Roll No. ..... Total Pages : 2

BT-5/D-20 **45110**

VLSI TECHNOLOGY
Paper–ECE-305 N
Opt. (I)

Time : Three Hours] [Maximum Marks : 75

Note : Attempt *five* questions, selecting at least *one* question from each unit.

UNIT–I

1. (a) List and discuss various steps in preparing wafers from raw silicon. 08

(b) Why (100) orientation is preferred over (111) orientation for starting material in NMOS/CMOS ICs fabrication? 03

(c) Draw and explain the fabrication process steps of p-n diode. 04

2. (a) Draw and explain cleanroom layout for a fully automatic IC lab. 08

(b) Describe RCA cleaning method. 07

UNIT–II

3. (a) Differentiate between thermal oxidation and CVD oxidation. 08

(b) Explain various isolation techniques in VLSI circuits. 07

4. (a) Describe growth mechanism and kinetics in detail. 08

(b) List and explain oxide properties. 07

UNIT–III

5. (a) Write and explain Fick's ID diffusion equations. 08

(b) Describe C-V and differential conductivity measurement techniques. 07

6. (a) Explain various atomic diffusion mechanisms. 08

(b) Why Ion implantation is preferred over diffusion for impurity doping? 07

UNIT–IV

7. List and compare different types of advanced lithography techniques. 15

8. Draw and explain various steps involved in fabrication process of NMOS. 15