POSSESION OF MOBILES IN EXAM IS UFM PRACTICE.

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Jaypee Institute of Information Technology, Noida

T1 Examination, 2023

B. Tech IV Semester

Course Title: Digital Systems **Maximum Time: 1 Hr**

Course Code: 18B11EC213 **Maximum Marks: 20**

CO1: 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 & Fourier analysis.
CO5: Understand various steps involved in digitization and transmission of a signal.

Note: Attempt all questions. All questions are compulsory.

Q. 1 **(a) Subtract using 10's Compliment method: 20 – 100.** **[CO1, 1+1+2]**

(b) Subtract using 2's Compliment method: $(11010)_2 - (1101)_2$.

(c) Simply the Boolean expression using Boolean laws: $Y = AB + \overline{AC} + A\overline{B}C(AB + C)$

Q.2. Find out minimized POS form of the following function: **[CO1, 4]**

$F(A, B, C, D) = \sum m(0, 2, 8, 10, 14) + \sum d(5, 15)$ **using k-map and also find out EPI's and PI's.**

Q.3. Implement the function $F(A, B, C, D) = \sum m(0, 1, 3, 4, 8, 9, 15)$ using 8:1 Mux. **[CO2, 4]**

Q. 4 Simplify the function $F(A, B, C) = \sum m(0, 1, 4, 5)$ using QM Techniques **[CO1, 4]**

Q.5. How many decoders are required to construct 6: 64 decoder using 3:8 decoders. Implement the full subtractor using 3: 8 decoders. **[CO2, 4]**