

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
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