JAYPEE UNIVERSITY OF ENGINEERING & TECHNOLOGY

A.B. ROAD, P.B. No. 1, RAGHOGARH, DIST: GUNA (M.P.) INDIA

DIGITAL ELECTRONICS (14B11EC317)

Tutorial-1

Q1 Covert the following numbers to binary:

(i) $(53.625)_{10}$ (ii) $(2B5)_{16}$ (iii) $(735)_8$ Ans $(110101.101)_2$; $(0010\ 1011\ 0101)_2$

Q2 Covert the following number to octal: $(111\ 011\ 101)_2$

$(153.513)_{10}$ = $(231.406517...)$

Q3 Covert the following number to Hexadecimal:

(i) $(115)_{10}$ (ii) $(235)_{10}$ Ans $(73)_{16}$; $(EB)_{16}$

Q4 Covert the following numbers to decimal

(i) $(1100101.1001)_2$ (ii) $(2B5)_{16}$ (iii) $(241)_5$ (iv) $(231.406)_8$ Ans (153.51171)

$(101.5625)_{10}$ $(693)_{10}$ $(71)_{10}$ XXXXXXXXXXXXXXX

Q5 Determine the base of the numbers in each case for the following operation to be correct.

(i) 14/2 = 5 (ii) 24 + 17 = 40 $(i)\ \frac{(14)_x}{(2)_x} = (5)_x$; $\frac{x+4}{2} = 5$ or $x = 6$; $(ii)\ (24)_x + (17)_x = (40)_x$

$2x + 4 + x + 7 = 4x$

$11 = x$

Q6 Convert the decimal number to base 5 : 231 $= (1411)_5$

Q7 Perform the following operation using the r's and (r – 1)'s complement:

(i) $(-53)_8 - (37)_8$ (ii) $(23)_{10} - (48)_{10}$ (iii) $(37)_8 - (53)_8$ (iv) $(-23)_{10} - (48)_{10}$

Ans $(-112)_8$ $(-25)_{10}$ $(-14)_8$ $(-71)_{10}$

Q8 Perform the following operation using 1's and 2's complement method:

Ans Convert the no. to binary and apply complement.

(i) $(23)_{10} - (48)_{10}$ (ii) $(48)_{10} - (23)_{10}$ (iii) $(-48)_{10} - (23)_{10}$ (iv) $(23.75)_{10} - (11.5)_{10}$

$(-25)_{10}$ $(25)_{10}$ $(-71)_{10}$ $(12.25)_{10}$

Q9 Find the r's and (r – 1)'s complement of the following numbers:

(i) $(0990)_{10}$ (ii) $(1010101)_2$ (iii) $(25.639)_{10}$ (iv) $(25.7)_8$ Ans:(52.0 ; 52.1) XXXXXXXXXXXXXXX

(9009; 9010) (0101010; 0101011) $(74.360; 74.361)_{10}$ $(\quad, \quad)$

Q10 Construct a weighted binary code for the decimal digits using weights 6,3,1,1.

Dec	6 3 1 1
0	0 0 0 0
1	0 0 0 1
2	0 0 1 1
3	0 1 0 0
4	0 1 0 1
5	0 1 1 1
6	1 0 0 0
7	1 0 0 1
8	1 0 1 1
9	1 1 0 0