



R22 Regulation

Subject code: 4E3DB

# TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

**B.Tech III Semester Supplementary Examinations, July 2024**

## Digital Logic Design (ECE)

Maximum Marks: 60

Date: 20.07.2024 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)	What are the types of number systems?	1	L1
b)	Define 2's compliment.	1	L2
c)	What is a Logic gate?	2	L1
d)	What do you mean by Literals?	2	L1
e)	Draw the 2x1 Mux diagram	3	L2
f)	Define priority Encoder.	3	L2
g)	What is a Flip-Flop?	4	L1
h)	Mention the difference between combinational and sequential circuit	4	L1
i)	Write down the example of Synchronous counter.	5	L1
j)	Define Ring Counter.	5	L2
Part-B			Bloom Tx level
Answer All the following questions. (5X10M=50Marks)			
2	Explain various number systems and codes and their conversion with examples for each. (10M)	1	L2
OR			
3	a) Express the following numbers in decimal: $(10110.0101)_2$ , $(16.5)_{16}$ , $(26.24)_8$ . (5M) b) Convert $(2348)_{10}$ into hexa decimal. (5M)	1	L3
4	a) Write the truth table and symbols of AND and OR gates. (5M) b) Simplify $A(B+C)+AB+ABC$ (5M)	2	L3 L2
OR			
5	Simplify the following Boolean functions, using a four variable Karnaugh map method and implement the simplified function using NAND gates $F(A,B,C,D) = \sum m(0,2,4,5,6,7,8,10,13,15)$ (10M)	2	L3
6	Design a Full adder using Decoder. (10M)	3	L3
OR			
7	Explain the working and functions of decoders and encoders. (10M)	3	L2

8	Convert SR flip-flop into JK flip-flop. (10M)	4	L2
	OR		
9	Compare synchronous and asynchronous sequential circuits. (10M)	4	L2
10	Explain a right shift register. (10M)	5	L2
	OR		
11	Design and explain Johnson counter. (10M)	5	L3