

Roll No																			
---------	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--



**PRESIDENCY UNIVERSITY
BENGALURU**

**SCHOOL OF ENGINEERING
MAKE-UP EXAMINATIONS – DECEMBER 2025**

Semester : MK	Date : 26-12-2025
Course Code : EEE2015	Time : 09:30am – 12:30pm
Course Name :Digital Electronics	Max Marks :100
Program :B. Tech. (EEE)	Weightage :50%

Instructions:

- (i) Read all questions carefully and answer accordingly.
- (ii) Question paper consists of 3 parts.
- (iii) Scientific and non-programmable calculator are permitted.
- (iv) Do not write any information on the question paper other than Roll Number.

PART A																																			
ANSWER ANY 3 QUESTIONS		3Q X 5M = 15 M																																	
1	The binary, decimal, and hexadecimal number systems are also known as Base-2, Base-8, Base-10, and Base-16 number systems. Convert the decimal number 1234 to its equivalent hexadecimal number and binary number.	(CO 1)	[Knowledge]																																
2	<p>Truth table is used for boolean algebra, which involves only True or False values. From the truth table below, determine the standard SOP expression and draw logic gate circuit</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>A</th> <th>B</th> <th>C</th> <th>Y</th> </tr> </thead> <tbody> <tr><td>0</td><td>0</td><td>0</td><td>1</td></tr> <tr><td>0</td><td>0</td><td>1</td><td>0</td></tr> <tr><td>0</td><td>1</td><td>0</td><td>1</td></tr> <tr><td>0</td><td>1</td><td>1</td><td>0</td></tr> <tr><td>1</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>1</td><td>0</td><td>1</td><td>1</td></tr> <tr><td>1</td><td>1</td><td>0</td><td>1</td></tr> </tbody> </table>	A	B	C	Y	0	0	0	1	0	0	1	0	0	1	0	1	0	1	1	0	1	0	0	0	1	0	1	1	1	1	0	1	(CO 1)	[Knowledge]
A	B	C	Y																																
0	0	0	1																																
0	0	1	0																																
0	1	0	1																																
0	1	1	0																																
1	0	0	0																																
1	0	1	1																																
1	1	0	1																																
3	In electronics, flip-flops and latches are circuits that have two stable states that can store state information. Differentiate between Flip Flops Latches?	(CO 3)	[Knowledge]																																
4	<p>Write the Boolean expression and the truth table for the give logic circuit.</p>	(CO 1)	[Knowledge]																																

5	NAND is an abbreviation for “NOT AND.” A two-input NAND gate is a digital combination logic circuit that performs the logical inverse of an AND gate. Draw the XOR gate using NAND gates ONLY	(CO 1)	[Knowledge]
---	---	--------	-------------

PART B

ANSWER ANY 2 QUESTIONS

2Q X 20M = 40M

6	A digital system is to be designed in which the month of the year is given as input in binary form. The month January is represented as '000', February '001' and so on. The output of the system should be '1' corresponding to the input of the month containing 31 days or otherwise it is '0'. Design and implement the logic for only 8 months from (January to August) Consider the system of three variables (A, B, C). Design and implement the simplified logic using NAND gates only.	(CO 1)	[Comprehension]
7	NAND is an abbreviation for “NOT AND.” A two-input NAND gate is a digital combination logic circuit that performs the logical inverse of an AND gate. Realize Basic gates using NAND gates ONLY.	(CO 2)	[Comprehension]
8	The different types of counters include Asynchronous, Synchronous, Asynchronous Decade, Synchronous Decade. Designs 3 bit asynchronous counter.	(CO 5)	[Comprehension]

PART C

ANSWER ANY 3 QUESTIONS

3Q X 15M=45M

9	A basic flip-flop can be constructed using four-NAND or four-NOR gates. Flip-flop is popularly known as the basic digital memory circuit. Convert SR flipflop to T flip flop	(CO 5)	[Application]
10	Digital circuits known as counters are capable of enumerating events or the pulses within a signal. Design 2 bit Asynchronous Binary down counter	(CO 4)	[Application]
11	In electronics, a multiplexer, also known as a data selector, is a device that selects between several analog or digital input signals and forwards the selected input to a single output line. Design 8:1 Multiplexer. Write the truth table and circuit using gates.	(CO 4)	[Application]
12	Use minimization technique called K-map to reduce the Boolean expression $f = \sum m(0,1,2,4, 5,8,9,12,13)$. Write the logic gate circuit.	(CO 1)	[Application]