

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]

