

DIGITAL ELECTRONIC practice

Exercise 1 : Conversion

1. Convert in decimal
 - $(101011101)_2$
 - $(745)_8$
 - $(123)_8$
 - $(2454,46)_8$
 - $(A9C)_{16}$
2. Convert into the indicated base
 - $(15,6)_{10} = (?)_2$
 - $(1564)_{10} = (?)_{16}$
 - $(564)_{10} = (?)_8$
 - $(10011110101)_2 = (?)_{16}$
 - $(AC3)_{16} = (?)_8$
3. IEEE conversion in simple and double precision
 - $(125.05)_{10}$
 - $(657.594)_{10}$
 - $(110001010.001101)_2$
4. Grey code
 - $(11110001101010110)_g = (?)_2$
 - $(10101010101010101)_2 = (?)_g$
 - $(1000010101110010)_2 = (?)_g$

Exercise 2: Simplification

$$F_1 = [A.B(C+D) + AB] C$$

$$F_5 = ABC + (A+B+C) + ABCD$$

$$F_2 = ABC + ABC + ABC + ABC$$

$$F_6 = ABCD + AB(CD) + AB(CD)$$

$$F_3 = AB + AC + ABC$$

$$F_7 = ABCD(AB + C(BC + AC))$$

$$F_4 = BD + B(D+E) + D(D+F)$$

$$F_8 = (B+BC)(B+BC)(B+D)$$

Exercise 3 : Calculation

1 Multiplication

- 11111×1111
- $11000011,11101 * 110,1$

2 Division

- $11011001,101 / 1011$

- 1001111011110,1 / 11,101
- 3 Signed bits
- 75-32
 - 32-75
 - -89-89
 - 126-165
 - 110-10
 - 1000-111
 - 10110-1
- 4 BCD addition
- 789+123
 - 213+144
 - 1759+2644
- 5 XS-3 addition
- 123+475
 - 842+168
 - 7894+2125

Exercise 4 : **Encoding**

Encode using the following weighted codes : BCD, 2421, 5211, 7421, XS-3

- 7699
- 54269
- 8921
- 228
- 12366