Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

M. E. - SEMESTER – III • EXAMINATION – WINTER • 2013

Subject code: 734202 **Date: 28-11-2013**

Subject Name: IC Fabrication Technology

Time: 10:30 am – 13:00 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)**	List down the steps for preparation of wafer and explain each in brief.	**07**
	(b)	Explain the different crystalline orientation for wafer in detail.	**07**
Q.2	**(a)**	Explain the different types of wafer based on wafer cut.	**07**
	(b)	What is clean room why it is needed?	**07**
		OR	
	(b)	What is Etching? Explain plasma etching.	**07**
Q.3	**(a)**	List down the steps for preparation of IC and explain each in brief.	**07**
	(b)	Explain need of shallow junction in smaller geometry devices for VLSI Design?	**07**
		OR	
Q.3	**(a)**	Give the classifications of clean room.	**07**
	(b)	Which resist is used in Electron-Beam Lithography? Explain Electron-Beam Lithography.	**07**
Q.4	**(a)**	Explain RF magnetron sputtering to deposit Al alloys for shallow junction device.	**07**
	(b)	Give comparison between Positive and Negative resist.	**07**
		OR	
Q.4	**(a)**	What is metallization? Explain PVD.	**07**
	(b)	Explain role of O_2 in furnace diffusion process. Explain Solid Solubility.	**07**
Q.5	**(a)**	Explain the types of contamination present in clean room.	**07**
	(b)	What is oxidation? Why it is needed?	**07**
		OR	
Q.5	**(a)**	Explain different Oxidation Induced Effects	**07**
	(b)	Why alignment is necessary in photolithography. Describe alignment techniques for mask layers.	**07**

****