Roll No.												

PRESIDENCY UNIVERSITY
BENGALURU

School of Engineering

Make Up Examinations – December 2025

Semester: MK	**Date**: 26-12-2025
Course Code: ECE2009	**Time**: **:** 1.00pm to 04.00pm
Course Name: Digital Computer Fundamentals	**Max Marks**: 100
Program: BCA	**Weightage**: 50%

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.				**2Mx10Q=20M**
1	Draw NOT gate using NOR gate	**2 Marks**	**L3**	**CO1**
2	Define combinational Circuit?	**2 Marks**	**L2**	**CO2**
3	Describe sequential circuit with block diagram	**2 Marks**	**L2**	**CO3**
4	Draw block diagram for the 2-bit magnitude comparator	**2 Marks**	**L2**	**CO2**
5	Hexadecimal numbers are represented with base 16. Convert $(BC9)_{16}$ = ($)_2$	**2 Marks**	**L3**	**CO1**
6	Describe JK flip flop with block diagram	**2 Marks**	**L2**	**CO3**
7	Draw the Universal gates diagram and its truth table	**2 Marks**	**L2**	**CO1**
8	What is the difference between combinational and sequential circuits	**2 Marks**	**L2**	**CO3**
9	What is the difference between edge triggered and level triggered flip flops	**2 Marks**	**L4**	**CO3**
10	Draw the block diagram and truth table of 2x4 decoder	**2 Marks**	**L2**	**CO2**

Part B

Answer ALL Questions. Each question carries 20 marks.					4QX20M=80M
11	a	Simplify the following Boolean functions using 3 variable maps: 1. F(x,y,z) = Σ(3,4,5,6,7) 2. F(x,y,z) = Σ(1,2,3,5,6,7)	10 Marks	L2	CO1
	b	Describe briefly the basic gates and universal gates with truth table, equations and logic diagrams	10 Marks	L2	CO1
		Or			
12	a	Simplify the following Boolean functions using 3 variable maps: 1. F(x,y,z) = Σ(3,4,5,6,7) 2. F(x,y,z) = Σ(0,2,4,6)	10 Marks	L2	CO1
	b	Write the basic laws of Boolean algebra with its truth table along with it's postulates for OR and AND functions	10 Marks	L3	CO1
13	a	Design the 2x4 demultiplexer logic diagram and along with 4x2 multiplexer with truth table	10 Marks	L3	CO2
	b	Design the 3-to-8-line decoder with near block diagram with truth table	10 Marks	L3	CO2
		Or			
14	a	Design the 2-bit magnitude comparator using k – map method and draw the logic diagram with truth table	10 Marks	L3	CO2
	b	Design the 8-to-3-line encoder with near block diagram with truth table	10 Marks	L3	CO2
15	a	Draw the diagram for JK flip flop, implement using NAND gate and also write the truth table	10 Marks	L2	CO3
	b	Draw the diagram for T flip flop, implement using NAND gate and also write the truth table	10 Marks	L2	CO3
		Or			
16	a	Draw the diagram for SR flip flop, implement using NAND gate and also write the truth table	10 Marks	L2	CO3
	b	Draw the diagram for D flip flop, implement using NAND gate and also write the truth table	10 Marks	L2	CO3

17	**a**	Design the 1-bit magnitude comparator using k – map method and draw the logic diagram with truth table	**5 Marks**	**L3**	**CO2**
	b	Construct a two-bit up counter using JK flip flop also write down the truth table indicating present state and next state of the counter and respective flip flop values and implement using NAND gate	**15 Marks**	**L4**	**CO3**
Or					
18	**a**	Design a Full subtractor using k – map method and write down the truth table and its logic diagram	**5 Marks**	**L3**	**CO2**
	b	Construct a two-bit down counter using JK flip flop also write down the truth table indicating present state and next state of the counter and respective flip flop values and implement using NAND gate	**15 Marks**	**L4**	**CO3**