Exam.Code:1033
Sub. Code: 7573

2063

M. E. (Biotechnology) Second Semester

Elective – II

MEBIO-205 (a) : Advances in 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 Unit.*

x-x-x

I. Answer the following questions briefly:-

(a) Explain one technique to prevent thrombosis in cardiovascular implants.

(b) Define foreign body reaction.

(c) Draw a unit cell for FCC.

(d) What are the types of bonds present in ceramics?

(e) Name two synthetic polymers used in facial implants.

(f) Define yield point.

(g) What are the different phases of composite material?

(h) Give composition of blood clot.

(i) Define corrosion.

(j) Give two examples of dental implant. (10x1)

UNIT - I

II. Compare the stress strain curve in metals, ceramics and polymer and discuss role of chemical bonding in defining stress strain behavior. (10)

III. a) Explain structure, properties and biomedical applications of alumina.

b) Give classification of titanium alloys. Explain the role of alloying elements in modulation of properties of titanium alloys. (2x5)

IV. Write short note:-

a) Influence of constituent materials on properties of composite

b) Surface reactions of bioactive glass in biological fluids (2x5)

UNIT - II

V. a) Explain the in-vivo biocompatibility testing techniques utilized for biomaterials.

b) Elucidate the mechanism of fatigue crack growth in biomaterials. (2x5)

P.T.O.

VI. Discuss properties and application of various biomaterials for hard tissue repair and regeneration. (10)

VII. a) Explain the series of events triggered by blood biomaterial interaction.

b) Explain fabrication and application of different type of drug delivery systems. (2x5)

x-x-x