Q.P. Code: **16EC402** **R16**

Reg. No: | | | | | | | | | | |

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech II Year I Semester (R16) Regular Examinations November 2017
SWITCHING THEORY AND LOGIC DESIGN
(Electronics and Communication Engineering)

Time: **3 hours** Max. Marks: **60**

(Answer all Five Units **5 X 12 = 60** Marks)

UNIT-I

1	a	Convert $(2AC5.D)_{16}$ to binary and then to octal.	6M
	b	Explain how transfer of information will be done among registers.	6M
		OR	
2	a	Simplify the following Boolean expressions (i) A'C' + ABC +AC' (ii) (A'+C)(A'+C')(A+B+C'D)	8M
	b	Obtain the dual of the function F = AB + (AC)'AB'C	4M

UNIT-II

3	a	Simplify the following Boolean expression using k-map F(w,x,y,z) = Σ (1,3,7,11,15) + d (0,2,5)	7M
	b	Implement EX-OR gate using NOR gates only.	5M
		OR	
4	a	Simplify using k-map to obtain a minimum POS expression (A'+B'+C+D)(A+B'+C+D)(A+B+C+D')(A+B+C'+D')(A'+B+C+D') (A+B+C'+D)	9M
	b	Realize the above result using the basic gates.	3M

UNIT-III

5	a	What is full adder? With necessary derivations implement the full adder circuit.	6M
	b	Design a combinational circuit with 4 inputs A,B,C,D. The output Y goes HIGH if and only if A and C inputs goes HIGH. Draw the truth table. Minimize the Boolean unction using K-map . Draw the circuit diagram.	6M
		OR	
6	a	What is decoder? Explain 2 to 4 line decoder with truth table and draw the circuit.	6M
	b	Explain 4:1 multiplexer with truth table and draw the logic diagram.	6M

UNIT-IV

7	a	Convert the SR flipflop to T flipflop	7M
	b	Explain JK flipflop	5M
		OR	
8	a	Explain 4-bit ring counter with suitable sketches.	6M
	b	Design mod-6 ripple counter using T-flipflops.	6M

UNIT-V

9	a.	Differentiate Moore and Mealy circuit models	3M
	b.	Explain Moore model.	9M
		OR	
10		Realize the following four Boolean functions using PAL (i) $F_1 (w,x,,y,z) = \Sigma m (0,1,2,3,7,9,11)$ (ii) $F_2 (w,x,,y,z) = \Sigma m (0,1,2,3,10,12,14)$ (iii) $F_3 (w,x,,y,z) = \Sigma m (0,1,2,3,10,13,15)$ (iv) $F_4 (w,x,,y,z) = \Sigma m (4,5,6,7,9,15)$	12M

***** END *****