

CPE 201 – Introduction to Computer Engineering

Fall 2007

Homework 1

Due date: September 18, 2007

1. [12 points] Convert the following decimal numbers to 8-bit two's complement number representation:

- a) 29
- b) 100
- c) 125
- d) -29
- e) -60
- f) -95

2. [20 points] Exercise 1-18 (page 33) from the textbook (fourth edition, M.Mano & M. Ciletti)

3. [20 points] Exercise 1-20 (page 33) from the textbook (fourth edition, M.Mano & M. Ciletti).

4. [8 points]

a) [4 points] Convert the following binary numbers to hexadecimal:

- 111100111
- 11001000
- 10100100
- 011001101101101

b) [4 points] Convert the following hexadecimal numbers to binary:

- 4F5E
- 3FAD
- 3E2A

- DEED

Extra credit:

1. [10 points] Compare the number of digits necessary to represent the following decimal numbers in binary, octal, decimal and hexadecimal representations. You need not determine the actual representations – just the number of required digits. For example, representing the decimal number 12 requires four digits in binary (1100 is the actual representation), two digits in octal (14 is the representation), two digits in decimal (12 is the representation) and one digit in hexadecimal (C is the representation).

- a) 8
- b) 60
- c) 300
- d) 1000
- e) 999999