Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VIII • EXAMINATION – SUMMER 2013

Subject Code: 180303 Date: 09/05/2013

Subject Name: Biomedical Microsystems

Time: 10:30 am TO 01:00 pm Total Marks: 70

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q.1	**(a)**	What is MEMS? List various medical applications of MEMS.	**07**
	(b)	What are the current fabrication and packaging challenges for MEMS?	**07**
Q.2	**(a)**	Differentiate physical vapor deposition and chemical vapor deposition.	**07**
	(b)	Explain chemical mechanical polishing in fabrication of MEMS.	**07**
		OR	
	(b)	Discuss the steps involve in fabrication of MEMS.	**07**
Q.3	**(a)**	What is LIGA? Explain its main processing steps.	**07**
	(b)	Discuss the scaling of electrostatic actuators.	**07**
		OR	
Q.3	**(a)**	List various MEMS analyzer. Explain any one in detail.	**07**
	(b)	What is thermo-elastic damping in MEMS?	**07**
Q.4	**(a)**	Explain thermal actuation of MEMS.	**07**
	(b)	What is biosensors? List applications of biosensors.	**07**
		OR	
Q.4	**(a)**	Discuss the overview of 4 levels of microsystem packaging.	**07**
	(b)	With Schematic representation, discuss the protocol for in vivo phage screening and homing peptide characterization..	**07**
Q.5	**(a)**	Discuss the applications of Quantum dots (QDs) for ó*In Vivo* live animal imagingô	**07**
	(b)	What are the major challenges in controlled drug delivery? Explain *Photothermally-modulated* drug delivery using *Nanoshell- Hydrogel Composites*. .	**07**
		OR	
Q.5	**(a)**	Explain schematic of the biocapsule assembly and loading.	**07**
	(b)	What are the current challenges in drug delivery? Explain bioadhesion in the gastrointestinal tract.	**07**

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