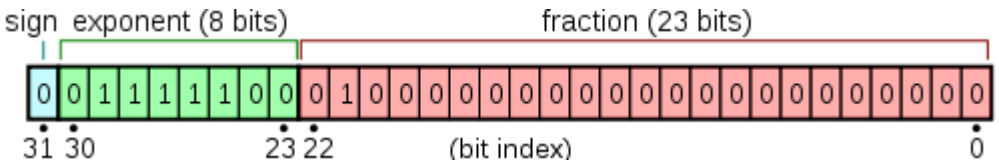
Logic Circuits and Digital Systems – Spring 2012

Assignment #2 **Due date: TBA**

Please submit the following questions and problems 3.10, 3.13 and 3.17 from your reference book chapter 3.

1 – Assume that A is in 32 bit Single-precision floating-point format which its structure is shown below.



Please answer the following questions:

(a) What is the largest positive number which can be shown in this system?

(b) What is the second largest positive number you can express in this system?

(c) Calculate the space between answers in part (a) and part (b) of this question.

(d) What is the smallest positive number which can be expressed in this system?

(e) What is the second smallest number which can be represented in this system?

(f) Calculate the space between answers in part (d) and (e) of this question.

(g) Compare your answers in part (c) and (f) of this question.

2 – Perform the following conversions:

(a) $(42390)_{10}$ = $(?)_{\text{(Floating point format)}}$

(b) $(7E\ 7F\ F0\ 00)_{\text{(Floating point format)}}$ = $(?)_{10}$

3 - Simplify the following Boolean expressions to a minimum number of literals.

(a) $x'y' + xy + x'y$

(b) $(x + y)\,(x + y')$

(c) $x'y + xy' + xy + x'y'$

4 – Evaluate the following equality using the truth table:

$$(x + y)'(x' + y') = x'y'$$