Name :- Muntasir Wasta

Data Representation

* Binary to decimal conversion

1) $(111101)_2 = (?)_{10}$

		2^5	2^4	2^3	2^2	2^1	2^0
Exponents		2^5	2^4	2^3	2^2	2^1	2^0
Place values		32	16	8	4	2	1
Bits		1	1	1	1	0	1
Value		32	+16	+8	+4		+1 = 61

$\therefore (111101)_2 = (61)_{10}$

2) $(1010)_2 = (?)_{10}$

		2^3	2^2	2^1	2^0
Exponent		2^3	2^2	2^1	2^0
Place values		8	4	2	1
Bits		1	0	1	0
Value		8		+2	= 10

$\therefore (1010)_2 = (10)_{10}$

3) $(10111011)_2 = (?)_{10}$

	2^7	2^6	2^5	2^4	2^3	2^2	2^1	2^0
Exponents	2^7	2^6	2^5	2^4	2^3	2^2	2^1	2^0
Place Values	128	64	32	16	8	4	2	1
Bits	1	0	1	1	1	0	1	1
Value	128		+32	+16	+8		+2	+1 =187

$\therefore (10111011)_2 = (187)_{10}$

4) $(00111)_2 = (?)_{10}$

Exponents →	2^4	2^3	2^2	2^1	2^0		
Place Value	16	8	4	2	1		
Bits	0	0	1	1	1		
Value			4	+2	+1	=	7

$\therefore (00111)_2 = (7)_{10}$

* Decimal to binary conversion

1) $(84)_{10} = (?)_2$ 2) $(144)_{10} = (?)_2$

2	84	
2	42	0
2	21	0
2	10	1
2	5	0
2	2	1
	1	0

$\therefore (84)_{10} = (1010100)_2$

2	144	
2	72	0
2	36	0
2	18	0
2	9	0
2	4	1
2	2	0
	1	0

$(144)_{10}$

$\therefore (144)_{10} = (10010000)_2$

3) $(14)_{10} = (?)_2$

2	14	
2	7	0
2	3	1
	1	1

$\therefore (14)_{10} = (1110)_2$

4) $(259)_{10} = (?)_2$

2	259	
2	129	1
2	64	1
2	32	0
2	16	0
2	8	0
2	4	0
2	2	0
	1	0

$\therefore (259)_{10} = (100000011)_2$

5) $(389)_{10} = (?)_2$

2	389	
2	194	0
2	97	0
2	48	1
2	24	0
2	12	0
2	6	0
2	3	0
	1	1

$\therefore (389)_{10} = (110000100)_2$