

8E8021

Roll No _____

Total No of Pages: **3****8E8021****B.Tech. VIII-Sem (Main & Back) Exam September 2020
Electronics & Communication Engg.
8EC1A IC Technology****Time: 2 Hours**www.ersahilkagyan.com**Maximum Marks: 48
Min. Passing Marks: 16****Instructions to Candidates:**

Attempt three questions, selecting one question each from any three 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. NIL2. NIL**UNIT-I**

- Q.1 (a) What is Gettering? Why surface cleaning is required before processing of Si wafer? Write the methods RCA and Piranha for wet processing terminology. [10]
- (b) What are crystal defects? Explain various types of crystal defects in brief. [6]

QB

- Q.1 (a) What do you understand by resistivity? Explain a technique for irregular size sample resistivity measurement. [8]
- (b) A thin film window de-icer resistor meanders over a length of 5m and is 1mm wide. It is designed to deliver a total power of 5W, employing a 12V power source. For a 5000Å thick film, what sheet resistance is required? [8]

UNIT- II

- Q.2 (a) State the difference between diffusion and ion implantation. [6]
- (b) What is the difference between dry and wet oxidation? Explain a process for SiO₂ synthesis. [10]

OR

- Q.2 (a) Explain Fick's diffusion equation in one dimension. [8]
- (b) What are the factors which affect the diffusion profile? Explain one of the diffusion profile measurement technique also. [8]

UNIT- III

- Q.3 (a) Explain the following with respect to epitaxy- [10]
- (i) Homoepitaxy
 - (ii) Hetroepitaxy
 - (iii) Defects in epitaxial growth
 - (iv) Auto doping
- (b) Explain gas transport mechanism in CVD briefly. [6]

OR

- Q.3 (a) Discuss about the hot wall reactor and cold wall reactor of LPCVD system. [6]
- (b) What are the differences between growth mechanism of MOCVD and MBE? [4]
- (c) Explain a technique for synthesis of GaAs homoepitaxy layer. [6]

UNIT- IV

Q.4 Define following terms with respect to optical lithography- [16]

- (a) Resolution
- (b) DOF
- (c) Modulation Transfer Function (MTF)
- (d) Optical proximity compensation

OR

- Q.4 (a) What is photoresist? Explain the difference between negative and positive photoresist with suitable example. [8]
- (b) What are the applications of dry etching? [4]
- (c) Distinguish between proximity, contact and projection printing. [4]

UNIT- V

Q.5 Write short note on following- (Any two) [16]

- (a) SOI
 - (b) CMOS IC technology
 - (c) Latch up problem
 - (d) Fault diagnosis and characterization technique
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