Seat No.:	Enrolment No.

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-V(New) • EXAMINATION – WINTER 2016

Subject Code:2150301		ode:2150301 Date:24/3	Date:24/11/2016	
Sub	ject N	ame:Biomaterials & Implants		
Time: 10:30 AM to 01:00 PM		80 AM to 01:00 PM Total M	arks: 70	
Instr	uctions:			
	1. A	Attempt all questions.		
	2. N	Make suitable assumptions wherever necessary.		
		Figures to the right indicate full marks.		
Q.1 S	hort Qu		14	
	1	Define Implants.		
	2	Name biodegradable ceramics.		
	3	What is biocompatibility?		
	4	Explain osseointegration.		
	5	Define vascular grafts.		
	6	Which biomaterial is used for synthetic blood vessels?		
	7	What are thermosets.		
	8	What type of material is used in bone plate?		
	9	Name reabsorbable ceramics.		
	10	What do you understand by shape memory property?		
	11	Give difference between autograft and allograft.		
	12	Which biomaterial is used in maxillofacial implant?		
	13	Give application of tissue Adhesive.		
	14	Name prosthetic heart valves.		
Q.2	(a)	State mechanical properties of stainless steel.	03	
Q. <i>2</i>	(b)	Explain in short Dental Amalgam.	03	
	(c)	Explain corrosion of metals illustrating electrochemical reaction. OR	07	
	(c)	Which is surface reactive ceramics? Explain its structure and its application.	07	
Q.3	(a)	Explain the three distinct phases of coagulation.	03	
	(b)	Short note on Zirconia.	04	
	(c)	Explain surface properties of biomaterial. OR	07	
Q.3	(a)	What is nanomaterial?	03	
	(b)	Explain how ceramics are used for drug delivery.	04	
	(c)	Explain the effect of blood material interaction.	07	
Q.4	(a)	Enlist types of contact lenses.	03	
	(b)	Explain polymerization process.	04	
	(c)	List the methods for biomaterial testing and explain it. OR	07	
Q.4	(a)	Give application of PMMA.	03	
	(b)	Enlist the factors responsible for orthopedic implant failure.	04	
	(c)	Explain intraocular lens implant with schematic diagram.	07	
Q.5	(a)	Explain difference between bioinert and bioactive biomaterials.	03	
	(b)	Explain hydrogel.	04	
	(c)	Explain all the components of total hip replacement. OR	07	
Q.5	(a)	Give application of composite.	03	
	(b)	Explain cellular activity of bone healing.	04	
	(c)	Explain types of cardiovascular implants	07	
