



(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : 131854

Roll No.

--	--	--	--	--	--	--	--	--	--

B. Tech.

(SEM. VIII) THEORY EXAMINATION, 2014-15
INTEGRATED CIRCUIT TECHNOLOGY

Time : 3 Hours]

[Total Marks : 100

Note : All questions are compulsory:

1 Attempt any four parts: **5x4=20**

- (a) What is Moore's law? Describe the terms SSI, MSI, VLSI and ULSI.
- (b) Describe the process to obtain Electronic Grade Silicon along with the proper diagram.
- (c) What is Czochralski method? Explain it.
- (d) What is Epitaxy and how it is different from Czochralski process? Differentiate between homo and hetro epitaxy.
- (e) Explain Molecular beam epitaxy along with its advantages and disadvantages.
- (f) What is the concept of silicon on insulator? Explain it.

2 Attempt any four parts :

5x4=20

- (a) Why oxidation is done in CMOS technology? Explain.
- (b) Explain the silicon oxidation model.
- (c) What is Lithography and what are its different types?
- (d) Explain various oxidation techniques along with their advantages and disadvantages.
- (e) What are the different types of photoresist used in optical lithography? Explain their properties.
- (f) Explain Hot-wall reduced pressure CVD reactor used for deposition purpose.

3 Attempt any two parts :

10x2=20

- (a) What is diffusion? Explain Fick's one dimensional diffusion equation along with the solutions.
- (b) What is ion implantation? Explain along with the proper diagram. What is annealing and why it is done?
- (c) What is sheet resistance? Explain four-point probe technique of measuring the sheet resistance.

- 4** Attempt any two parts: **10x2=20**
- (a) What are the device properties of metallization for integrated circuits? What is multi level metallization and its advantages.
 - (b) What are the different package types used for VLSI devices? What are the different packaging design considerations?
 - (c) Explain the physical vapour deposition method along with the proper diagram.

- 5** Attempt any two parts : **10x2=20**
- (a) Explain the steps of fabrication process for NMOS IC technology.
 - (b) What are the special considerations for the fabrication of CMOS ICs?
 - (c) Discuss in detail the monolithic and hybrid integrated circuits.
-