King Fahd University of Petroleum and Minerals
College of Computer Sciences and Engineering
Department of Computer Engineering

COE 202 – Fundamentals of Computer Engineering (T101)

Homework # 02 (*due date & time: Sunday 24/10/2010 during class period*)

***** Show all your work. No credit will be given if work is not shown! *****

Problem # 1 (40 points): Find the decimal equivalent of the number $(100111.011)_2$ when the number is interpreted as:

i. **(10 points)** Unsigned number.
ii. **(10 points)** Signed-magnitude number.
iii. **(10 points)** 1's complement signed number.
iv. **(10 points)** 2's complement signed number.

Problem # 2 (40 points): Perform the following arithmetic operations in the signed 2's complement system using 7-bit registers. State if an overflow occurred or not for every case:

i. **(10 points)** (+14) – (+61)
ii. **(10 points)** (–14) – (+61)
iii. **(10 points)** (+14) – (–61)
iv. **(10 points)** (–14) – (–61)

Problem # 3 (20 points): Solve **parts (a) and (c)** of problem **2-2** on page 109 of the textbook.