GAIN MORE KNOWLEDGE
REACH GREATER HEIGHTS

ROLL NO.	

PRESIDENCY UNIVERSITY, BENGALURU
SCHOOL OF ENGINEERING

Max Marks: 80 | Max Time: 120 Mins | Weightage: 40 %

ENDTERM FINAL EXAMINATION

I Semester AY 2017-18 | Course: **CSE 202 DIGITAL DESIGN** | 19 DECEMBER 2017

Instructions:

i. Write legibly
ii. Scientific and non-programmable calculators are permitted

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Part A

[4 Q x 10 M= 40 Marks]

1. Enumerate the design steps in combination logic, and design a circuit with three inputs x, y, z and outputs A, B and C. When the binary inputs is 4,5,6 or 7 the binary output is two less than the input and when the input binary input is 0,1,2,or 3 the binary output is one greater than the input.
2. Enlist the steps in analysis process of combinational logic and describe with suitable example.
3. What is multiplexer? Simplify the Boolean function using 8:1 multiplexer f(abcd)=∑m (1,3,4,11,12,13,14,15) and write the logic diagram.
4. What is the difference between flip flop and latch? Write characteristic table and excitation table for SR, JK, D and T flip flop

Part B

[2 Q x 8 M= 16 Marks]

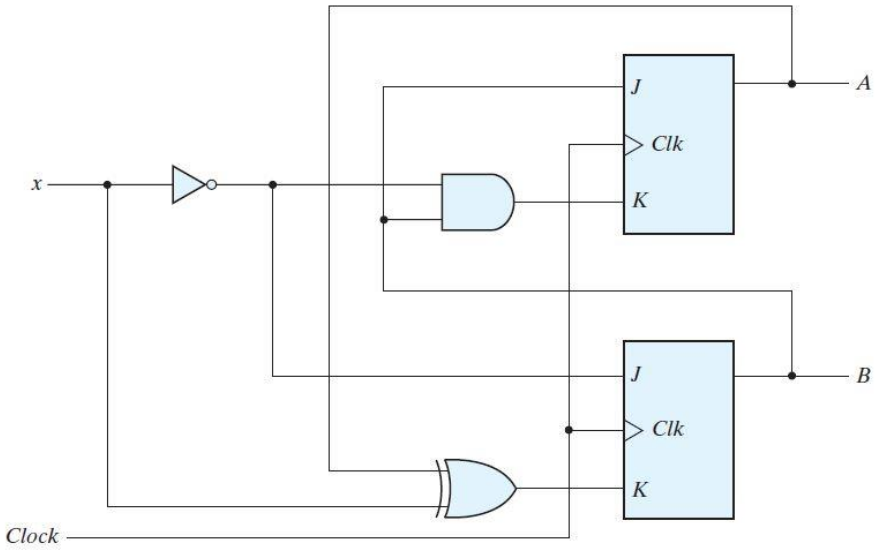
5. Design 32:1 multiplexer using only using 8:1 multiplexer and one 4:1 multiplexer.
6. What is demultiplexer? Design using decoder and external gates
   F1(abc)= ∑m(2,4,6,7) and F2(abc)=∑m(1,3,5,7)

Part C

[2 Q x 12 M= 24 Marks]

7. Design a sequential logic using JK flip flop with the following transition when **x=1, 11→00→10→01→11**, and the sequential logic will remain in same state when **x=0.** Assume state 11 as initial state and 01 as final state. Output is 1 at final state and 0 at all other states.

8. Analyze the clocked synchronous sequential logic give below



PRESIDENCY UNIVERSITY, BENGALURU
SCHOOL OF ENGINEERING

Max Marks: 40 | Max Time: 60 Mins | Weightage: 20 %

TEST 2

I Semester AY 2017-2018 | **Course: CSE 202 Digital Design** | 26 OCT 2017

Instructions:

i. Write legibly
ii. Scientific and non programmable calculators are permitted

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Part A

1. Define the terms Prime Implicants & Essential Prime Implicants. **2M**

2. With neat logic diagram, truth table & output expressions explain

a) Binary Half Subtractor **2M**

b) Binary Full Adder **4M**

Part B

3. Simplify the Boolean function using K-MAP

$f(a,b,c,d) = \sum m(0,1,3,5,8,9,12,14,15) + \sum d(2,11,13)$ **5M**

4. Explain the steps involved in Quine McCluskey method to find Essential. **5M**

Prime Implicants. Also explain how step-1 is carried out to find Prime Implicants.

5. Simplify the Boolean function using K-MAP and find the output expression for

POS (f'). $f(a,b,c,d,e) = \sum m(0,2,4,5,9,10,14,16,24) + \sum d(19,21,30)$ **7M**

Part C

6. Simplify the Boolean Function using Quine McCluskey method. **15M**

$F(a,b,c,d,e) = \sum m(0,1,2,5,6,7,8,12,15,16,21,23,24,26,29,30,31)$