Exam.Code:0910
Sub. Code: 6718

(21)

1059

B.E. (Biotechnology) Sixth Semester

BIO-615: Biomaterials

me allowed: 3 Hours

Max. Marks: 50

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

x-x-x

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

a) What is smart scaffold?

b) What are soft contact lenses?

c) What is a tricuspid valve and its function?

d) What is the difference between gelatin and collagen?

e) What is the use of polyamide in tissue engineering?

f) What is the nature of biodegradable skin suture?

g) What are major soluble components causing metal corrosion in the host?

h) How blood clotting is avoided.in a cardiac stunt?

i) What is a condyle joint/junction?

j) What are major characteristics of an intra-ocular lens? (10x1)

## UNIT – I

II. a) What are biopolymers? Describe their types, important characteristics and medical applications.

b) What are metal alloy-based implants? Describe pro and cons of the cobalt-chromium alloys in tissue engineering. (2x5)

III. a) What are bio-inert ceramics? Describe prominent structural features and medical applications of bioresorbable ceramics in detail.

b) What is bioglass? Describe its nature, characteristics and major applications in tissue engineering. (2x5)

IV. a) What is a synthetic polymer? How its porosity, swelling capacity and strength are manipulated? Describe the method(s) of synthesis of perfluorinated polymers.

b) What are biomaterials? What properties are built into them to reconstruct soft/ adipose tissue? (5,5)

P.T.O.

## UNIT – II

V. a) What are graft *versus* host immune responses? How they can be overcome in case of artificial implants?

b) What are blood substitutes? Describe their important properties and applications. (5,5)

VI. a) What is an orthopedic implant? Describe its major types, features and medical applications.

b) What is a pace maker? What function it provides to the patient?

VII. a) What are filling and dental restorative materials? How such implanted materials can be kept safe to pro log their life?

b) Describe anatomy of the heart? Which material(s) are used for reconstruction and replacement of cardiac vascular structures and valves? (4,6)

*x-x-x*