

2054
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. 1 which is compulsory and selecting two questions from each Section.

x-x-x

1.	<p>Answer briefly-</p> <ul style="list-style-type: none"> a) Define yield point. b) What is the coordination number and number of atoms in bcc unit cell. c) Explain pitting corrosion. d) Give composition of nitinol. e) Give advantage of hydrogels as drug delivery agents. f) Explain the role of surface energy in cell adhesion. g) Give two examples of skin implants. h) Why is nickel added to steel. i) Name two orthopedic implants. j) What is the shape of stress-strain curve of elastin? 	(10)
<p>SECTION A (Attempt any Two)</p>		
2.	Explain the crystal structure and stress strain curve for alumina. Explain the effect of chemical bonding and crystal structure on its stress strain curve.	(10)
3.	Differentiate between austenitic, ferritic and martensitic steel on basis of composition, mechanical properties and applications.	(10)
4(a)	Explain the process of Thermogravimetric analysis of polymers.	(5)
(b)	Explain the matrix and reinforcement phases of composite materials. How do they influence the mechanical properties of composites	(5)
<p>SECTION B (Attempt any Two)</p>		
5.	Explain the use of biomaterials to treat diseases of the heart and blood vessels. How is the blood compatibility of biomaterial maintained.	(10)
6.	<p>Write short note-</p> <ul style="list-style-type: none"> a) Active and Passive Targeting in drug delivery b) Foreign body reaction to biomaterials 	(5,5)
7a	Explain the techniques for in vivo testing of biomaterial for tissue compatibility.	(5)
b	Explain the fatigue fracture and wear in orthopedic implants.	(5)

x-x-x