Code No:8CC55   **Date: 17-August-2024 (FN)**

B.Tech II-Year II- Semester External Examination, August-2024 (Supplementary)
DIGITAL ELECTRONICS (CSE, IT, CS, AIML, DS and IOT)

Time: 3 Hours   **Max.Marks:70**

> **Note:** a) *No additional answer sheets will be provided.*
> b) *All sub-parts of a question must be answered at one place only, otherwise it will not be valued.*
> c) *Missing data can be assumed suitably.*

Bloom's Cognitive Levels of Learning (BCLL)

Remember	L1	Apply	L3	Evaluate	L5
Understand	L2	Analyze	L4	Create	L6

Part - A   Max.Marks:20
ANSWER ALL QUESTIONS

		BCLL	CO(s)	Marks
1	What is the decimal equivalent of hexadecimal number 1A53?	L1	CO1	[2M]
2	Simplify the following Boolean expression: (A'BC')'+ (AB'C)'	L3	CO2	[2M]
3	Expand POS and SOP	L2	CO3	[2M]
4	Write the characteristic equation for D Flip-flop.	L1	CO4	[2M]
5	What is shift register? Give the classification of them.	L4	CO5	[2M]
6	List out the types of PLD	L6	CO6	[2M]
7	Perform the subtraction operation on 22-7 using 2's complement form..	L3	CO1	[2M]
8	How many states are there in a n-bit ring counter?	L4	CO3	[2M]
9	Compare PROM & PAL.	L2	CO5	[2M]
10	Draw the symbol of universal gates.	L4	CO6	[2M]

Part – B   Max.Marks:50
ANSWER ANY FIVE QUESTIONS. EACH QUESTION CARRIES 10 MARKS.

			BCLL	CO(s)	Marks
11.	a)	Convert the following to Decimal and then to Hexadecimal. i. $(1234)_8$ ii. $(11001111)_2$	L1	CO1	[5M]
	b)	Determine the hamming code 1011011 is received correct it for even parity if any error.	L3	CO1	[5M]
12.	a)	State and Prove De Morgan's theorem of Boolean Algebra.	L2	CO2	[5M]
	b)	Simplify the following boolean function using Quine- McClukey method. $F(A,B,C,D)=\sum m(0,1,2,5,7,8,9,10,13,15)$	L3	CO2	[5M]
13.	a)	Design Full adder using two Half adders.	L5	CO3	[5M]
	b)	Design a 4 bit binary-to-Gray code converter	L3	CO3	[5M]
14.	a)	Explain the operation JK master slave flip flop. Explain its truth table	L2	CO4	[5M]
	b)	Design T flip flop by using SR flip flop.	L3	CO4	[5M]
15.	a)	Develop 3 bit ripple Asynchronous up counter.	L6	CO5	[5M]
	b)	Design a 4 bit universal shift register with neat diagram		CO5	[5M]
16.	a)	Write the differences between PAL and PLA	L1	CO6	[5M]
	b)	Minimize and implement the Boolean function F = Σ(0,1,2,3,13,14,15) using PROM	L3	CO6	[5M]
17.	a)	Realize Ex-OR and Ex-NOR gate operations by NOR gates.	L2	CO1	[4M]
	b)	Express the Boolean function $F = x\,y + x'\,z$ in a product of maxterm form	L3	CO2	[3M]
	c)	Explain the working of a De-multiplexer with the help of an example	L1	CO3	[3M]
18.	a)	List the difference between latch and flip flop	L3	CO4	[4M]
	b)	What is the shift register? List out the applications of shift registers	L1	CO5	[3M]
	c)	Explain short notes about ROM and PROM	L2	CO6	[3M]

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