Code No: RT21053 **R13** SET - 1

II B. Tech I Semester Supplementary Examinations, October/November - 2018
DIGITAL LOGIC DESIGN
(Com. to CSE, IT)

Time: 3 hours Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)
2. Answer **ALL** the question in **Part-A**
3. Answer any **THREE** Questions from **Part-B**

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PART –A

1. a) What is Non weighted code? Write some Non weight codes (4M)
   b) Prove $AB + \bar{A}C + BC = AB + \bar{A}C$ (3M)
   c) What are advantages of Priority Encoder? (3M)
   d) What is excitation table? write excitation table for JK flip-flop (4M)
   e) Draw the BCD ripple counter logical diagram (4M)
   f) Write the difference between PLA and PROM (4M)

PART -B

2. a) Convert the decimal numbers 350.5, 14.0625, 10^2, 673.23 to binary, base 4, base 6, base 8, base 16. (8M)
   b) Is it possible to construct a 5 4 1 1 weighted code and also a 6 3 2 1 Weighted code? Justify your answer (8M)

3. a) Express the following function as a sum of min terms and as a product of max terms: F(A, B, C, D) = $\bar{B}$D + $\bar{A}$D + BD (8M)
   b) Simplify the following Boolean function *F(A, B, C, D)* = π(1, 3, 5, 7, 13, 15) (8M)

4. a) Explain about Ripple Adder/Subtractor using 1's complement method (8M)
   b) Implement a full adder with two 4 X1 multiplexers (8M)

5. a) What is a master slave flip flop? Design a clocked master slave JK flip flop (8M)
   b) Conversion of JK flip flop to D flip flop (8M)

6. a) Draw the logic diagram of a 4 bit register with four D flip-flop and four 4X1 MUXs with mode selection inputs s_1 and s_0. The register operates according to the following function table: (8M)

S_1	S_0	Register operation
0	0	No change
0	1	Complement the four outputs
1	0	Clear register to 0
1	1	Load parallel data

   b) Design a 4-bit binary synchronous counter with D flip-flop (8M)

7. A Combinational circuit defined by functions (16M)

$A(x, y, z) = \sum(1,2,4,6)$ $B(x, y, z) = \sum(0,1,6,7)$

$C(x, y, z) = \sum(2,6)$ $D(x, y, z) = \sum(1,2,3,5,7)$

Implement circuit with 8X4 ROM

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