

Roll No. _____

Total Pages : 2

5th Sem. Electronics

8957

BT-5/D05

MICROELECTRONICS

PAPER - ECE-309E

Time : 3 Hrs.

Maximum Marks : 100

Note : Attempt any five questions in all, selecting at least one question from each unit.

UNIT-I

1. a. Using suitable diagrams, explain Czochralski's crystal growth method for Si. 15
- b. List the steps involved in obtaining Si wafers from Si Crystals. 5
2. a. How does Si Oxidation take place ? Explain the kinetics involved in it. 10
- b. Explain the sputtering technique used for thin film deposition. 10

SECTION-II

3. Explain the process of Photo-lithography. What is the role of positive and negative Photo-resist in Photolithography ? 20
4. a. What is reactive plasma etching ? How is it different from the wet etching ? Explain. 10
- b. How is anisotropic etching useful in designing feature size? 5
- c. How is isotropic etching different from anisotropic etching? 5

SECTION - III

5. a. How does diffusion of atoms take place in solids ? (5th sem. Electronics) 42

- Explain the mechanism involved. 15
- b. Write Fick's ID diffusion equation and explain its significance. 5
6. a. Explain the behaviour of a -
(i) Group III and
(ii) Group V
impurities in Si. 10
- b. How is ion-implantation done ? What is the role of acceleration voltage and the size of ion in ion-implantation? 10

SECTION - IV

7. a. Explain the steps involved in bipolar IC fabrication. 15
- b. What are MEMS ? What are their applications ? 5
8. a. Explain the steps involved in CMOS IC fabrication. 15
- b. What is the role of IC packaging ? What factors should be kept in view while packaging an IC ? 5

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