Name: Id#

COE 301/ICS 233, Term 161

Computer Architecture & Assembly Language

Quiz# 4 Solution

Date: Tuesday, Dec. 6, 2016

1. **[3 Points]** Find the normalized single precision float representation of +59.25.

59.25 = 111011.01 = 1.1101101\* 25

Exponent = 5 + 127 = 132

[0, 1000 0100, 1101 1010 0000 0000 0000 000]

1. **[5 Points]** Find the normalized difference between A and B by using rounding to nearest even. Perform the operation using **guard**, **round** and **sticky** bits:

A= + 1.00000000000000000000000 × 24

B = +1.11110000000000000000001 × 23

**1.000 0000 0000 0000 0000 0000 000 x 24**

**- 1.111 1000 0000 0000 0000 0001 000 x 23**

**01.000 0000 0000 0000 0000 0000 000 x 24**

**- 00.111 1100 0000 0000 0000 0000 100 x 24 (align)**

**01.000 0000 0000 0000 0000 0000 000 x 24**

**+ 11.000 0011 1111 1111 1111 1111 100 x 24 (2's complement)**

**00.000 0011 1111 1111 1111 1111 100 x 24**

**= +** **0.000 0011 1111 1111 1111 1111 100 x 24**

**= + 1.111 1111 1111 1111 1110 0000 000 x 2-2 (normalize)**

**= + 1.111 1111 1111 1111 1110 0000 x 2-2**  **(round)**