NSI

Composition d’NSI

Appréciations :

Note :

\_\_\_\_\_\_\_\_\_\_\_\_

Signature :

Problème 1 :

a)

4=11(3).

|  |  |
| --- | --- |
| 4 | 3 |
| -3 | **1** |
| **1** |  |

15=120(3).

|  |  |  |
| --- | --- | --- |
| 15 | 3 |  |
| -15 | 5 | 3 |
| **0** | -3 | 1 |
|  | **2** |  |

100=10201(3).

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 100 | 3 |  |  |  |
| -99 | 33 | 3 |  |  |
| **1** | -33 | 11 | 3 |  |
|  | **0** | -9 | 3 | 3 |
|  |  | **2** | -3 | **1** |
|  |  |  | **0** |  |

b)

12(3) = 2\*30+1\*31 = 2+3 = 5

101(3) = 1\*30+1\*32 = 3+0+9 = 12

20,2(3) = 2\*31 | 2\*30 = 6 | 6 =6,6

c)

2121(3)+1212(3) = 3333(3).

|  |
| --- |
| 2121 |
| +1212 |
| 3333 |

Exercice 2 :

1789=11011111101(2)



25=11001(2)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 25 | 2 |  |  |  |
| -24 | 12 | 2 |  |  |
| **1** | -12 | 6 | 2 |  |
|  | **0** | -6 | 3 | 2 |
|  |  | **0** | -2 | **1** |
|  |  |  | **1** |  |

7=111(2)

|  |  |  |
| --- | --- | --- |
| 7 | 2 |  |
| -6 | 3 | 2 |
| **1** | -2 | **1** |
|  | **1** |  |

12,625=1100,1001110001(2)

|  |  |  |  |
| --- | --- | --- | --- |
| 12 | 2 |  |  |
| -12 | 6 | 2 |  |
| **0** | -6 | 3 | 2 |
|  | **0** | -2 | **1** |
|  |  | **1** |  |



b)

101(2) = 1\*20+1\*22 = 1+4 = 5

1011000010(2)=1\*20+1\*22+1\*23+1\*28=1+4+8+256=269

1101,011(2)=1\*20+1\*21+1\*23 | 1\*21+1\*22 = 1+2+8 | 2+4 = 11,6

c)

d)

e)

11001100(2)+ 10011001(2) = 101100101(2)

|  |
| --- |
| 11001100 |
| +10011001 |
| 101100101 |

Exercice 3 :

a)

28-1=256-1=255

b)

-28 et 28-1

c)

d)

e)

f)

11100101+11000011 = 100101000 (débordement de 1 bit)

|  |
| --- |
| 11100101 |
| +11000011 |
| 100101000 |

10100110+11001001 = 101101111 (débordement de 1 bit)

|  |
| --- |
| 10100110 |
| +11001001 |
| 101101111 |

Problème 2 :

Exercice 1

b)

01001/000 = C5+L0 = ENQ

01100/101 = C6+L5 = U

01101/110 =

01110/010 =

01101/001 =

00100/000 =

01001/001 =

01010/110 =