COMP 206: Digital Logic Design

Assignment No. 1

Submission: Monday, 2nd Nov

1. Fill the following table by performing proper conversion. Show complete working

Decimal	Binary	Octal	Hexa-decimal
33	100001	41	21
117	1110101	165	75
451	111000011	703	1C3
431	110101111	657	1AF

Assignment - 1

① 33_{10}

i - $33_{10} \rightarrow {}^{2}.{}_{2}$

2	33
2	16 - 1
2	8 - 0
2	4 - 0
2	2 - 0
	1 - 0

$\Longrightarrow 100001_2$

ii - $33_{10} \rightarrow 2.8$

8	33
	4 - 1

$\Rightarrow 41_8$

iii - $33_{10} \rightarrow {}^{?}{}_{16}$

16	33
	2 - 1

=> 21

② 1110101_2

i - $1110101_2 \rightarrow {}^{?}{}_{10}$

$2^6 + 2^5 + 2^4 + 2^2 + 2^0 = 117_{10}$

ii - $1110101_2 \rightarrow {}^{?}{}_{8}$

$1110101_2 = 117_{10}$

8	117
8	14 - 5
	1 - 6

=> 165

iii - $1110101_2 \rightarrow {}^{?}{}_{16}$

16	117
	7 - 5

=> 75

③ 703_8

i - $703_8 \rightarrow {}^{?}{}_{10}$

$(7 \times 8^2) + (0 \times 8^1) + (3 \times 8^0) = 451_{10}$

ii - $703_8 \rightarrow {}^{?}{}_{2}$

$703_8 = 451_{10}$

2	451
2	225 - 1
2	112 - 1
2	56 - 0
2	28 - 0
2	14 - 0
2	7 - 0
2	3 - 1
	1 - 1

=> 111000111_2

iii - $703_8 \rightarrow {}^{?}.16$

16	451
16	28 - 3
	1 - 12

$\Rightarrow 1C3$

(4) $1AF_{16} \rightarrow {}^{?}.10$

i- $(1 \times 16^2) + (10 \times 16^1) + (15 \times 16^0)$

$= 431_{10}$

ii - $1AF_{16} \rightarrow {}^{?}.2$

2	431
2	215 - 1
2	107 - 1
2	53 - 1
2	26 - 1
2	13 - 0
2	6 - 1
2	3 - 0
	1 - 1

$\Rightarrow 110101111_2$

iii - $1AF_{16} \rightarrow {}^{?}.8$

8	431
8	53 - 7
	6 - 5

$= 657$