**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**