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

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

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR

(AUTONOMOUS)

B.Tech II Year I Semester Supplementary Examinations Nov/Dec 2019

SWITCHING THEORY AND LOGIC DESIGN

(Electronics & Communication Engineering)

Time: 3 hours Max. Marks: 60

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

UNIT-I

1	**a**	Reduce the following Boolean expressions using Boolean algebra. i) (X'Y'+Z)'+Z+XY+WZ ii) A'B (D'+C'D)+ B (A+A'CD) iii) (A'+C) (A'+C') (A+B+C'D)	**6M**
	b	Convert the given decimal number 351 to binary, octal, hexadecimal and BCD equivalent.	**6M**

OR

2	**a**	State Duality theorem. List the Boolean laws and their Duals.	**6M**
	b	Solve for x i) $(257)_8 = (x)_2$ ii) $(BC2)_{16} = (x)_8$ iii) $(33)_{10} = (201)_x$	**6M**

UNIT-II

3	**a**	Simplify the Boolean function F(A,B,C,D)=∑(1, 3, 7, 11, 15)+d(0, 2, 5) using map method.	**6M**
	b	Implement the given Boolean function Y= (AB'+A'B) (C+D') using NOR gates only.	**6M**

OR

4		Simplify the following Boolean function using Tabulation method. Y(A,B,C,D) = Σ(1,3,5,8,9,11,15)	**12M**

UNIT-III

5	**a**	Explain Carry Look Ahead Adder circuit with the help of logic diagram	**8M**
	b	Realize a 2-bit comparator using logic gates.	**4M**

OR

6	**a**	What is encoder? Design octal to binary encoder.	**6M**
	b	Design a 16 line to 1 line multiplexer using 4 line to 1 line multiplexer.	**6M**

UNIT-IV

7	**a**	Design D Flip Flop by using SR Flip Flop and draw the timing diagram	**6M**
	b	Write the differences between combinational and sequential circuits.	**6M**

OR

8	**a**	With a neat sketch explain MOD 6 Johnson counter using D Flip-flop.	**6M**
	b	What is race around problem in JK Flip-Flop? Explain how it is eliminated in master slave JK Flop-Flop.	**6M**

UNIT-V

9	**a**	Implement the following Boolean function using PLA. (i) $F(w,x,y,z) = \Sigma m(0,1,3,5,9,13)$ (ii) $F(w,x,y,z)) = \Sigma m(0,2,4,5,7,9,11,15)$	**8M**
	b	Explain about memory decoding.	**4M**
		OR	
10	**a**	Given the 4-bit data word 1101, generate the composite word for the hamming code that corrects and detects single errors.	**6M**
	b	Differentiate among ROM, PROM, DROM , EPROM, EEPROM, RAM.	**6M**

*** END ***