

Exam.Code:0910
Sub. Code: 6319

2053

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

I. Answer the following in 3-4 sentences only:-

- i. What is fibronectin?
- ii. What are advantages of titanium implants?
- iii. Which cellular components are involved in graft rejection in the host?
- iv. What is HA?
- v. What is the nature of soft eye lens?
- vi. What is the nature of a cardiac stent?
- vii. What is Type-IV collagen?
- viii. How blood clotting is avoided in a cardio-vascular stent?
- ix. What is a blood thinner? Give a suitable example.
- x. What is the composition of natural tears fluid?

1 X 10 = 10

Section-A

- || a. What are synthetic polymers? Describe the roles of monomer, co-polymer(s) and cross linker(s) in synthesis of synthetic polymers for tissue engineering.
- b. What are smart polymers? Give suitable examples and describe their major applications. 5, 5
- ||| a. What are bio-resorbable ceramics? Describe their types, features and important medical applications. 5, 5
- b. What are bio-inert ceramics? Describe their mechanical characteristics and broader applications. 5, 5
- ||| a. What are metallic alloys? How titanium alloys are beneficial in tissue repair and reconstruction?
- b. What are bio-polymers? Describe the role of PLA and PGA in tissue engineering. 5, 5

Section-B

- Va. What is an artificial lens? What is its composition and important characteristics for protracted functioning?
- b. What are blood substitutes? Give their broader composition, benefits and limitations, if any? 5, 5
- VIa. What is a temporary fixation device? How they are helpful in restoring tissue/ organ in a fatal injury?
- b. What is an allograft, autograft and a xenograft? How they are useful in restoring tissue structure after an injury? 5, 5
- VIIa. What are dental restorative compounds? Describe their nature, characteristics and applications.
- b. Describe the anatomy of a bone. How knee joint implants are helpful in restoration of impaired functions? 5, 5

x-x-x

