O.P.Code: 20EC0403	R20	H.T.No.									

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR

(AUTONOMOUS)

B.Tech II Year I Semester Regular & Supplementary Examinations December-2023

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	Express the following functions in Sum of Minterms and Product of Maxterms. i) F1(A,B,C,D) = B'D + A'D + BD ii) F2(x,y,z) = (xy + z)(xz+y)	CO1	L1	6M
	b	Prove De Morgan's theorems using Perfect Induction Method.	CO1	L3	6M
		OR			
2	a	List the different Boolean expressions for Two binary Variables.	CO1	L1	6M
	b	State Universal Gates and represent their truth tables with Graphic symbols.	CO1	L1	6M

UNIT-II

3		Simplify the following Boolean function by using Tabulation method. F = Σ (0, 1,2,8,10,11,14, 15)	CO2	L4	12M
		OR			
4	a	Outline the disadvantage of K-Map method, of reducing a Boolean function and explain the ways to overcome it.	CO1	L2	6M
	b	Demonstrte the steps involved in simplification of K-Map.	CO1	L2	6M

UNIT-III

5	a	Define Combinational Circuit and Explain the analysis procedure of a combinational logic circuit using suitable example.	CO1	L2	6M
	b	Construct a BCD Adder-circuit using 4-bit binary adders.	CO5	L3	6M
		OR			
6	a	Recall Demultiplexer and Design an1:8 demultiplexer using two 1:4 demultiplexer.	CO4	L3	6M
	b	Define Multiplexer. Construct 4:1 multiplexer with logic gates and truth table.	CO4	L3	6M

UNIT-IV

7	a	Convert SR flip flop into JK Flip-Flop. Draw and explain its logic diagram.	CO4	L2	6M
	b	Express Shift register and explain its types.	CO1	L2	6M
		OR			
8	a	Explain in brief about a 2-bit synchronous up-counter.	CO6	L2	6M
	b	With the help of logic diagram, obtain the characteristic table of D & T Flip-Flops. Also draw their graphic symbols.	CO3	L3	6M

UNIT-V

9		Elaborate in detail on Programmable Read Only Memory (PROM) with a suitable example.	CO2	L2	12M
		OR			
10	a	Classify various types of RAMs.	CO1	L2	6M
	b	Compare ROM and RAM.	CO1	L2	6M

*** END ***