



R20 Regulation

Subject code: 3P3FA

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

(Autonomous, Accredited by NAAC with 'A+' Grade)

B.Tech III Semester Supplementary Examinations, February 2024
Digital Logic Design

(IT)

Maximum Marks: 70

21.02.2024

Duration: 3 hours

- Note: 1. This question paper contains two parts A and B.
 2. Part A is compulsory which carries 20 marks. Answer all questions in Part A.
 3. Part B consists of 5 Units. Answer any one full question from each unit.
 4. Each question carries 10 marks and may have a, b, c, d as sub questions.

Part-A

All the following questions carry equal marks

(10X2M=20 Marks)

		CO	Bloom Tx
1	Why we need a data representation system?	CO1	L1
2	Perform the conversion $(7777)_8 = (?)_{10} = (?)_2$	CO1	L2
3	For the given logic equation, implement with three NOR gates $Y = (A+B).(C+D)$	CO2	L2
4	What is k map? How it is different from truth table.	CO2	L1
5	Realize OR function using 2:1 MUX	CO3	L2
6	Draw the logic diagram of a one to four line demultiplexer.	CO3	L1
7	Differentiate between RING and TWISTED RING counter.	CO4	L2
8	Why $S=R=1$ is not permitted in SR flipflop	CO4	L1
9	What is the need for state reduction in sequential circuit design?	CO5	L1
10	Compare Mealy and Moore models.	CO5	L2

Part-B

Answer All the following questions.

(5X10M=50Marks)

11	(a) Perform the subtraction with the binary number $11010 - 1101$ using (i) 2's complement method (ii) 1's complement method (b) Compare the BCD code and Gray code.	5M 5M	CO1	L2 L2
	OR			
12	How a Hamming code locate the error? Explain with an example.	10M	CO1	L2
13	(a) What is Boolean algebra? How it is different from normal algebra? why it is specially suited to logic? (b) How can you get a Boolean expression from a truth table? Explain with an example	5M 5M	CO2	L3 L2
	OR			
14	Simplify the expression by using K- maps method $f(A,B,C,D) = \sum m(1,2,5,6,7,9,10) + \sum d(0,13,15)$	10M	CO2	L4
15	Design GREY to BCD code converter using logic gates.	10M	CO3	L4

	OR			
16	Implement a function $F(A,B,C,D) = \sum m(0,1,3,4,8,9,15)$ using multiplexer	10M	CO3	L4
17	Show the T flip flop implementation from SR flip flop	10M	CO4	L2
	OR			
18	Describe the operation of shift register. Discuss different methods of entering data into the register and reading it.	10M	CO4	L4
19	What are the capabilities of finite state machines and explain	10M	CO5	L2
	OR			
20	Explain the mealy model of sequential circuits with a neat circuit diagram	10M	CO5	L2