

**Homework Cover Page**

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| Name: Brandon Hoang | Date: 04/24/19 |
| Course: EGCP-381 | HW #: 6 |

Grading Criteria:

|  |  |  |
| --- | --- | --- |
| **Problem #** | **Earned Points** | **Possible Points** |
| 10.1 |  | 4 |
| 10.15 |  | 4 |
| 10.39 |  | 2 |
| 10.40 |  | 4 |
| Total: |  | 14 |

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Professor Comments:

10.1: Represent the following decimal numbers in both binary sign/magnitude and twos complement using 16 bits: +512; -29.

Binary sign/magnitude

51210 = 0000 0010 0000 00002

-2910 = 1000 0000 0001 11012

2’s complement

51210 = 0000 0010 0000 00002

-2910 = 0000 0000 0001 11012 => 1111 1111 1110 00102 + 110 = 1111 1111 1110 00112

10.15 Use Booth Algorithm

M = 2310 = 01 0111

Q = 2910 = 01 1101

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| A | Q | Q-1 | M/M-1 |  | n |
| 000000 | 011101 | 0 | 010111/101001 | Init | 6 |
| 101001  110100 | 011101  101110 | 0  1 | 010111/101001 | A <- A-M  Shift | 5 |
| 001011  000101 | 101110  110111 | 1  0 | 010111/101001 | A <- A+M  Shift | 4 |
| 101110  110111 | 110111  011011 | 0  1 | 010111/101001 | A <- A-M  Shift | 3 |
| 111011 | 101101 | 1 | 010111/101001 | Shift | 2 |
| 111101 | 110110 | 1 | 010111/101001 | Shift | 1 |
| 010100  001010 | 110110  011011 | 1 | 010111/101001 | A <- A+M  Shift | 0 |

10.39

1. 7.764 \* 10-3 - 6.666 \* 10-3 = 1.098 \* 10-3 (most significand digit = 1, no shift)
2. 8.844 \* 10-3  - 2.233 \* 10-1 = 0.08844 \* 10-1 - 2.233 \* 10-1 =  -2.14456 \* 10-1 / -2.144\*10-1

10.40

1. (2.255 \* 101) \* (1.234 \* 100) = 2.255 \* 1.234 \* (101 +0) = 2.78267 \* 101 / 2.782 \* 101
2. (8.833 \* 102) / (5.555 \* 104) = 8.833 / 5.555 \* (102-4) = 1.590099 \* 10-2 / 1.590 \* 10-2