**Assembly Language**

**Assignment 1**

Part 2:

1. (2 points) Convert 3FC16 to decimal

Soluton: 3\*256 + 15\*16 + 12

= 768 + 240 + 12

= 1020

(3FC)16= (1020) 10

2. (2 points) Convert DEA5616 to binary.

Solution: D E A 5 6

1101 1110 1010 0101 0110

(DEA56)16 = (1101 1110 1010 0101 0110) 2

3. (2 points) Convert 101011010110101100011010100111012 to hexadecimal

Solution: 1010 1101 0110 1011 0001 1010 1001 1101

A D 6 B 1 A 9 D

(10101101011010110001101010011101)2 = (AD6B1A9D) 16

4. (4 points) Given the 8‐bit, signed number 01101110, what is its decimal

equivalent? What is its negative (in binary)?

Solution: 0110 1110

64 + 32 + 8 + 4 + 2 = 110

(01101110) 2 = (110) 10

Finding 2’s complement : 10010001

Adding 1 : + 1

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Negative value in binary: 10010010

5. (2 points) What is the largest number that can be represented by a 16‐bit

signed number?

Solution: 2^15 – 1 = 32768 – 1 = (32767)10

6. (2 points) What is the above number in hexadecimal?

Solution: (111 1111 1111 1111 )2 = (7FFF)16

7. (2 points) Convert the 16-bit, signed number ADF316 to decimal.

Solution: (ADF3) 16 = (1010 1101 1111 0011)2

Converting binary number (1010 1101 1111 0011)2 to decimal:

0101001000001100 – One’s Complement

+ 1 – Add 1

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0101001000001101

(0101001000001101)2 = (21005)10

Since the sign bit is 1, the number is negative.

ADF316 = (-21005)10

8. (2 points) How many bits are required to represent ‐51310 in two’s

compliment?

Solution: 17 bits are required to represent -51310 in two’s compliment

9. (1 points) What is the binary representation of this number?

Solution: Absolute value of -51310 is 51310

5131010 in binary is : 0000 0000 0000 0000 1100 1000 0110 11102

Reverse the bits : 1111 1111 1111 1111 0011 0111 1001 0001

Add 1 : + 1

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1111 1111 1111 1111 0011 0111 1001 0010

-5131010 = 1111 1111 1111 1111 0011 0111 1001 00102

10. (1 points) What is the hexadecimal representation of this number?

-5131010 = 1111 1111 1111 1111 0011 0111 1001 00102

1111 1111 1111 1111 0011 0111 1001 00102 = FFFF379216

-5131010 = FFFF379216