CS330 - Computer Organization & Assembly Language
Assignment # 5

Individual Work Only

Full Name:
BlazerID:

- Assignment must be completed and turned in by the due date given in canvas.
- You may solve the problems in any medium, but you must upload your completed work to Canvas as an image (.png, .jpg), PDF (.pdf), or word document (.docx). Other formats are acceptable by request to a TA.
- For each question, you are required to show your solution step by step.
- Check the lab document if you are unsure what a specific symbol means

1) Perform the following conversions (5 pts each)

   60GB = …….MB

   120KB = ……...Bits

   85TB = …….MB

   17 GB= …….KB

   4 MB=…… Bytes

SECTION TWO

Notes:

- All numbers must be represented as signed binary numbers. Convert given decimal numbers and remember to double check your signs for all problems.
- Use the least number of digits necessary (only using one sign bit) to represent the largest number in a given problem. The smaller number must be represented with the same number of bits.
- If overflow occurs, indicate that with a note. It can only occur if the inputs are the same sign, and the result has a different sign.
- In addition and subtraction, the final answer is exactly as many bits as the inputs are.
- In multiplication, the final answer is twice as many bits as the inputs.

1) Convert to binary, then show step by step subtraction. (8 pts each, +1 for attempting all problems)
   a. 27- 4

   b. -12- 21

   c. 34 - 16

2) Convert to binary, then show step by step multiplication using Booth's Algorithm. (12.5 pts each).
   a. 3* 7

   b. 9 * -3

3) Convert the given number to the IEEE754 floating point format (single precision, 32 bits), showing all steps. Label all parts of the result. (25 pts)
   a) 193.625