R22

ANURAG Engineering College
(An Autonomous Institution)
II B.Tech I Semester Supplementary Examinations, June/July – 2024
DIGITAL LOGIC DESIGN
(ELECTRONICS AND COMMUNICATION ENGINEERING)

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

Section – A (Short Answer type questions)   (10 Marks)
Answer All Questions

		Course Outcome	B.T Level	Marks
1.	What are the Universal gates?	CO1	L1	1M
2.	Write the applications of Hamming code.	CO1	L2	1M
3.	Construct OR gate using diodes.	CO2	L1	1M
4.	Classify Logic Families.	CO2	L2	1M
5.	What is the difference between latch and flip flop?	CO3	L1	1M
6.	Write the truth table of JK flip flop.	CO3	L2	1M
7.	What is the significance of a shift register in data communication systems?	CO4	L1	1M
8.	Define the term "modulus" in the context of counters.	CO4	L2	1M
9.	Define the term "state table" in the context of FSMs.	CO5	L1	1M
10.	What do you mean by merger graphs?	CO5	L2	1M

Section B (Essay Questions)
Answer all questions, each question carries equal marks.   (5 X 10M = 50M)

				Course Outcome	B.T Level	Marks
11.	A)	Perform (-50)-(-10) in binary using the signed-2's complement		CO1	L3	10M
		OR				
	B)	Develop a Logic diagram for the Boolean function $F = A^{l}B + AB^{l}$ i) using NOR gates ii) using NAND gates		CO1	L2	10M
12.	A)	Compare RTL, TTL and CMOS Logic families.		CO2	L3	10M
		OR				
	B)	With the aid of a four-variable Karnaugh map, derive minimal sum-of products expressions for each of the following functions. i) $f(A,B,C,D) = \sum m(0,2,4,9,12,15) + d\, m(1,5,7,10)$. ii) $f(A,B,C,D) = \sum m(1,2,3,5,13) + d\, m(6,7,8,9,11,15)$.		CO2	L3	10M
13.	A)	Implement the following Boolean function using 8*1 multiplexer. $F(A,B,C,D) = \Sigma m (2,3,5,7,10,14)$		CO3	L3	10M
		OR				
	B)	Compare combinational and sequential logic circuits.		CO3	L3	10M
14.	A)	Explain the operation of 4 bit BCD counter with parallel load.		CO4	L2	10M
		OR				
	B)	Design a modulo 5 synchronous counter using JK Flip Flop and implement it. Construct its timing diagram.		CO4	L3	10M

15. A) Design sequential circuit of Moore model for the fallowing state table.   CO5   L3   10M

Present state	Next state		Output
	X=0	X=1	Z
A	A	C	0
B	D	A	0
C	C	A	1
D	B	D	1

OR

B) Explain briefly Moore and Mealy machines? Compare them.   CO5   L2   10M