

TEC-503

1207

Odd Semester Examination 2018-19

B.TECH.(EEE/EN) (SEMESTER-V)

VLSI TECHNOLOGY

Time: 03:00 Hours

Max Marks :100

Note: Attempt all questions. All questions carry equal marks.

1. Attempt **any four** of the following:

(5x4=20)

- (a) Discuss different types of Integrated Circuits.
- (b) Explain the effect of orientation of crystals in the fabrication process. Which orientation is preferred in VLSI ?
- (c) Explain four point probe technique to measure resistivity.
- (d) Explain Czochralski Crystal growing method.
- (e) Explain various kinds of charge present in oxide and oxide Si interface.
- (f) Discuss the Silicon Oxidation model described by Deal and Grove.

2. Attempt **any four** of the following:

(5x4=20)

- (a) What is range theory? How does it affect the implantation?
- (b) Explain MBE process. Also write its advantages and disadvantages.
- (c) Derive the diffusion equation and solution of it.
- (d) Explain Ion Implantation Process. Why it is preferred over other diffusion process for doping?
- (e) What is Epitaxy? Discuss the types of epitaxy method.
- (f) Explain various types of diffusion systems with the help of suitable diagram.

3. Attempt **any two** of the following: (10x2=20)

- (a) Compare Optical, X ray and Ion beam lithography
- (b) What do you mean by Etching? Differentiate between Dry and Wet etching. What are the factors affecting etch rate?
- (c) What is the requirement of Photo resist? Which photo resist is preferred for better resolution and why?

4. Attempt **any two** of the following: (10x2=20)

- (a) Explain the fabrication steps involved in CMOS IC using p well technology. How it differ from other technology?
- (b) What is metalization? Describe the problems associated with this process.
- (c) Explain PVD and CVD method. Also explain different types of system used in PVD

5. Attempt **any two** of the following: (10x2=20)

- (a) What is Packaging? Explain its types and packaging design consideration.
- (b) Describe the different VLSI assembly technologies. What is yield loss in VLSI ?
- (c) Write short note on -
 - (i) VLSI Assembly Technologies
 - (ii) Accelerated Testing

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