

**Code No: 8CC55**

**Date: 17-Aug-2023 (Fri)**

**B.Tech II-Year II- Semester External Examination, Aug - 2023 (Regular & 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**  
**ANSWER ALL QUESTIONS**

**Max.Marks:20**

	BCLL	CO(s)	Marks
1 Convert the following to the decimal form. i) (01101001.101) <sub>2</sub> ii) (A23B) <sub>16</sub>	L3	CO1	[2M]
2 Obtain dual of the expression AB+A'C+AC+BC.	L2	CO2	[2M]
3 Draw a full subtractor logic diagram with truth table.	L4	CO3	[2M]
4 Write the properties of Bistable latch.	L2	CO4	[2M]
5 Write the applications of flip flops.	L2	CO5	[2M]
6 Differentiate between ROM, PROM.	L4	CO6	[2M]
7 Explain the Properties of XOR Gate.	L2	CO1	[2M]
8 What are the differences between flip flop and latch	L1	CO4	[2M]
9 Differentiate between Synchronous and Asynchronous counter.	L4	CO5	[2M]
10 Write the characteristics of PAL and PLA.	L2	CO6	[2M]

**Part - B**  
**ANSWER ANY FIVE QUESTIONS. EACH QUESTION CARRIES 10 MARKS.**

**Max.Marks:50**

	BCLL	CO(s)	Marks
11. a) Convert (A1F9) <sub>16</sub> to decimal, binary, octal. b) Realize AND,OR gates from universal gates.	L3 L4	CO1 CO1	[5M] [5M]
12. a) Minimize the function $f(A,B,C,D)=\pi(1,4,6,10,14)+d(0,8,11,15)$ using K-map. b) Obtain the compliment of the following Boolean expressions i) $A'B+A'BC'+A'BCD+A'BC'D'E$ ii) $ABEF+ABE'F'+A'B'EF$ .	L4 L4	CO2 CO2	[5M] [5M]
13. a) Explain the differences between a MUX and a DEMUX. b) Realize a full adder using half adders and explain the truth table.	L4 L4	CO3 CO3	[5M] [5M]
14. a) Design Master -slave JK flipflop with necessary diagrams. b) Convert JK flip flop to T flip flop.	L4 L2	CO4 CO4	[5M] [5M]
15. a) Design a 4 bit ring counter. b) Design a 4 bit up ripple counter and explain its timing diagram.	L4 L4	CO5 CO5	[5M] [5M]

- |     |    |                                                                                                                |    |     |      |
|-----|----|----------------------------------------------------------------------------------------------------------------|----|-----|------|
| 16. | a) | Implement $f(A,B,C,D) = \sum m(0,1,4,5,6,7,9,10,12,13,15)$ using PLA and explain its procedure.                | L4 | CO6 | [5M] |
|     | b) | Explain the memory organization with a neat diagram.                                                           | L4 | CO6 | [5M] |
| 17. | a) | Given two binary numbers $X=1010100$ and $Y=1000011$ . Perform i) $X-Y$ ii) $Y-X$ using 2's complement method. | L3 | CO1 | [4M] |
|     | b) | Obtain dual of the following Boolean expressions<br>i) $AB+A(B+C) + B'(B+D)$ ii) $A+B+A'B'C$ .                 | L3 | CO2 | [3M] |
|     | c) | Realize 3-bit digital comparator and explain the truth table.                                                  | L4 | CO3 | [3M] |
| 18. | a) | Differentiate SR-FF and JK-FF with their functional operation and excitation tables.                           | L4 | CO4 | [4M] |
|     | b) | What do you mean by universal shift register? Draw and explain its circuit diagram and operation.              | L1 | CO5 | [3M] |
|     | c) | Differentiate between ROM and RAM.                                                                             | L4 | CO6 | [3M] |

-- 00 -- 00 --