



R22 Regulation

Subject code: 4E3DB

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

B.Tech III Semester Regular Examinations, February 2024

Digital Logic Design

(Electronics and Communication Engineering)

Maximum Marks: 60

Date: 19.02.2024 Duration: 3 hours

- Note:
1. This question paper contains two parts A and B.
 2. Part A is compulsory which carries 10 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		CO	Bloom Tx
All the following questions carry equal marks (10x1M=10 Marks)			
1.a)	Convert $(F28)_{16}$ to decimal number	CO1	L2
b)	What is 1's complement?	CO1	L1
c)	Why NAND and NOR gates are known as Universal gates?	CO2	L2
d)	Write down the Demorgan's Theorems	CO2	L1
e)	Define the combinational Circuits?	CO3	L1
f)	What is code converter?	CO3	L1
g)	What do you mean by Latch?	CO4	L2
h)	Mention the difference between combinational and sequential circuit	CO4	L2
i)	Define Ring counter?	CO5	L1
j)	What is a Shift Register?	CO5	L1
Part-B			
Answer All the following questions. (5X10M=50Marks)			Bloom Tx level
2	Represent 54 using 3321, 5211 and 6311 BCD codes	10M	L3
OR			
3	a) Convert $(657)_8$ into decimal. b) Convert $(2348)_{10}$ Into hexa decimal.	5M 5M	L3 L3
4	a) Simplify the $Y = (A+B)(A'+C)(B'+C')$ b) Solve the simplified expression in SOP form of $F(a,b,c,d,e) = \Sigma(1,2,4,7,12,14,15,24,27,29,30,31)$ using K-maps	5M 5M	L3 L3
OR			
5	Implement the function $f(a,b,c) = \pi(0,1,3,4)$ using NAND-NAND two level gate structure.	10M	L3
6	Design a Half adder using only NAND gates	10M	L4
OR			
7	What is a multiplexer ? Draw and explain the logic diagram of 8x1 line multiplexer.	10M	L3
8	Draw and explain the working of clocked R-S Flip-Flop.	10M	L3
OR			

9	Transform D flip flop to T flip flop and JK flip flop.	10M	L3
10	Construct the shift register for serial in(SI) and serial out(SO) using D-FF.	10M	L3
	OR		
11	Draw the 4bit synchronous counter and Explain.	10M	L3