R20 Regulation *Subject code: 3P3EC*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

B.Tech III Semester Supplementary Examinations, February 2024

LOGIC CIRCUITS DESIGN

(Common to CSE & CSE(AI&ML))

Maximum Marks: 70 Date: 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	Simplify hexadecimal E79A.6B5 to binary.	CO1	L4
2	Explain self complementing code with examples.	CO1	L5
3	List the importance of don't care conditions.	CO2	L4
4	Construct a 16:1 mux using two 8:1 mux.	CO2	L3
5	Identify the number of states a 4 bit Johnson counter have?	CO3	L3
6	List the applications of shift registers?	CO3	L4
7	Compare ALU with ALSU	CO4	L5
8	What are shift micro operations?	CO4	L2
9	List the types of micro operations.	CO5	L4
10	What is a combinational PLD?	CO5	L2

Part-B

Answer All the following questions. (5X10M=50Marks)				
11	Explain De-Morgan theorems in detail.	10M	CO1	L5
	OR			
12	Construct basic gates using Universal Gates.	10M	CO1	L3
13	Simplify the Boolean function using k-map in SOP and POS forms $F=\sum m(0,1,2,4,7,8,12,14,15,16,17,18,20,24,28,30,31)$	10M	CO2	L4
	OR			
14	Explain combinational circuits and construct input Priority encoder	10M	CO2	L5
15	Explain the following terms with relation to flipflop (i)Setup time(ii)Hold time(iii)Propagation delay time(iv)Present state(v)Clear state	10M	CO3	L5
	OR			
16	Develop synchronous mod-6 counter using clocked jk flip flops.	10M	CO3	L3

17	Determine the bus Architecture and Memory Transfer in detail.	10M	CO4	L5
	OR			
18	Explain the hardware implementation of arithmetic logic shift unit in detail.	10M	CO4	L5
19	Develop the internal logic construction of 32X4 ROM and explain how a Boolean expression is implemented using it.	10M	CO5	L3
	OR			
20	Write short notes on (a) PROM ,(b) PLA and (c) PAL	10M	CO5	L5