Jaypee Institute of Information Technology, Noida

T1 Examination, 2022
B.Tech , IV Semester

Course Title : Digital Systems/ Introduction to Digital Systems **Maximum Time : 1 Hr**
Course Code : 18B11EC213/15B11EC314 **Maximum Marks : 20**

CO 1	Familiarize with the fundamentals of number system, Boolean algebra and Boolean function minimization techniques.
CO2	Analyze and design combinational circuits using logic gates.
CO3	Analyze state diagram and design sequential logic circuits using flip flops.
CO4	Understand the classification of signals & systems and learn basic signal operations and fourier analysis.
CO5	Understand various steps involved in digitization and transmission of a signal.

Q1. Write the BCD code and excess – 3 code of $(987.123)_{10}$. Also write the gray code corresponding to given binary code $(11010001)_2$. [3, CO1]

Q2. Given the two binary numbers X = 1010100 and Y = 1000011, perform the subtraction (a) X-Y and (b) Y-X by using 2's complement method. [2, CO1]

Q3. In a new number system A and B are successive digits such that $(AB)_x = 29$ and $(BA)_x = 34$. Find A, B and x. [3, CO1]

Q4. Reduce the following expression using K – map and implement the reduced expression using universal NOR gate. [5, CO2]

F(A, B, C, D) = ΠM(2, 8, 9, 10, 11, 12, 14)

Q5. Obtain the simplified SOP expression for the function F(A, B, C) = Σm (3, 4, 6, 7) using Quine Mccluskey method. [4, CO2]

Q6. Implement the function F(A, B, C) = ABC + A'B'C + BC' using a single 4×1 Mux. [3, CO2]