Cairo University
Faculty of Engineering
Aerospace department

3rd year
ELC316 course
(Logic part)

Sheet (1): Number Systems and Binary Coding

1) Convert the numbers $(AC)_{16}$,$(723)_8$ into its Binary equivalent

2) Convert the Hexadecimal number $(F3A7C2)_{16}$ into the Binary and Octal equivalents

3) Formulate a simple procedure for converting base-3 numbers directly to base-9. Use the procedure to convert (2110201102220112)3 to the base-9 system

4) Preform the Binary addition and subtraction on the Binary numbers listed below
   a. 101011+111000
   b. 001110+110010
   c. 111001-001010
   d. 101011-100110
   e. 011111+001111

5) Represent the decimal number 8620 as:
   a. BCD code.
   b. Excess-3 code.
   c. Gray code
   d. Binary number.

6) The state of 12-bit register is (010110010111), what is its content if it represents:
   a. Three decimal digits in BCD
   b. Three decimal digits in the Excess-3 code.
   c. Three decimal digits in 2421 code.

7) A computer represents information in groups of 32 bits, how many different integers can be represented in:
   a. Binary
   b. BCD