Digital System Design – UEC 612
(Odd Sem -2018)

Tutorial – 1

Q-1: Convert the following numbers :

(i) $(123.4)_8$ --> $(?)_{10}$ (ii) $(4021.2)_5$ --> $(?)_{10}$

(iii) $(B4C)_{16}$ --> $(?)_{10}$ (iv) $(1101.01)_2$ --> $(?)_{16}$

Q-2: Write the 1's and 2's complement of

(i) 10110101 (ii) 10101011

Q-3: Find the signed magnitude representation of

(i) -102 (ii) 106 (iii) -27

Q-4: What is the 2's complemet representation using 8 bits for following decimal numbers:

(i) -44 (ii) 64 (iii) -112

Q-5: Calculate the result of following arithmetic operations using 2's complement Arithmetic:

(i) 35 – 18 (ii) 98 - (-22) (iii) -124 + 78 (iv) -62 – 45

Q-6: Convert each of the following decimal numbers in binary, BCD and Excess-3 forms:

(i) 125 (ii) 156 (iii) 98 (iv) 69

Q-7: Convert each of the following packed BCD numbers to decimal numbers:

(i) 01101001 (ii) 01000101 (iii) 10011000 (iv) 100001110000

Q-8: Add followng BCD numbers:-

(i) 75 + 29 (ii) 33 + 56 (iii) 298 + 99 (iv) 917 + 215

Q-10: Tabulate which of the following bit strings are in error, if even or odd parity is considered:

(i) 100110010 (ii) 011101010 (iii) 10111111010001010

(iv) 11110110 (v) 00110001 (vi) 01010101010101010

Q-11: Given the 11 bit data word 11001001010, generate the 15 bit hamming code word assuming odd parity.

Q-12: A 7-bit hamming code sequence 1001001 0111001 1110110 0011011 is received through a noisy channel. Decode the message assuming a single bit error and even parity.

Q-13: A 12 bit hamming code word containing 8 bits of data and 4 parity bits is received over a noisy channel. Assuming even parity, confirm that the correctness of the following data words. If the data words are not correct, identify the bit location in each data word that has an error and carry out the necessary correction to generate the original data word.

(i) 000011101010 (ii) 101110000110