**]=CSE260 Spring 2019**

*Digital Logic Design*

Deadline: 24-Feb-2019

Time: By 5 pm

Where to Submit: There will be boxes [one for each section] in front of my room

The goal is to make you practice, not to bother you.

So, we[me & your TA apu] will provide important solutions in this very doc by 22-Feb-2019 midnight.

**Pre-Mid Assignment**

1. **Conversion:**

| **Hexadecimal** | **Decimal** | **Octal** | **Binary** | **BCD** |
| --- | --- | --- | --- | --- |
| 3ABF.23 |  |  |  |  |
|  | 625.5 |  |  |  |
|  |  | 453.66 |  |  |
|  |  |  | 1101010.1001 |  |
|  |  |  |  | 1001000000111000 |

**\*\*Also determine the Excess-3 and Excess-4 codes for the digits 0-9.**

**Design a system that would take BCD as input and output the equivalent Excess-3.**

1. **Convert the following numbers to 16 bit 1’s and 2’s complement binary numbers:**
   1. 415410
   2. -721310
   3. **-**513210
2. **Calculate range of the following numbers:**

* a. 5 bit 2’s complement
* b. 9 bit 2’s complement
* c. 7 bit 1’s complement

**5. Do the following subtractions: [10 bit system]**

1011001012-10001112 [using 2’s complement]

1102-100100112[using 1’s complement]

**6. Draw the truth table of the given functions and then Simplify them using**

* 1. **Boolean algebraic manipulation,**
  2. **K-map and**
  3. **Tabulation Method**

**Also, draw logic circuits of the simplified versions using**

* 1. **Basic Gates**
  2. **NAND Gates only**
  3. **NOR Gates only**

1. F(A,B,C) = ∏(0,3,5) = ∑(1,2,4,6,7)
2. F (A,B,C,D)= ∑(1,4,5,8,11,13,15)
3. F(A,B,C,D) = ∑(1,2,5,7,9) + d(4,6,15) [d=Don’t care]
4. F (A,B,C)= A̅B C̅ + A̅ B̅C + AB̅C + A̅B
5. F (A,B,C,D)= A̅BC̅D + AB̅ C̅D̅ + AB̅C̅D̅ + AB̅CD̅
6. **Convert the SOP function into POS function**

F (A, B, C)= ∑ (0, 2, 3, 5, 7) = A’ B’ C’ + A B’ C’ + A B’ C + ABC’ + ABC

8. Word Problems:

<https://docs.google.com/document/d/1-hM-Qod2b7ucFRPkYuOI1MADLcqLIDLo03MRr0ksOZg/edit?usp=sharing>