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B.E. / B.Tech (Full Time) DEGREE END SEMESTER EXAMINATIONS, APRIL / MAY 2012
ELECTRONICS AND COMMUNICATION ENGINEERING BRANCH
SEVENTH SEMESTER
EC 472 – VLSI Design
(REGULATIONS 2004)

Time: 3 Hours

Max. Marks:100

Answer all Questions

PART-A

(10 x 2 = 20 Marks)

- 1) What is meant by device modeling?
- 2) List the various process parameters to design a VLSI circuit.
- 3) Define the term "propagation delay".
- 4) Give the advantages of dynamic logic gates.
- 5) Define the term "pipeline".
- 6) List the various clocking strategies occurred in the sequential logic circuits.
- 7) What is meant by datapath circuits?
- 8) Write the trade-offs between area and speed.
- 9) List out the types of ASICs.
- 10) What is meant by manual routing?

Part – B

5 x 16 = 80 marks

11.

- (a) (i) Explain in detail about any five of the electrical properties of MOS circuits. (10)
- (ii) Describe the various scaling principles and its fundamental limits. (6)

12.

- (a) Implement the equation $X = ((\bar{A} + \bar{B} + \bar{C})(\bar{D} + \bar{E}) + \bar{F})\bar{G}$ using CMOS technology and draw the layout for this CMOS circuit. (16)

(or)

- (b) (i) Draw the stick diagram & layout diagram for a four-input CMOS NOR gate. (8)
- (ii) Discuss about the various issues in the design principles of a low power circuit. (8)

13.

- (a) (i) Prepare the detail comparison table between synchronous and asynchronous circuit design. (8)
- (ii) What is meant by latches? Give the detail explanation of static and dynamic latches with proper examples. (8)
- (or)
- (b) Discuss in detail about the memory architectures and its control circuits used in sequential logic design. (16)

14.

- (a) Explain in detail about the architecture of the following circuits with suitable example.
- (i) Multipliers (8)
- (ii) Accumulators (8)
- (or)
- (b) Explain in detail about the architecture of the following circuits with suitable example.
- (i) Adders (8)
- (ii) Barrel Shifters (8)

15.

- (a) Describe in detail about the standard cell design implementation and its cell libraries. (16)
- (or)
- (b) Discuss about the FPGA building block architectures and its interconnect techniques. (16)