ELEG 2134 Quiz 3 2010.02.01

Name:_____Answer_____
Instructions: Do NOT use your book, notes or calculator and answer questions on test page (bottom and back if necessary).

1. Add the following signed 2's complement 8-bit word length numbers and specify if an overflow condition occurred. Show all carry bits. Write all answers in binary and hexadecimal. (Note parts a – d are binary numbers and part e are hexadecimal.)

Carry in and carry out shown in Red.

a)	***b)***	***c)***	***d)***	***e)***
0 1 1 1 1 1 1 0	1 1 1 1 1 1 1 10	0 0 0 0 1 0 0 0	0 1 0 0 0 0 0 0	
1 0 1 1 0 1 1 1	0 1 0 1 1 1 0 1	1 0 1 1 0 1 1 0	1 0 1 1 1 0 0 1	B9
+1 0 1 0 1 1 0 1	+0 0 1 1 1 0 1 1	+0 1 0 0 0 1 0 1	+0 0 1 0 0 1 1 0	+ 37
[1] 0 1 1 0 0 1 0 0	[0] 1 0 0 1 1 0 00	[0] 1 1 1 1 1 0 11	[0] 1 1 0 1 1 1 11	$F0_{16}$
64_{16} - overflow	98_{16} - overflow	FB_{16} – No ovflw	DF_{16}- No ovflw	No ovflw

e)

0 1 1 1 1 1 1 0
1 0 1 1 1 0 0 1
0 0 1 1 0 1 1 1
[0] 1 1 1 1 0 0 0 0

2. Using the procedure described in class, subtract the following signed 2's complement 4-bit word length numbers and specify if an overflow condition occurred. Show all carry bits. Write all answers in binary and hexadecimal. (Note parts a – d are binary numbers and part e are hexadecimal.)

a)	***b)***	***c)***	***d)***	***e)***	
1 0 1 0	1 0 1 0	1 1 1 0	0 1 1 1	D	
- 1 1 0 1	- 0 1 1 0	- 0 0 1 1	- 0 0 1 0	- 4	
0 1 0 1	0 1 1 1	1 0 0 1	1 1 1 1		1 1 1 1
1 0 1 0	1 0 1 0	1 1 1 0	0 1 1 1		1 1 0 1
0 0 1 0	1 0 0 1	1 1 0 0	1 1 0 1		1 0 1 1
[0] 1 1 0 1	[1] 0 1 0 0	[1] 1 0 1 1	[1] 0 1 0 1		[1] 1 0 0 1
D_{16} – no ovflw	4_{16} - overflow	B_{16} – no ovflw	5_{16} – no ovflw		9_{16} – no ovflw