

Do your quiz in text file: **2240/d/quiz12.txt** -or- **2240/d/quiz12.jpg**

Some questions ask you to do some calculations.

Show your work.

1. The IEEE floating-point standard reserves some bits to hold the exponent of a number. In terms of k bits, what is the formula used to produce the bias of the exponent field?

2. Assume the exponent portion of a floating-point number is represented with 5-bits. Give the bit pattern of the exponent for the following binary number.

$$1.1101 * 2^3$$

3. Convert the following decimal number to binary with at least 5 binary bits of accuracy to the right of the decimal point. Show your answer in binary.

$$28.68$$

4. Show the final bit-pattern of an 8-bit floating-point field that stores the following decimal number. (sign=1, exponent=3, mantissa=4)

$$-2.25$$

5. A 32-bit floating-point number reserves 8-bits to represent the exponent. What is the bias of the exponent field?

6. If a 16-bit floating-point number reserves 10-bits for the Mantissa, then how many bits will be available to represent the exponent?

7. Please convert this 8-bit floating-point field to a decimal number. (sign=1, exponent=3, mantissa=4)

$$01001100$$

8. Show the normalized version of the following binary number:

$$101100.011$$

9. What is the largest value that can be represented with **9** binary bits?
Give your answer as one number, not a formula or equation.

10. Show the binary representation of the following decimal number using IEEE 32-bit floating point notation. Calculate binary precision to at least 8-bits.

42.24