Printed Pages : 3

EEC034

(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.