The University of Alabama in Huntsville
ECE Department
CPE 431 01/01R, CPE 531 01/91
Fall 2022

Due September 13, 2022 – You must show your work to get full credit. Use online calculators to check your answers.
1.0 (5), 2.0 (5), 3.0 (10), 4.0 (10), 5.0 (10), 6.0 (10)

1.0 **<3.2>** Assume 12 and 155 are unsigned 8-bit decimal integers. Calculate 12 – 155 in binary. Is there overflow, why or why not?

2.0 **<3.5>** What decimal number does the bit pattern **`0xCB9A_0A89`** represent if it is a two's complement integer? An unsigned integer?

3.0 **<3.5>**What decimal number does the bit pattern **`0x6DB8_0000`** represent if it is a floating point number? Use the IEEE 754 standard and express in decimal scientific representation.

4.0 **<3.5>** Write down the hexadecimal representation of the decimal number 57812.59375 assuming the IEEE 754 single precision format.

5.0 **<3.5>**Write down the hexadecimal representation of the decimal number -5932.515625 assuming the IEEE 754 double precision format.

6.0 **<3.5>** Write down the hexadecimal representation of the decimal number -1947.75 assuming it was stored using the single precision IBM format (base 16, instead of base 2, with 7 bits of exponent, bias = 64, no implicit numbers)