

7E4047	Roll No. : _____	Total Printed Pages : 3
	7E4047	
B. Tech. (Sem. VII) (Main) Examination, December-2012		
Electronics & Comm.		
7EC4 I.C. Technology		

Time : 3 Hours]

[Maximum Marks : 80
[Min. Passing Marks : 24

Attempt any five questions. Selecting one question from each unit. All questions carry equal marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly. Units of quantities used / calculated must be stated clearly.

Use of following supporting material is permitted during examination.
(Mentioned in form No. 205)

1. _____ Nil _____

2. _____ Nil _____

1 (a) Discuss Czochralski Groth in details and draw the schematic diagram.

8

(b) Explain the term Electronic Grade Silicon. Draw the schematic diagram of the production of EGS and describe the method.

8

OR

1 (a) What are the various steps for wafer preparation ? Explain each in detail.

8

(b) Find the concentration of Boron in crystal at fraction solidified of 0.4, if solid concentration (C_s) at fraction solidified 0.05 is 2×10^{18} atoms/cm³ and segregation coefficient is 0.8.

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2 (a) Show analytic solutions of fick's law and explain the correction in this theory.

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- (b) With the help of schematic diagram of ion-implantation machine, explain the process.

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OR

- 2 (a) What is thermal oxidation ? Explain Deal Grove model of oxidation. Also discuss Linear and parabolic rate coefficients of oxidation.

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- (b) Arsenic is diffused in silicon with a doping concentration of 5×10^{15} atoms/cm³. Arsenic doping assumes a profile of Gaussian type. Arsenic is diffused for 30 minutes and a junction depth of 20 μm is achieved with a surface concentration of 2×10^{18} per cm³. Find the diffusivity of arsenic.

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- 3 (a) What is Chemical Vapor Deposition (CVD) ? Compare CVD with Vapor phase epitaxy.

6

- (b) Explain LPCVD (Low Pressure Chemical Vapor Deposition) system, with horizontal and vertical chambers.

6

- (c) Compare LPCVD with APCVD (Atmospheric Pressure Chemical Vapor Deposition).

4

OR

- 3 (a) Explain Molecular Beam Epitaxy.

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- (b) What do you mean by Epitaxy ? Explain vapor phase epitaxy and defects in epitaxial growth.

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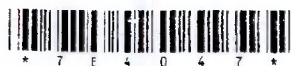
- 4 (a) What is optical lithography ? Explain proximity printing and compare it with contact and projection printing.

8

- (b) Compare Wet Etching with Plasma Etching.

8

OR



- 4 (a) What is a photoresists ? Discuss types of photoresists and components of photoresists. 8
- (b) Explain reactive ion etching process with suitable diagram. 8

- 5 (a) Explain NMOS fabrication process sequence with the help of neat sketch. 8
- (b) Explain LOCOS method and SWAMI isolation. 8

OR

- 5 (a) Discuss metallization applications and choices for metallization. 8
- (b) Explain Bipolar IC fabrication process sequence with the help of neat sketch. 8

