## **GUJARAT TECHNOLOGICAL UNIVERSITY**

ME - SEMESTER-I(New course) • EXAMINATION - WINTER- 2015

Subject Code: 2713110  Subject Name: Advance biomaterials  Time: 2:30 pm to 5:00 pm  Instructions:  Date: 04/0  Total Ma			Date: 04/01/2016	
		rks: 70		
		Attempt all questions.  Make suitable assumptions wherever necessary.		
Q.1	(a) (b)	Write a short note on surface properties of biomaterials. How mechanical properties affect the durability of bio implants.	07 07	
Q.2	(a)	Give the name of three polymers with formula of monomer and its biomedical used.	07	
	<b>(b)</b>	Explain heat sterilization process with necessary schematic.  OR	07	
	<b>(b)</b>	Write a short note on Ethylene oxide based chemical sterilization process.	07	
Q.3	(a)	Give the composition of titanium based alloys. Where it is used in medical implants?	07	
	<b>(b)</b>	Define surface reactive ceramics. Give name of surface reactive ceramics and explain any one in details.	07	
		OR		
Q.3	(a)	What is shape memory phenomena? Explain role of NITINOL material in medical field.	07	
	<b>(b)</b>	Define resorbable ceramics. Give name of such ceramics and explain any one in details.	07	
Q.4	(a)	Explain biomaterials degradation in the biological environment.	07	
	<b>(b)</b>	Discuss biocompatibility related issues of materials and tissues reactions.  OR	07	
Q.4	(a)	Enlist the Factors Affecting Biodegradation Phenomena and discuss any two in details.	07	
	<b>(b)</b>	Explain design aspects of any two prosthetic valves.	07	
Q.5	(a) (b)	Give name of dental implants and discuss their chemical composition selection. Explain role of polymer in drug delivery system.	07 07	
O 5	(a)	OR Write a short note on commercialization and legal aspects of biomaterials	07	
Q.5	(a)	implant design.	07	
	<b>(b)</b>	Give design aspects of contact lens with their material selection.	07	

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