

Name \_\_\_\_\_

ID \_\_\_\_\_

York University

Dept. of Computer Science and  
Engineering

EECS2021

Computer Organization

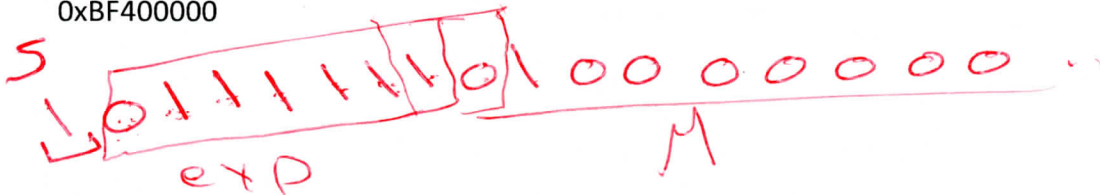
Quiz 3 – 15 minutes

Dec. 2<sup>nd</sup> 2015

Question 1 – 6 points

Convert the Following single precision IEEE floating point representation to a fixed point decimal value

0xBF400000



126 - 127 → -1

$-2 \times 1.5$

### Question 2 - 4 points

Assume a floating point representation that is similar to IEEE754, with the following differences:

The exponent field is 5 bits, Mantissa field is 7 bits, Sign is 1 bit, and bias = 15

- Represent the decimal value 7 in this format

$$7 = 1.75 \times 2^2 \quad \text{exp: } 2 + 15 = 17$$

Handwritten diagram of the floating point representation:

S	01001	11
---	-------	----

The diagram shows three fields: a 1-bit sign field (S) containing 0, a 7-bit mantissa field containing 01001, and a 5-bit exponent field containing 11. The mantissa field is labeled with a handwritten  $\sqrt{0.75}$  above it.

- What is the largest normalized value that could be represented in this format?

$$2 \times 2^{\cancel{32} - 15} \quad \dots \quad 2 \times 2^{16}$$