Exam.Code:1033
Sub. Code: 35403

2015

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 Section

x-x-x

1.	Answer briefly- a) Give composition of martensitic steel. b) Define fibrosis. c) Define Young's modulus. d) How can you vary the degradation rate of polymer. e) What are bioactive ceramics. f) Explain the term- corrosion. g) Draw a unit cell of HCP crystal. h) Name any two biomaterials used for targeted drug delivery, i) Which alloying element is used to stabilize alpha titanium. j) Give two factors contributing to orthopedic implant wear.	(10)
	SECTION A **(Attempt any Two)**	
2(a)	Elucidate structure, properties, and biomedical applications of pyrolytic carbon.	(5)
(b)	Explain the stress strain curve for characterization of mechanical properties of biomaterials.	(5)
3.	Write short note- a) Differential Scanning Calorimetry analysis of biomaterials b) Biomedical applications of biodegradable polymers	(5,5)
4.	Explain the properties and applications of bioactive and bioresorbable ceramic materials currently employed to repair and reconstruct diseased or damaged tissues.	(10)
	SECTION B **(Attempt any Two)**	
5(a)	Explain any two techniques for surface coating of dental/orthopedic implants. How does it improves the interaction between implant and the host tissue.	(5)
(b)	Discuss the critical requirements of bone tissue engineering scaffolds. Give suitable examples.	(5)
6(a)	Elucidate the use of hydrogels as drug delivery agent. Discuss their drug releasing mechanism.	(5)
(b)	Explain the in vitro cytotoxic testing techniques for biomaterials .	(5)
7.	Explain the inflammatory response of host to implanted biomaterial. Discuss the factors regulating the inflammation.	(10)

x-x-x