (c) List three general methods for the reinforcement of ceramics.

   (d) What is Biodegradable ceramics ?

   (e) What is the difference between elastic strain and plastic strain ?

   (f) What factors influence the dentin bond ?

   (g) Define following terms: Biocompatibility, Xenografts, Prosthesis, allografts.

   (h) What are the considerations for a biomaterial which is to be used as an orthopedic implant ?

   (i) What is surface corrosion ?

   (j) What are the characteristics of bioadhesives ?

2. (a) Enlist different biocompatibility factors and explain performance of Biomaterials. 5

   (b) Explain in detail the applications of polymers as a biomaterial. 5

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3. (a) Write a short Note : Titanium and Titanium alloys as biomaterial. 5

(b) Give the properties of Glass Ceramic and explain its applications. 5

4. List out different mechanical properties of materials and describe their importance when material is implanted in human body. 10

5. (a) Write a short note on pacemaker. 5

(b) Explain polymers as a drug delivery biomaterial in detail. 5

6. (a) Discuss briefly the physicochemical properties of polymers and relationship with structure, properties, kinetics, mechanisms and applications. 5

(b) Explain manufacturing process of Stainless steel based Implants. 5

7. (a) Explain surface properties of biomaterials and their testing. 5

(b) What are the considerations for a biomaterial which is to be used as an ophthalmology implant ? Add a note on different biomaterial used in for ophthalmology. 5

8. Write short notes on any **two** of the following : 5×2

(a) Biopolymer

(b) Hydrogels

(c) Pharmaceutical polymers

(d) Dental implants.