

1. Using the 4-bit 2's complement floating-point format (4-bit exponent, 4-bit fraction):

- a) What is the largest positive number that can be represented?
- b) What is the largest negative number that can be represented?
- c) What is the smallest fraction that can be represented?

2. Perform the following multiplications using the 4-bit 2's complement floating-point format. Normalize the result and verify your answer in Base 10.

- a)  $(3/8 \times 2^3) \times (-1/2 \times 2^{-1}) = ?$
- b)  $F_1 = 1.011, E_1 = 0101$   
 $F_2 = 1.010, E_2 = 0100$   
 $N_1 \times N_2 = ?$

3. Represent the following decimal numbers in the IEEE single precision floating-point format:

- a)  $25.25_{10}$
- b)  $-7.5_{10}$
- c)  $-63.125_{10}$