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 **Reg. No. :**

**Question Paper Code: 32027**

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2017

Second Semester

Computer Science and Engineering

01UCS207- DIGITAL PRINCIPLES AND SYSTEM DESIGN

(Common to Information Technology)

(Regulation 2013)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions.

PART A - (10 x 2 = 20 Marks)

1. Which gates are called as the universal gates? What are their advantages?

2. What is a logic gate??

3. Write down the truth table of a full subtractor.

4. Develop a HDL program module for half-adder.

5. Name the different HDLs.

6. Compare SRAM and DRAM.

7. Give the classification of PLDs.

8. What is a primitive flow table?

9. Define race condition.

10. What is one hot state assignment?

PART - B (5 x 16 = 80 Marks)

11. (a) (i) State the laws of Boolean algebra. (6)

 (ii) For the expression *F= (CD+E) (A+B’)* write the procedure to obtain the multilevel NAND gate diagram. (10)

Or

 (b) Minimize the expression using Quine McCluskey method (Tabulation) method *F=∑m(0, 1,9, 15, 24, 29, 30)+∑d(8, 11, 31).*  (16)

12. (a) Design a circuit that converts 8421 BCD code to Excess 3 code. (16)

Or

(b) Design a combinational circuit that convert a 4-bit BCD number into 4-bit Excess-3 number. (16)

 13. (a) Implement the following Boolean function using a 8 to 1 multiplexer F(A, B, C, D) = A’BD’+ ACD+ B’CD+ A’C’D. Also implement the function using 16 to 1 multiplexer. (16)

Or

 (b) Implement the Boolean function using 8:1 multiplexer

 *F(A, B, C, D) = AB’ D + A’ C’ D + B’ CD’ + AC’ D*. (16)

14. (a) Design a 4-bit binary ripple counter using D flip-flops. (16)

Or

(b) Implement T flip flop using D flip flop and JK flip flop. (16)

15. (a) (i) Describe the design procedure for asynchronous sequential circuits. (10)

 (ii) Write short notes on ASM chart. (6)

Or

(b) Implement the Switching Function F=∑m(1, 3, 5, 7, 8, 9, 14, 15) by a static hazard free two level AND OR gate network. (16)