

Total No. of Questions : 8]

SEAT No. :

P3653

[Total No. of Pages : 2

[4859]-1036

B.E. (E & T/C)

VLSI DESIGN & TECHNOLOGY

(2012 Pattern) (Semester - I)

Time : 2½ Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) Answer any one question out of Q.No.1 or 2, Q.No.3 or 4, Q.No. 5 or 6, Q.No.7 or 8.
- 2) Neat diagrams should be drawn wherever necessary.
- 3) Use of electronic pocket calculator is allowed.
- 4) Assume suitable data, if necessary.

Q1) a) Write VHDL code for 8 bit serial in serial out shift register by structural & behavioural modeling methods. [7]

b) What is need of FPGA? List typical specifications of FPGA. [7]

c) Explain I/O architecture in detail. [6]

OR

Q2) a) What are flip flop timings? What is meta-stability? What are solutions? [7]

b) Explore the architecture of CPLD in detail. [7]

c) What are different wire parasitics? How do they play important role in routing? [6]

Q3) a) Derive the expressions for power dissipations in CMOS. What are the techniques to minimize the dissipations? [9]

b) Design CMOS logic for $Y = AB + CDEFG + H$. Compute area on chip. [9]

OR

Q4) a) What is power delay product? Derive the expression for it. What is its significance? [9]

b) Explain linear delay model in detail. [9]

P.T.O.

- Q5)** a) Compare push-pull, current source & active load inverters with respect to voltage gain, voltage range, output resistance & bandwidth in detail.[8]
b) Draw the schematic of CMOS differential amplifier and give the expressions for voltage gain, output resistance. CMRR & ICMR. [8]

OR

- Q6)** a) Draw common drain amplifier. Compare with common source & common gate amplifiers with respect to gain, output resistance & bandwidth. [8]
b) Draw & explain CMOS operational amplifier. Give the expressions for voltage gain & output resistance. [8]

- Q7)** a) What is need of DFT? Explain with suitable example. [8]
b) Explain fault models in detail. [8]

OR

- Q8)** a) With the interface ports involved, explain JTAG in detail. [8]
b) What is partial & full scan path? [8]

