Roll No.												

PRESIDENCY UNIVERSITY

BENGALURU

End - Term Examinations – December 2025

Date: 10 – 12- 2025 **Time:** 09:30am – 12:30pm

School: SOIS	**Program:** BCA, BCA(DS), BCA(AIML)	
Course Code : CSA1200	**Course Name:** Digital Computer Fundamentals	
Semester: I	**Max Marks**: 100	**Weightage**: 50%

CO – Levels	**CO1**	**CO2**	**CO3**	**CO4**	**CO5**
Marks	**34**	**33**	**33**	**-**	**-**

Instructions:

(i) Read all questions carefully and answer accordingly.

(ii) Do not write anything on the question paper other than roll number.

Part A

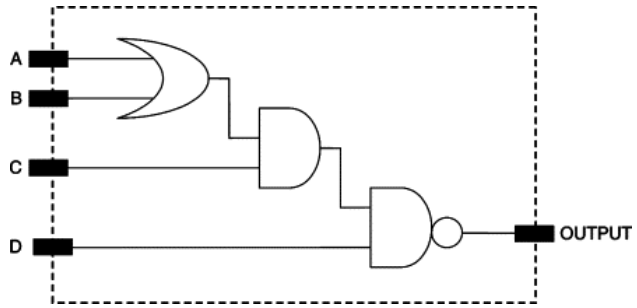
Answer ALL the Questions. Each question carries 2marks. **10Q x 2M=20M**

1	Show that (A'(A'+1))' = A	**2 Marks**	**L2**	**CO1**
2	What is Boolean algebra?	**2 Marks**	**L1**	**CO1**
3	Define combinational circuits.	**2 Marks**	**L1**	**CO2**
4	Compare multiplexer and demultiplexer.	**2 Marks**	**L2**	**CO2**
5	List the design procedure steps of combinational circuits.	**2 Marks**	**L1**	**CO2**
6	State magnitude comparator.	**2 Marks**	**L1**	**CO2**
7	Describe about latches.	**2 Marks**	**L1**	**CO3**
8	How sequential circuits are different from combinational circuits?	**2 Marks**	**L1**	**CO3**
9	Name the different types of sequential circuits.	**2 Marks**	**L1**	**CO3**
10	Outline the applications of sequential circuits.	**2 Marks**	**L1**	**CO3**

Part B

Answer the Questions. **4Q x 20M=80M**

6.	**a.**	Determine simplified sum of product terms from the given Boolean expression F(A, B, C, D) = (A'+B+D)(A+C'+D) (A'+B'+C')(A+B+C).	**15 Marks**	**L3**	**CO1**
	b.	Implement XOR and XNOR using NAND gates	**5 Marks**	**L2**	**CO1**
		Or			
7.	**a.**	Compute product of sum term from the Boolean expression F(A, B, C, D)= AD+B'C'	**15 Marks**	**L3**	**CO1**
	b.	Deliberate in detail about 2 and 3 variable k-map.	**5 Marks**	**L2**	**CO1**

8.	**a.**	Portray about Full adder. How full adder can be constructed using half adders?	**10 Marks**	**L2**	**CO2**
	b.	Draw a truth table of below figure. 	**10 Marks**	**L3**	**CO2**
		Or			
9.	**a.**	Depict about parity generator. Draw a logic diagram and truth table of 4-bit even parity generator.	**10 Marks**	**L2**	**CO2**
	b.	Draw a truth table and circuit diagram of an octal to binary encoder.	**10 Marks**	**L3**	**CO2**

10.	**a.**	Illustrate about of J K flip flop with neat sketch.	**10 Marks**	**L2**	**CO3**
	b.	Explain Moore model of finite state machine in detail.	**10 Marks**	**L2**	**CO3**
		Or			
11.	**a.**	Demonstrate about registers in detail.	**10 Marks**	**L2**	**CO3**
	b.	Delineate about mealy model of finite state machine in detail.	**10 Marks**	**L2**	**CO3**

12.	**a.**	State and prove De Morgan's laws of three variables.	**10 Marks**	**L3**	**CO1**
	b.	Describe the steps of analysis in combinational circuits.	**5 Marks**	**L2**	**CO2**
	c.	Explain characteristic table of sequential circuits.	**5 Marks**	**L2**	**CO3**
		Or			
13.	**a.**	Compute equivalent value of octal, decimal and binary for the octal number $(456)_{16}$.	**10 Marks**	**L3**	**CO1**
	b.	Elucidate on half subtractor.	**5 Marks**	**L2**	**CO2**
	c.	Explain excitation table of sequential circuits.	**5 Marks**	**L2**	**CO3**