ITI1100 Assignment I — Innocent Mutenure

1.3 $(4310)_5$
↳ $(4\times5^3)+(3\times5^2)+(1\times5)+0$
$= 580$

b) $(196)_{12}$
↳ $(1\times12^2)+(9\times12)+8$
$= 260$

c) $(4\,8\,5)_8$
↳ $4\times8^2+(8\times8)+5$
$= 285$

d) $(345)_6$
↳ ~~$(6\times3\times5)$~~ $(6^2\times3)+29$
$= 137$

1.7 64 CD → Binary

6 0110
4 0100
C 1100
D 1000

0110 0100 1100 1000

11 0 110 010 011 001 000 → octal
0 6 2 3 1 0

$=(62310)_8$

1.9 10110.0101
↳ $2^4+2^2+2+2^{-2}+2^{-4}$
$= 22.3125$

b 16.5
↳ $(1\times16)+6+5\times16^{-1}$
$= 22.3125$

c) $(26.24)_8$
→ $(2\times8)+6+2\times8^{-1}+4\times8^{-2}$
$= 22.3125$

d) $(DADA.B)_{16}$
↳ $13\times16^3+10\times16^2+13\times16+10+11\times16^{-1}$
$= 56026.6875$

1.10 (1010.1101)

$\rightarrow 2^3 + 2 + 2^{-1} + 2^{-2} + 2^{-4}$

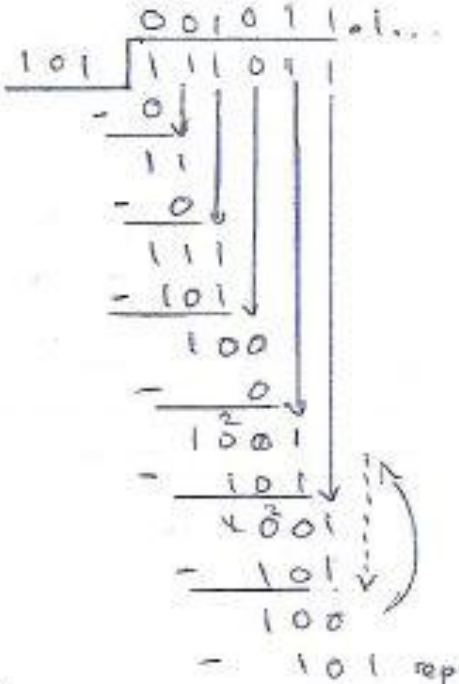
$= 10.8125$

1.11 Division

$\therefore$

$11101_2 \div 101_2$

$1011.1\ldots$



1.13 a) $27.315 \rightarrow B_1$

$27.315 - 16$	1
$= 11.315 - 8$	1
$= 3.315 - 4$	0
$= 3.315 - 2$	1
$= 1.315 - 1$	1
$= 0.315 - 2^{-1}$	0
$\rightarrow 0.315 - 2^{-2}$	1
$\rightarrow 0.065 - 2^{-3}$	0
$\rightarrow 0.065 - 2^{-4}$	1

$\rightarrow 11011.0101$

b) 2/3 = 10/11 →

```
0.1010
11|10.00
  0
  ---
  100
- 11
  ---
  010
- 0
  ---
  100
- 11
  ---
  010 ... repeats this pattern ∴
```

the eighth decimal place is a 0

= 0.10101010

bii) 0.10101010

$= 2^{-1}+2^{-3}+2^{-5}+2^{-7}$

= 0.664

difference is (0.02)

c) 0.10101010 → (hex)

0. 10 10

0. AA

ii) 0.AA → decimal = $10^{-1} + 10^{-2}$

= 0.0664

∴ It is not the same

a) 00010000

1's 11101111

2's 11110000

11011010

00100101 1's

00110 2's

b) 00000000

1's 11111111

2's 100000000

d) 10101010

1's 01010101

2's 10101010

e) 10000101

1's 11110101

2's 11110111

f) 11111111

1's 00000000

2's 0 1

1.5 2 8
2 9 6 7 0 0

1.6 C 3 D F
b's 3 C 2 1

b) C 3 D F → Binary

C → 1100
3 → 0011
D → 1101
F → 1111

1100 0011 1101 1111

c) 1100 0011 1101 1111
2's 0011 1100 0010 0001

d) 0011 1100 0010 0001 → hex

3 12 2 1

(3 C 2 1) → same as answer in a)

1.7 a) 4637 - 2579
M = 4637
10's → N = 7421
1 2058
- 10000
ans 2058

b) 125 - 1800
M = 0125
10's → N = + 8200
8325

ans = -10's (8325)
= -(1675)

c) 2043 - 4361

M = 2043

10's N = 15639

7682

ans = -(10's(7682

-(2318)

d) 1631 - 0745

M = 1631

10's N = 09255

10886

- 10000

ans ~~886~~

886

#.18 a) 10011

2's +01110

11111

ans = -2's(11111)

= (-00001)

b) 10-0010

2's +01 1010

11 1110

ans = -2's(11 1110)

= - (10)

) 001001

2's 001011

11111

ans = -2's(11111)

= -(00001)

d) 101000

010101

↓

101000

+101011

①011011

ans = 011011

because of end carry