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First Semester M.Tech. Degree Examination, Dec.2014/Jan.2015
VLSI Process Technology

Time: 3 hrs.

Max. Marks: 100

Note: Answer any FIVE full questions.

- 1
 - a. Explain the production of electronic grade silicon from the hydrogen reduction of trichlorosilane. (08 Marks)
 - b. With a neat diagram, explain the crystal growing approach by Czochralski process. (08 Marks)
 - c. Why silicon wafer clearing is necessary before any processing steps. (04 Marks)
- 2
 - a. What is epitaxy? Discuss any one type of epitaxy method. (06 Marks)
 - b. Explain the CVD techniques used for deposition of polysilicon. (06 Marks)
 - c. What are the various processes used in SOI? (04 Marks)
 - d. What are the advantages of SOI process? (04 Marks)
- 3
 - a. What is photo lithography? Explain any two lithographic techniques. (08 Marks)
 - b. Explain Ion Beam lithography process. (08 Marks)
 - c. List and compare different types of lithography techniques. (04 Marks)
- 4
 - a. Why is higher degree of anisotropy required in VLSI fabrication? (08 Marks)
 - b. Explain briefly Reactive plasma etching. (08 Marks)
 - c. Briefly explain specific etch processes. (04 Marks)
- 5
 - a. Explain briefly oxidation of polysilicon. (08 Marks)
 - b. Explain briefly the ION implantation technique. (08 Marks)
 - c. What is annealing and why is it required in IC fabrication process? (04 Marks)
- 6
 - a. Explain the possible metallization choices and properties of various metallization. (12 Marks)
 - b. Explain metallization and also describe the problems associated with the processes. (08 Marks)
- 7
 - a. Briefly explain the fabrication process sequence of CMOS IC'S. (08 Marks)
 - b. Explain the MOS memory IC technology. (08 Marks)
 - c. What are the special considerations for Bipolar IC's? Explain. (04 Marks)
- 8

Write short note on :

 - a. Package design considerations
 - b. Package types
 - c. X – ray lithography
 - d. Photoresist. (20 Marks)