Total No. of Questions : 10]

SEAT No. :

P3602

[Total No. of Pages : 2

[4959]-1080A

B.E. (Electrical) (End Semester)

VLSI DESIGN

(2012 Pattern) (Elective - IV)

Time : 2½ Hours] *[Max. Marks : 70*

Instructions to the candidates:

1) ***Attempt Q1 or Q2, Q3 or Q4, Q5 or Q6, Q7 or Q8, Q9 or Q10.***
2) ***Neat diagrams must be drawn wherever necessary.***
3) ***Figures to the right indicate full marks.***
4) ***Use of logarithmic tables, slide rules, Mollier Charts, electronic pocket calculator and steam tables is allowed.***
4) ***Assume suitable data, if necessary.***

Q1) a) Explain the EDA tool design flow in VLSI with diagram. **[6]**

b) Differentiate between synchronous and asynchronous machines in sequential circuit design. **[4]**

OR

Q2) a) Explain the three modeling styles in VHDL, with the help of example. **[6]**

b) Explain with the help of diagram a serial in serial out 4 bit shift register using D flip flop. **[4]**

Q3) a) Write VHDL code for 4-bit UP counter. **[6]**

b) List the concurrent statements in VHDL. **[4]**

OR

Q4) a) Explain configurations in VHDL. **[6]**

b) Draw a Moore FSM (state diagram) to detect sequence 1101. **[4]**

Q5) a) Differentiate CPLD w.r.t. FPGA **[8]**

b) With neat schematic explain the architectural building blocks of FPGA. **[8]**

OR

P.T.O.

Q6) a) List the features, specifications and applications of FPGA. **[8]**

b) Explain the need of PLDs. Compare ASIC with DSP processor. **[8]**

Q7) a) Explain CMOS inverter and its transfer characteristics in detail. **[8]**

b) Draw and explain CMOS NAND and CMOS NOR gate **[8]**

OR

Q8) a) Explain Static and dynamic power dissipation. Derive an expression for power-delay product. **[8]**

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

i) Body effect

ii) Hot Electron Effect and

iii) Velocity Saturation

Q9) a) Explain in detail the parameters that should be considered in design of memory. **[10]**

b) Differentiate between carry ripple adder and carry look ahead adder with diagram. **[8]**

OR

Q10) a) Explain with a FSM diagram a vending machine controller. **[10]**

b) Explain barrel shifter with diagram. **[8]**