

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY
M. E. - SEMESTER – I • EXAMINATION – SUMMER • 2013

Subject code: 713006N

Date: 06-06-2013

Subject Name: Nano-Devices Fabrication Technology

Time: 10.30 am – 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) Explain construction and working of Czochralski crystallizer with neat diagram. 07
(b) Discuss cutting and Polishing of Silicon wafers. What the flats? Discuss requirement of flats for P⁺ and n⁺ type junctions. 07
- Q.2** (a) What is Epitaxy? What is homoepitaxy and heteroepitaxy? Explain Epitaxial growth. 07
(b) Discuss Molecular beam Epitaxy. 07
- OR**
- (b) Discuss reactors used for Epitaxial growth. 07
- Q.3** (a) Explain the reaction mechanism in CVD, choosing any suitable example. 07
(b) Discuss growing of Silicon over Amorphous substrate. 07
- OR**
- Q.3** (a) Discuss the construction and working of Reactors used for Physical vapor deposition. 07
(b) What is Etching? Differentiate Dry and Wet Etching. 07
- Q.4** (a) Discuss Passivation. How Passivation is accomplished? 07
(b) What is zone refining ? How and why it is performed? 07
- OR**
- Q.4** (a) Write short note on Optical projection Lithography. 07
(b) Discuss Electron beam Lithography. 07
- Q.5** (a) Discuss Sol-Gel technique for making Nano-Wires. 07
(b) Discuss with diagram steps used for making Nano-Device. 07
- OR**
- Q.5** (a) Discuss construction and working of LPCVD. 07
(b) AFM in Nano technology. 07
