Seat No.:	Enrolment No.

GUJARAT TECHNOLOGICAL UNIVERSITY BE - SEMESTER-VII(NEW) • EXAMINATION – WINTER 2016

Subject Code: 2170311 Subject Name: Biomedical Micrograftems (Department 1			Date:25/11/2016	
Ti	•	t Name: Biomedical Microsystems (Department Elective - II) 0.30 AM to 1.00 PM Total Marks: 7 ons:	70	
	1. 2. 3.	To a series of the series of t		
Q.1	(a)	Which are different types of substrates used in MEMS? Explain Czochralski Growth Process with neat diagram and equations.	07	
	(b)	Explain Lithography process with neat diagram and equations. Photo resist is made up of which type of compounds?	07	
Q.2	(a) (b)	What is significance of Lift off process? Explain it in detail. What is difference between MEMS and Microelectronics? Give different MEMS applications.	07 07	
	(b)	OR Explain different techniques used for Wafer bonding. Which is better? Why?	07	
Q.3	(a)	Which are dominant MEMS fabrication technologies? Explain them. Which is best suited to industry & why?	07	
	(b)	Explain LIGA. Explain design steps of LIGA electromagnetic micro drive. OR	07	
Q.3	(a)	Explain Sacrificial surface micromachining technique. Which is the different material systems associated with it? Explain them in short.	07	
	(b)	Explain Bulk Micromachining technique with neat figure.	07	
Q.4	(a)	Explain Electron tunneling phenomenon. How it is used for transduction principle?	07	
	(b)	Explain MEMS based accelerometers in detail. OR	07	
Q.4	(a)	Write note on biosensor arrays and implantable devices.	07	
	(b)	Explain delivery of diagnostic and therapeutic agents to vascular targets.	07	
Q.5	(a) (b)	Explain sensor noise from MEMS point of view. Explain how MEMS are used in oral drug delivery systems.	07 07	
0.5	(e)	OR Evoluin MEMS based chemical cansors	07	
Q.5	(a) (b)	Explain MEMS based chemical sensors. Explain material doping for MEMS.	07	
