GALGOTIAS UNIVERSITY

ADMISSION NUMBER

School of Engineering

B.TECH Electronics and Communication Engineering
Semester End Examination - Jul 2024

Duration : 180 Minutes
Max Marks : 100

Sem I - G2UC101B - Introduction to Digital System

General Instructions
Answer to the specific question asked
Draw neat, labelled diagrams wherever necessary
Approved data hand books are allowed subject to verification by the Invigilator

1)	What do the extreme right and extreme left digits in a number indicates?	K1(2)
2)	Perform (1010)2 - (101)2 Using 2's complement method.	K2(4)
3)	Represent the decimal number 27 and 132 in binary using (i) Binary code (ii) BCD code (iii) Excess-3 Code (iv) Gray Code.	K2(6)
4)	Reduce the given Boolean expression A = XY + X(Y+Z) + Y(Y+Z) using Boolean algebraic simplification techniques. And also draw the logical circuit using universal NAND gates.	K3(9)
5)	With neat sketch, realize the expression Y = AB + CD by NAND gates only. How do you convert a standard SOP form into a standard POS form?	K3(9)
6)	Realize a full adder using (a) only NAND gates and (b) only NOR gates.	K5(10)
7)	Reduce using mapping the following expression and implent the real minimal expression in universal logic. F(A, B, C, D) = Σm(1, 3, 4, 6, 8, 9, 11, 13, 15) + Σd(0, 2, 14)	K4(12)
8)	Make a K-map for the function, $f(A, B, C, D)$ = ¶M (3,4,5,7,11,13,15)) + d(6,8,10,12)	K5(15)
9)	Design a 8:1 multiplexer using basic gates only. Why is a multiplexer called as a data selector? Mention any two applications of a multiplexer.	K5(15)
10)	Design a 4-bit BCD to XS-3 Code converter. Why is minimization of switching functions required?	K6(18)