



CSE Department, North South University
ETE131: Introduction to Telecommunications
& Computer Engineering (SyR)
Problem Sheet 3: IEEE754 Format Numbers - Solutions

1. Represent the decimal number 10.28125 in IEEE 754 Single Precision format.

Ans: $01000001001001001000000000000000$

2. Represent the decimal number -52.375 in IEEE754 Double Precision format.

Ans: $11000000100101000110000000000000$
 $00000000000000000000000000000000$

3. Find the approximate decimal value of the following numbers that are represented using IEEE 754 Single Precision format [4.5]:

a. $00000000101100000000000000000000$ Ans: 4.04×10^{-39}

b. $10111111010010000000000000000000$ Ans: -1.28125

c. $01111111000000000000000000000000$ Ans: +infinity

4. Store the following binary numbers in IEEE Single Precision format.

a. $0.0010110011101 \times 2^{-125}$

Ans: $00000000010110011101000000000000$

b. $-11110.01100001 \times 2^{-127}$

Ans: $10001000111001100001000000000000$

c. $0.10011000000001 \times 2^{100}$

Ans: $01110001000110000000100000000000$

Note: To make the answers easier to read, the sign bit is in green, the exponent bits are in red italics while the fraction bits are in blue. You do not need to do this for your answers on quizzes and exams. However you must show all your working which should indicate how each component was derived.