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

Total number of printed pages – 2

B. Tech

PEBT 5303 (New)

Sixth Semester (Back) Examination – 2013

BIOMATERIALS

BRANCH : BIOTECH

QUESTION CODE : B226

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) What are the backgrounds of FTIR ?

   (b) What do you mean by tissue engineering ?

   (c) Name two mechanical properties of biomaterials.

   (d) What is the kinetics involved in step growth polymerization of polymers ?

   (e) What do you mean by synthetic polymers ? Give two examples.

   (f) Define Xenograft.

   (g) Which one of the following has highest fracture toughness property ? (Metals, ceramics and polymers)

   (h) Define copolymer. Give one example.

   (i) What is biological incompatibility ?

   (j) What do you mean by artificial tissue ?

2. (a) Describe briefly about polymeric biomaterials. 5

   (b) Discuss the properties and kinetics of polymers for drug delivery system. 5

3. (a) What are metallic, polymeric and ceramic implant materials ? 5

(b) Looks at some recent techniques of testing and discusses the future development of fracture and wear resistant biomaterials. 5

4. Describe briefly biophysicochemical interactions at the biological interface. Give an account of forces governing the interfacial interactions between biomaterials and biological systems. 7+3

5. Discuss the design strategies of 2D and 3D matrices (scaffolds) of biomaterials for tissue engineering ? 10

6. (a) Differentiate between synthetic polymer and biopolymer. 4

(b) Discuss about structure and properties (mechanical, thermal, optical, electrical and surface) of biomaterials. 6

7. Write short notes any **four** of the following : 2.5×4

(a) Scaffolds

(b) Evaluation of biomaterials

(c) Hydrogels

(d) Hard tissue replacement

(e) Self-assembling peptides.