R22 Regulation *Subject code:4E4BB*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

B.Tech IV Semester Regular/Supplementary Examinations, June 2026

DIGITAL ELECTRONICS

(EEE)

Maximum Marks: 60 Date:10.06.2026 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

All the following questions carry equal marks (10X1M=10 Marks)		Marks	CO	Bloom Tx
1.a)	Define unit distance code give one example.	1M	1	1
b)	Find radix 52/4=12	1M	1	2
c)	Prove AB+A'C=(A+C)(A'+B)	1M	2	2
d)	Find the expression using K Map F(A,B,C)= ∑(1,2,4,7)	1M	2	2
e)	Define Hazard	1M	3	1
f)	Explain 1-Bit Comparator	1M	3	1
g)	Define FlipFlop	1M	4	1
h)	Write excitation table of D Flip Flop	1M	4	1
i)	Define Merger Graph	1M	5	1
j)	Compare Mealy and Moore machine.	1M	5	2

Part-B

Answer All the following questions. (5X10M=50Marks)		Marks	CO	Bloom Tx
2	a) Convert hexadecimal B9F.AE to octal. b) Explain Self Complementing codes 5211,84-2-1	5M 5M	1 1	2 2
	OR			
3	a) Generate Hamming code for 01011 b) Using 2's complement method find 57-29	5M 5M	1 1	2 2
4	Given the function T(w,x,y,z) = ∑(1,2,3,5,13) + ∑Ø(6,7,8,9,11,15), a. Find a minimal sum-of-products expression b. Find a minimal Product-of-sums expression using K Map	5M 5M	2	3
	OR			
5	Simplify the function using tabulation procedure and obtain all minimal expressions for the following F(w,x,y,z)=∑(0,1,5,7,8,10,14,15)	10M	2	4
6	a) Design a 4x16 decoder using 3x8 decoder and a NOT gate. b) Implement Half Adder using MUX	5M 5M	3 3	3 3

	OR			
7	Illustrate the truth table for a full adder, obtain expressions for its sum and carry outputs. Design the circuit of full adder using two half-adders and an OR gate	10M	3	3
8	Illustrate the circuit of JK flip-flop with NAND gates, its truth table, Excitation table and explain race around condition.	10M	4	3
	OR			
9	a) Design 4 bit Ripple counter using in T Flipflop b) Explain Different types of Registers with neat diagrams.	5M 5M	4 4	3 3
10	A clocked sequential circuit with single input X and single output Z produces an output Z=1 whenever the input X completes the sequence 1011 and overlapping is allowed. Obtain the minimum state table and state diagram.	10M	5	4
	OR			
11	Design a Moore machine to detect overlapping sequence "1101"	10M	5	4