**Computer Systems I**
**Homework Assignment #3**

**Points: 100**
**Due: 09/20/2024 11:59 PM**

---

1. Represent the following decimal numbers in 8-bit sign magnitude binary representation. **[10 points]**
   a) -23
   b) 15
   c) -0
   d) 122

2. a) True or False: The decimal value 256 can be represented using 8-bit sign magnitude binary. Justify your answer. **[5 points]**
   b) Explain the reason behind converting the true exponent derived from normalization to its biased exponent to store the value using the IEEE floating point standard. **[5 points]**

3. What is the ASCII code for the following characters? Provide both decimal and hexadecimal values **[20 points]**
   a) A
   b) @
   c) 9
   d) ?
   e) h

4. Convert 88.25 to IEEE Standard for single-precision floating-point value. **[20 points]**

5. Convert the IEEE Standard number 01000001010010000000000000000000 to its decimal equivalent. [**20 points**]

6. a) Explain the terms Little Endian and Big Endian. **[5 points]**
   b) Assume 32-bit memory and represent the value 1156 in both Little Endian and Big Endian. **[15 points]**