Total No. of Questions : 8]

SEAT No. :

P3828

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[5561]-249
B.E. (E&TC)
VLSI DESIGN & TECHNOLOGY
(2012 Pattern) (Semester - I) (404181)

Time : 2½ Hours] *[Max. Marks : 70*

Instructions to the candidates:

1) ***Answer Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6, Q.7 or Q.8.***
2) ***Assume suitable data if necessary.***

Q1) a) Explain the behavioral, data flow, structural VHDL modeling techniques with example. What are the relevant advantages of each? **[8]**

b) Draw and explain the block diagram CPLD architecture. **[6]**

c) Explain power distribution and power optimization techniques. **[6]**

OR

Q2) a) Draw the state diagram of lift controller for two floors. Write optimum VHDL code for it. **[8]**

b) Explain the following terms. **[6]**

i) CLB

ii) UCF

iii) GRM

iv) EDIF

c) What are the wires parasitic? How it effect the performance in the VLSI chip Design? **[6]**

Q3) a) Explain in detail static and Dynamic power dissipation. **[8]**

b) With the help of mathematical analysis & suitable schematic, explain DC transfer Characteristics of CMOS Inverter. **[10]**

OR

P.T.O.

Q4) a) Design CMOS logic for Y = AB+CDEFG+H. **[10]**

b) Explain the following terms: **[8]**

i) Body effect

ii) Hot Electron effect

iii) Velocity saturation

iv) Power delay product

Q5) a) Compare push-pull, current source & active load inverters with respect to voltage gain, voltage range, output resistance & bandwidth in detail. **[8]**

b) With the help of suitable schematic, explain cascode amplifier. What are its merits? Give the expressions for voltage gain and output resistance. **[8]**

OR

Q6) a) Draw schematic diagram and I-V characteristics, explain current sink and current source. **[8]**

b) Draw common drain amplifier. Compare with common source & common gate amplifiers with respect to gain, output resistance & bandwidth. **[8]**

Q7) a) Draw and explain JTAG in detail. **[8]**

b) Explain in detail boundary scan technique. **[8]**

OR

Q8) a) Explain: **[8]**

i) Partial scan and full scan

ii) Stuck at '1' and '0' faults

b) Write short note on BIST. **[8]**