Q.P. Code: 20CS0503a **R20**

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

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR

(AUTONOMOUS)

B.Tech I Year II Semester Regular Examinations November-2021

DIGITAL LOGIC DESIGN

(Common to CSE (AI & ML) & CSE (IoT & CS Including BCT))

Time: 3 hours Max. Marks: 60

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

UNIT-I

1	**a**	Convert the following numbers i) $(AB)_{16}=(\ )_2$ ii) $(1234)_8=(\ )_{16}$ iii)$(101110.01)_2=(\ )_8$	**L5**	**3M**
	b	Convert the following to binary and then to gray code $(AB33)_{16}$	**L5**	**4M**
	c	Perform the following Using BCD arithmetic $(7129)_{10} + (7711)_{10}$	**L5**	**5M**

OR

2		Prove the following identities:		
	a	A' B' C' + A' B C' + A B' C' + A B C' = C'	**L5**	**6M**
	b	A B + A B C + A' B + A B' C = B + A C	**L5**	**6M**

UNIT-II

3		Simplify the following Boolean expression using K-MAP and implement using NAND gates. F(W,X,Y,Z)=XYZ+WXY+WYZ+WXZ	**L6**	**12M**

OR

4		Simplify the following expressions, and implement them with two-level NAND gate circuits: i) AB′ + ABD + ABD′ + A′C′D′ + A′BC′ ii) BD + BCD′ + AB′C′D′	**L6**	**12M**

UNIT-III

5		Draw and explain the working of a Carry- Look ahead adder?	**L2**	**12M**

OR

6	**a**	Implement the following Boolean function using 8:1 multiplexer F(A,B,C.D)=ΣM(0,1,2,5,7,8,9,14,15)	**L5**	**6M**
	b	Explain Full binary subtractor in detail?	**L2**	**6M**

UNIT-IV

7		Explain the working of the following i) J-K flip-flop ii) S- R flip-flop iii) D flip-flop	**L2**	**12M**

OR

8		What is race-around condition? How its elimination does is a Master–slave J-K flip-flop?	**L1**	**12M**

UNIT-V

9		Implement the following functions using PLA. A(x,y,z)=∑m(1,2,4,6) B(x,y,z)=∑m(0,1,6,7) C(x,y,z)=∑m(2,6)	**L5**	**12M**

OR

10		Explain about Error correction & Detection Codes with examples?	**L2**	**12M**

*** END ***