R18

Reg. No:

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech II Year I Semester Supplementary Examinations November-2020
DIGITAL LOGIC DESIGN
(Computer Science & Engineering)

Time: 3 hours   Max. Marks: 60

PART-A
(Answer all the Questions **5 x 2 = 10** Marks)

1	**a**	Convert $(15)_{10}$ to Binary.	**2M**
	b	State De Morgan's theorem.	**2M**
	c	Construct 2:1 multiplexer.	**2M**
	d	Explain the dfference between latch and flip-flop.	**2M**
	e	Define the Static RAM and Dynamic RAM.	**2M**

PART-B
(Answer all Five Units 5 x 10 = 50 Marks)

UNIT-I

2	**a**	a) Design the circuit by Using NAND gates $F = ABC' + DE + AB'D'$	**5M**
	b	Simplify and implementation the following SOP function using NOR gates. $F(A,B,C,D) = \Sigma m(0,1,4,5,10,11,14,15)$.	**5M**

OR

3	**a**	Convert the following numbers	**5M**
		i) $(163.789)_{10}$ to Octal number	
		ii) $(11001101.0101)_2$ to base-8 and base-4	
		iii) $(4567)_{10}$ to base2	
		iv) $(4D.56)_{16}$ to Binary	
	b	Subtract $(111001)_2$ from (101011) using 1's complement.	**5M**

UNIT-II

4	Simplify the Boolean expression using K-map and implement using NAND gates $F(A,B,C,D) = \Sigma m(0,2,3,8,10,11,12,14)$.	**10M**

OR

5	Simplify the Boolean expression using K-map. $F(A,B,C,D,E) = \Sigma m(0,2,4,6,9,11,13,15,17,21,25,27,29,31)$	**10M**

UNIT-III

6	**a**	Explain about Binary Multiplier.	**5M**
	b	What is memory decoding? Explain about the construction of 4 X 4 RAM.	**5M**

OR

7	Explain The Half adder. Implement the full adder using two half adders.	**10M**

UNIT-IV

8	Explain the design of a 4 bit binary counter with parallel load in detail?	**10M**

OR

9	**a**	Explain synchronous and ripple counters compare their merits and demerits.	**5M**
	b	Design a 4-bit binary synchronous counter with D-flip flop.	**5M**

UNIT-V

10	Implement the following function using PLA. $A(x,y,z) = \Sigma m(1,2,4,6)$ $B(x,y,z) = \Sigma m(0,1,6,7)$ $C(x,y,z) = \Sigma m(2,6)$.	**10M**

OR

11	**a**	Write difference between PROM, PLA &PAL.	**5M**
	b	Explain about Hamming code.	**5M**

END