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

COE 202 – Fundamentals of Computer Engineering (T081)

Homework # 02 (*due date & time: Saturday 8/11/2008 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 $(100001.011)_2$ 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 (60 points): Perform the following arithmetic operations in the signed 2's complement system using 8-bit registers. State if an overflow occurred or not for every case:

i. **(15 points)** (+24) – (+61)
ii. **(15 points)** (–24) – (+61)
iii. **(15 points)** (+24) – (–61)
iv. **(15 points)** (–24) – (–61)