

Tutorial 2 (BCD, Complement Subtraction, Universal Gate)

ECSE104L

1. Perform following using BCD addition write all the intermediate steps
 - (i) $1234 + 6678 = (?)$
 - (ii) $1212 + 2323 = (?)$
2. Solve using 1's complement (use 9 bit binary)
 - (i) $25 + 112 = (?)$
 - (ii) $111 - 51 = (?)$
 - (iii) $53 - 120 = (?)$
3. Solve using 1's complement (use 9 bit binary)
 - (i) $91 + 11 = (?)$
 - (ii) $11 - 51 = (?)$
 - (iii) $53 - 120 = (?)$
4. Implement following Boolean function using 2-input NAND gate only and NOR gate only
 - (i) $A.B.C$
 - (ii) $A+B+C$
 - (iii) $A.B + A'.B'$
 - (iv) $A'.B + A.B'$
 - (v) $A + B.C + A.B.C'$
5. Convert following in the 8,4,-2,-1 coding and excess-3 code
 - a. 19
 - b. 26
 - c. 45

Take Home Exercise

1. What are the special functionalities of XOR and XNOR gate?
2. What are the scenarios when NAND or NOR implementation of the circuit are more beneficial as compare to simple AND, OR, NOT implementation.