Question Paper Code: R22A21EC04

R22

ANURAG Engineering College

(An Autonomous Institution)

II B.Tech I Semester Regular/Supplementary Examinations, December – 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.	Define binary logic.	CO1	L1	1M
2.	Write the truth table of EX-OR gate.	CO1	L2	1M
3.	Construct AND gate using diodes.	CO2	L1	1M
4.	Write the applications of CMOS logic family.	CO2	L2	1M
5.	Write the excitation table of JK flip flop.	CO3	L1	1M
6.	Write about Hazards in combinational logic circuits.	CO3	L2	1M
7.	List out the applications of shift register.	CO4	L1	1M
8.	What is the significance of a counter's clock input?	CO4	L2	1M
9.	Discuss the applications of finite state machines in real-world scenarios.	CO5	L1	1M
10.	What is the significance of a reset state in an FSM?	CO5	L2	1M

Section B (Essay Questions)

Answer all questions, each question carries equal marks. **(5 X 10M = 50M)**

11. A)	Determine the value of b, Given that i) $(16)_{10} = (100)_b$ ii) $(292)_{10} = (1204)_b$	CO1	L3	10M
	OR			
B)	State and prove De Morgan's theorems	CO1	L2	10M
12. A)	With the aid of a four-variable Karnaugh map, derive minimal sum-of products expressions for each of the following functions. i) $f(A,B,C,D) = \sum (1,3,7,11,15) + d(0,2,5,10)$. ii) $f(A,B,C,D) = \sum (1,4,8,12,13,15) + d(3,14)$.	CO2	L3	10M
	OR			
B)	Summarize the standard TTL NAND Gate-Analysis & characteristics.	CO2	L2	10M
13. A)	Design a 4-bit adder-subtractor using full adders and explain its operation.	CO3	L3	10M
	OR			
B)	Convert SR-flipflop into JK-Flipflop and verify the truth table.	CO3	L2	10M
14. A)	Design and Implement 4-bit binary counter using D flipflop.	CO4	L3	10M
	OR			
B)	Explain about Bidirectional Shift Register.	CO4	L2	10M
15. A)	Compare Moore and mealy machine and explain the rules for converting mealy machine to Moore and vice versa.	CO5	L3	10M
	OR			
B)	Write a short note on i) State diagram ii) State table iii) State Assignment rules	CO5	L2	10M