Temă laborator 1 ASC

1. a)

$4_{(10)} = 100_{(2)}$

$4_{(10)} = 4_{(16)}$

b)

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

$10_{(10)} = A_{(16)}$

c)

$15_{(10)} = 1111_{(2)}$

$15_{(10)} = F_{(16)}$

d)

$32_{(10)} = 20_{(16)}$

$32_{(10)} = 100000_{(2)}$

2. a)

$3_{(10)} = 3_{(16)}$

$3_{(10)} = 11_{(2)}$

b) 11 | 16 → 0 | 0 → 11

$11_{(10)} = B_{(16)}$

11 | 2 → 5 | 2 → 2 | 2 → 1 | 2 → 0 | 2 → 0

$11_{(10)} = 1011_{(2)}$

c) 16 | 16 → 1 | 16 → 0 | 1

$16_{(10)} = 10_{(16)}$

16 | 2 → 8 | 2 → 4 | 2 → 2 | 2 → 1 | 2 → 0 | 2 → 0

$16_{(10)} = 10000_{(2)}$

d) 17 | 16 → 1 | 16 → 0 | 1

$17_{(10)} = 11_{(16)}$

17 | 2 → 8 | 2 → 4 | 2 → 2 | 2 → 1 | 2 → 0 | 2 → 0

$17_{(2)} = 10001_{(2)}$

3) ~~$1010_{(16)} = 0101_{(2)} = 10_{(10)}$~~

~~$0101_{(2)} = 0 \cdot 2^0 + 1 \cdot 2^1 + 0 \cdot 2^2 + 1 \cdot 2^3 = 2 + 8 = 10_{(10)}$~~

a) $1010_{(2)} = A_{(16)}$

b) $0111_{(2)} = 7_{(16)}$

c) $1111_{(2)} = F_{(16)}$

d) $10001010_{(2)} = 8A_{(16)}$

e) $1101111110111_{(2)} = 1AF7_{(16)}$

4) a) $3_{(16)} = 0011_{(2)}$

b) $A_{(16)} = 1010_{(2)}$

c) $F_{(16)} = 1111_{(2)}$

d) $2B_{(16)} = 00101011_{(2)}$

e) $2F8_{(16)} = 0010\ 1111\ 1000_{(2)}$

5. a) 1+1 = 10
b) 10+10 = 10 +
10
100

c) 111 +
1
1000

d) 1010 -
1
1001

e) 1000 -
10
0110

6. a) 9+1 = 10
b) B+2 = 13
c) F+1 = 15+1 = 16 = 20
15 +
1
20

d) 10+A = 10 +
10
20

e) 10-2 = 8 10 -
2
E

f) B-3 = 11 -
3
E

7. a) 10000 -
7583
8A7D

7583(16) = 0111 0101 1000 0011(2) => 7583(16) și 8A7D(16) nu sunt complementare

1000 1010 0111 1100 +
0000 0000 0000 0001
1000.1010.0111.1101(2) = 8A7D(16)

b)

000F095D(16) = 100000000 -
000F095D
FFF0F6A3

000F095D(16) = 0000.0000.0000.1111.0000.1001.0101.1101(2)

1111.1111.1111.0000.1110.0110.1010.0010 -
0 1
1111.1111.1111.0000.1111.0110.1010.0001 = FFF0F6A3

=> nr. 000F095D(16) și FFF0F6A3(16) sunt complementare

c) 4BA1(16) = 10000 -
4BA1
B45F

4BA1(16) și 5C93(16) nu sunt complementare

4BA1(16) = 0100.1011.1010.0001.(2)
1011.0100.0101.1110 +
0000.0000.0000.0001
1011.0100.0101.1111 = B45F

Scanned with CamScanner

d) $7F_{(16)} = 7 \cdot 16 + 15 = 127$

Nr. $7F_{(16)}$ și $81_{(16)}$ sunt complementare.

$7F_{(16)} = 0111.1111_{(2)}$

$1000.0000 +$
0000.0001
$\overline{1000.0001} = 81_{(16)}$

e) $732A_{(16)} = 1000\,0 - 32\,10 = 8CA6_{(16)}$

Nr. $732A_{(16)}$ și $A5D8_{(16)}$ nu sunt complementare.

$732A_{(16)} = 0111.0011.0010.1010_{(2)}$

$1000.1100.1101.0101 +$
$0000.0000.0000.0001$
$\overline{1000.1100.1101.0110} = 8CD6_{(16)}$

8. a) $8_{(10)} = 0000.0010_{(2)}$

b) $67_{(10)} = 01000011_{(2)}$

67 | 2 → 66 | 33 | 2 → 32 | 16 | 2 → 16 | 8 | 2 → 8 | 4 | 2 → 4 | 2 | 2 → 2 | 1 | 2 → 0

c) $230_{(10)} = 11100110_{(2)}$

230 | 2 → 230 | 115 | 2 → 114 | 57 | 2 → 56 | 28 | 2 → 28 | 14 | 2 → 14 | 7 | 2 → 6 | 3 | 2 → 2 | 1 | 2 → 0

1111.1111.1111.1010(2)

9. a) $-6_{(10)} = A_{(16)} = 1010_{(2)}$

-10
$\overline{6}$
$\overline{A}$

b) $-121_{(10)}$ $EDT_{(16)} = 1111.1110.1101.1111_{(2)}$

$-1\ -2\ -1$
$1\ 000-$
$1\ 2\ 1$
$\overline{EDT}$

c) $70_{(10)} = 0011.0001_{(2)}$ $0000.0000.0011.0001_{(2)}$

70 | 2
70 | 35 | 2
0 | 34 | 17 | 2
1 | 16 | 8 | 2
1 | 8 | 4 | 2
0 | 4 | 2 | 2
0 | 2 | 1 | 2
0 | 0 | 1