

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 O₂ 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**
