# II B. Tech I Semester Supplementary Examinations, Oct/Nov- 2017 <br> DIGITAL LOGIC DESIGN 

(Com. to CSE, IT)
Time: 3 hours
Max. Marks: 75

## Answer any FIVE Questions <br> All Questions carry Equal Marks

1. a) Perform the following subtraction using 10 's complement method
i) $72532-3250$
ii) 7188-3049
iii) 84574-123
b) Convert the following i) 101110 to base-10 ii) 101110 to base- 8
2. a) Realize EX-OR gate using only NAND and NOR separately?
b) Find the complement of the following expressions:
i) $A B C+\bar{A} B+A B \bar{C}$
ii) $\bar{A} B C+A C B+\bar{A} \bar{B} \bar{C}$
3. a) Simplify the following Boolean function F
i) $F(A, B, C, D)=\sum(0,6,8,13,14)+\sum_{d}(2,4,10)$

Draw the logic diagram for the simplified above function?
b) Find the dual complement of $B C+A \bar{D} E+B \bar{C} E+A E B$
4. a) Design a combinational circuit with three inputs $\mathrm{x}, \mathrm{y}, \mathrm{z}$, and three outputs $\mathrm{A}, \mathrm{B}, \mathrm{C}$.

When the binary input is $0,1,2$, or 3 the binary output is one greater than the input. When the binary input is $4,5,6$, or 7 the binary output is one less than the input?
b) Draw the block diagram and truth table for Full Subtractor? Explain with k-map?
5. a) Draw the logic diagram of a 3 to 8 decoder Explain? Include an enable input?
b) Construct a 16 X 1 MUX with two 8 X 1 MUX and one 2 X 1 MUX , use block diagram for multiplexer?
6. a) What are the architectural differences between PAL and PROM? Discuss with the use of suitable diagrams?
b) With the help of a neat diagram explain the PLA and functions of each component?
7. a) How do you Convert a JK into T flip flop? Discuss
b) What is race condition? Discuss about JK Master-slave Flip-Flop
8. a) Design a 4-bit binary ripple counter with D - flip flop?
b) Construct a Johnson Counter for ten timing signals?

