Digital Logic Design
Assignment - 1

1. Express each decimal number in binary as an 8-bit sign-magnitude number:
(a) -83 (b) +101 (c) -103

2. Express each decimal number as an 8-bit number in the 1's complement form:
(a) - 69 (b) +116 (c) -99

3. Express each decimal number as an 8-bit number in the 2's complement form:
(a) -59 (b) +102 (c) -116

4. Determine the decimal value of each signed binary number in the sign-magnitude form:
(a) 10011101 (b) 01110100 (c) 10111011

5. Determine the decimal value of each signed binary number in the 1's complement form:
(a) 10111001 (b) 01100100 (c) 10111101

6. Determine the decimal value of each signed binary number in the 2's complement form:

(a) 10111011 (b) 01010100 (c) 10011000

7. Convert each pair of decimal numbers to binary and add using the 2's complement form(8-bit representation) :

(a) -38 and -27 (b) 59 and -39 (c) - 58 and 65 (d) -102 and – 85 (e) 29 and -72

8. Convert each hexadecimal number to decimal:
(a) 4226 (b) 6426 (c) 2B26 (d) ABC26 (e) 6F226

9.. Convert each decimal number to hexadecimal:
(a) 3654 (b) 7824 (c) 8926 (d) 551 (e) 3682

10. Convert each binary number to Gray code:

(a)11011 (b) 1001010 (c) 1111011101110

11 . Convert each Gray code to binary:

(a) 1010 (b) 00010 (c) 11000010001

12. Add the following BCD numbers:

(a) 1001 + 0110 (b) 0011 + 1001

(c) 1001 + 1001 (d) 1001 + 0111

(e) 00110101 + 01100111

(f) 01010011 + 01011000

(g) 10010101 + 100111000

(h) 010101101001 + 001100101000