Reg. No. | | | | | | | | | | | |

Question Paper Code : 61924

M.E. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2015.

Elective

VLSI Design

VL 9256/VL 956/ 10244 VLE 32 – VLSI TECHNOLOGY

(Regulation 2009/2010)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Why SiO_2 is an important component in electronics?

2. What are the factors should be considered to evaluate the Epitaxial evaluation?

3. Compare anisotropy and isotropy etching.

4. How can you control Anisotropy?

5. What do you mean by sputtering? How it is used in etching and metallization?

6. What do you mean by Annealing?

7. Write the significance of threshold adjusting in MOS fabrication.

8. What is plasma? Draw an equivalent circuit for RF plasma discharge.

9. State the purpose of packaging of VLSI device.

10. What is Assembly technique? Give its applications.

PART B — (5 × 16 = 80 marks)

11. (a) (i) Explain briefly about the process of Silicon Wafer Fabrication using Czochralski Method. (10)

(ii) Why cleaning of silicon wafer is necessary before any processing steps? (6)

Or

(b) (i) What is Epitaxy? Discuss briefly about Molecular Beam Epitaxy technique. What are the advantages of MBE? (10)

(ii) Compare wet oxidation with dry oxidation. Why wet oxides are faster than dry oxides? (6)

12. (a) Explain about feature size control and Anisotropic Etch mechanism. (16)

Or

(b) (i) Discuss about the common plasma etching techniques in detail. (10)

(ii) List and compare different types of lithography techniques. (6)

13. (a) (i) Explain about chemical vapour depositions techniques used for deposition of polysilicon. (10)

(ii) List all process steps of pattern transfer with diagram. (6)

Or

(b) Derive the diffusion equation. How the depth of diffusion is controlled during diffusion process? Give the solution of Fick's Law? (16)

14. (a) (i) Briefly explain about the various fabrication steps of CMOS transistor using in well technique with diagram. (10)

(ii) Compare ion implantation process with diffusion. (6)

Or

(b) (i) Describe the masking sequence and process flow for BIPOLAR devices. (8)

(ii) What is etching? Describe about wet etching for silicon with all steps. (8)

15. (a) Write a short note on VLSI assembly technologies. Describe the different VLSI assembly technologies. (16)

Or

(b) What are the Package types in VLSI? Explain about various types of package fabrication technology. (16)