**MGM’S COLLEGE OF ENGINEERING, NANDED**

**DEPARTMENT OF CSE**

**2016-17(Odd Semester)**

**ASSIGNMENT-1**

 **CLASS: SE CSE I SUBJECT: Digital Systems**

Q.1) Convert the following-

 a) Convert to decimal

 i) (1100111)2 ii) (111010101)2 iii) (101.11011)2 iv) (10111.011011)2 v) 11110001)2

 b) Convert to binary

 i) (57.35)8 ii) (2765)8 iii) (9BCD6)16 iv) (5635)10 v) (100.425)10

Q.2) Give detail classification of binary codes.

Q.3) Determine the 2’s complement of following numbers-

 i) (01101101) ii) (11101111) iii) (10000011) iv) (01110001) v) (11110110)

Q.4) Perform in 2’s complement-

 N1= 65 N2= 46

 i) N1+N2 ii) N1-N2 iii) -N1+N2

Q.5) Add the following in BCD

 i) 88.7+265.8 ii) 275+493

Q.6) Add the following in XS-3

 i) 109+778 ii) 204.6+183.52

Q.7) Subtract the following in XS-3 by 9’s complement arithmetic

 i) 173.5-66.6 ii) 256-643

Q.8) Convert the following to Gray code-

i) (1024)10 ii) (A85)16  iii) (11101001)2 iv) (356)8 v) (10101101)2

Q.9) Convert the following Gray codes to equivalent binary-

i) 10101111 ii) 10110011 iii) 10010110 iv) 11010011 v) 10111000

Q.10) Design Hamming code for the data words-

a) 7-bit Hamming code for-

 all sixteen 4-bit binary words(0 to 15)

 b) 12-bit Hamming code for the 8-bit words-

 i)10101110 ii) 01101111 iii) 10111001 iv)10001110 v) 01110010

Q.11) Decode the Hamming code received after passing through noisy channel-

i) 0111110 ii) 0011101 iii) 1100110 iv) 1010111 v) 1110001

Q. 12) Reduce the following using K-map & realize using universal gates-

 i) AB+AC+C+AD+ABC+ABC

 ii) (A+B)(A+B+D)(B+C)(B+C+D)

Q.13) Reduce the following using K-map & realize using universal gates-

i) ∑m (0,2,4,6,7,8,10,11,12,13,14,16,18,19,29,30)

ii) ∑m (0,7,8,9,12,13,15,16,22,23,30,31)

Q.14) Reduce the following using K-map & realize using universal gates-

i) ∏M (4,5,6,13,15)

ii) ΠM (2, 3, 6, 8, 10, 14). d (0,1,7,11,12)

iii) ΠM (6, 7, 8, 9). D (10,11,12,13,14,15)

iv) ∑m (1, 3, 5, 8, 9, 11, 15) + d (2, 13)

v) ∏M (1, 2, 3, 8, 9, 10, 11, 14) . d (7, 15)

Q.15) Reduce the following using Quine McClusky method & realize using universal gates-

i) ∑ m (1,4,5,6,11,12,13,14)

ii) ∑m (1,5,6,12,13,14) +d(2,4)

iii) ∑m (0, 3, 5, 6, 10, 12, 15)

iv) Π M (1,3,4,5,6,7,9,12,13,14)

Q.16) Reduce the following using Quine McClusky method & realize using universal gates-

i) Π M (1,3,4,5,6,7,9,12,13,14)

ii) Π M (1,2,3,5,6,7,8,9,12,13) . d(10,11)

 D.B.Aghor

 Subject In-charge