Exam.Code:0910
Sub. Code: 6718

1058
B.E. (Biotechnology), Sixth Semester
BIO-615: Biomaterials

Time allowed: 3 Hours Max. Marks: 50

NOTE: Attempt five questions in all, including Question No. I which is compulsory and selecting two questions from each Section.

x-x-x

1. i. What is fibronectin?
   ii. What are pyrogens?
   iii. Which cellular components are involved in graft rejection in the host?
   iv. What is polyurethane?
   v. What is the nature of biodegradable suture?
   vi. What is the nature of biodegradable skin suture?
   vii. What is type-I collagen?
   viii. How blood clotting is avoided in cardio-vascular stunt?
   ix. What is a proteoglycan?
   x. What is a condyle? 1 X 10 =10

Section-A

2a) What are biopolymers? Describe their biological properties and important applications in tissue engineering.
b) What are smart polymers? Give suitable examples and describe their applications in detail. 5, 5
3a) What are bio-inert ceramics? Describe their mechanical characteristics and broader applications.
b) What are bioresorbable ceramics? Describe their types, features and important applications. 5, 5
4a) What are metallic alloys and their diverse applications? How they are prevented from corrosion *in vivo*?
b) What are synthetic polymers? Describe the concept of hydrogel, copolymer and cross-linker in manipulation the structural features of the synthetic polymers. 5, 5

Section-B

5a) What is an extracorporeal device? What are its characteristics and how it may be helpful in the human liver failure cases?
b) What are blood substitutes? Give broader composition of blood and explain how cellular and soluble components of blood are involved in graft rejection? 5, 5
6a) What are orthopedic implants? Describe the anatomy of knee joint and medical conditions that need knee replacement.
b) What is are allograft and xenograft? How their survival in the host can be ensured? 6, 4
7a) What are dental restorative materials? Describe their types, characteristics and applications.
b) Describe the anatomy of a urinary bladder. How urological implants are helpful in restoration of impaired bladder functions? 5, 5

x-x-x