Total No. of Questions : 12]

SEAT No. :

P3510

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[4959]-219

B.E. (Computer Engineering)

a:VLSI AND DIGITAL SYSTEM DESIGN

(2008 Pattern) (Semester - II) (Elective - IV) (410451)

Time : 3 Hours] *[Max. Marks : 100*

Instructions to the candidates:

1) ***Answers to the two sections should be written in separate answer books.***
2) ***Neat diagrams must be drawn wherever necessary.***
3) ***Figures to the right indicate full marks.***

SECTION - I

Q1) a) Compare Speed-Power Performance of ECL, CMOS, BiCMOS. **[9]**

b) Explain the types of technology scaling. **[8]**

OR

Q2) a) Explain design methodology with flow chart for ASIC design. **[9]**

b) Explain the different tools for device simulation. **[8]**

Q3) a) Explain Shallow Trench Isolation (STI) with process flow. **[8]**

b) Describe different limiting performance of CMOS technology. **[9]**

OR

Q4) a) Explain merits and demerits of Cu interconnect. **[8]**

b) Explain the different process options for device isolation. **[9]**

P.T.O.

Q5) a) Explain basic properties of Silicon Wafer. **[4]**

b) Explain Czochrlski and Float-Zone Crystal Growth Methods. **[4]**

c) Explain Chemical vapor oxidation technique. **[8]**

OR

Q6) a) Write a short note on **[8]**

i) Nano imprint Lithography

ii) Electron-beam lithography.

b) Explain the different techniques of etching. **[8]**

SECTION - II

Q7) a) Write code in VHDL for 16:1 multiplexer. **[8]**

b) Explain different Modeling styles in HDL. **[9]**

OR

Q8) a) Explain the following terms with examples. **[9]**

i) Identifier

ii) Variable

iii) Array

b) Draw a state diagram and write a VHDL code for traffic Light Controller. **[8]**

Q9) a) Explain the types of programmable logic devices in details. **[8]**

b) Discuss logic levels and noise margins with respect to CMOS circuits. **[4]**

c) Explain role of interconnects in VLSI design. **[4]**

OR

Q10)a) Explain dynamic behavior of CMOS devices and Circuits. **[8]**

b) Compater ASIC and FPGA in details. **[8]**

Q11)a) Explain different design parameters for digital circuit design. **[5]**

b) Describe software aspect for digital design. **[8]**

c) Explain merits and demerits of FPGA. **[4]**

OR

Q12)a) Draw a neat diagram and explain briefly 6-T SRAM. **[8]**

b) For Clock Circuitry explains the following. **[9]**

i) Clock skew

ii) Clock jitter

iii) slew