

30/11/15

QP Code : 5901

ETRX

ICT

Max. Marks: 80

Time: 3 Hours.

N.B.

- 1) Question No. 1 is compulsory
- 2) Solve any three questions from remaining questions
- 3) Assume suitable data if necessary

1. Solve any four of the following (20)
 - (a) Explain predeposition and drive in steps in diffusion process.
 - (b) Classify and discuss in brief the types of Thin Film Deposition methods.
 - (c) What is Hall effect? Enlist important electrical parameters for which measurement is required before device processing begins.
 - (d) Explain the need of isolation in VLSI and list the methods to accomplish it?
 - (e) Explain SOI fabrication using bonded SOI and smart cut method.
2.
 - (a) Explain Czochralski method for Silicon crystal growth. What are its advantages? (10)
 - (b) What do you mean by Class of a clean room? Give the steps in a standard RCA cycle during wafer cleaning (10)
3.
 - (a) Explain Solid source diffusion system with neat diagram. Also give one example of each source for P-type and N-type diffusion. (10)
 - (b) Explain High K and Low K dielectrics with application of each. (05)
 - (c) What are the basic reactions in formation of SiO_2 in dry oxidation and wet oxidation? Explain where these methods are used during MOSFET fabrication process. (05)
4.
 - (a) Explain the fabrication process steps along with vertical cross-sectional views for CMOS inverter using N-well process (10)
 - (b) What are the different types of design rules? Draw layout of 2 input NAND gate as per lambda (λ) based design rules (Show units in lambda). (10)
5.
 - (a) Enlist important electrical parameters for which measurement is required before device processing begins. Also describe the experimental setup for the Four Probe method for resistivity measurement with the help of a neat diagram (10)
 - (b) Explain the difference between SOI Finfet and bulk Finfet? (03)
 - (c) State advantages of Finfet devices over single gate MOSFET devices. Also draw cross-sectional views of different multigate structures. (07)
6. Write short notes on any three of the following (20)
 - (a) MESFET Fabrication
 - (b) Carbon Nanotube Transistor
 - (c) SOI Technology
 - (d) Parametric tests and Functionality tests for IC testing

Course: B.E. (Sem VII) (REV. -2012) (CBSGS) (Electronics Engg.) (Prog T3227)

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Correction:

Q.no. 6

Read As:

Write short notes on the following. **(All)**

Instead of:

Write short notes on **any three** of the following.

Query Update time: 30/11/2015 12:45 PM