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Student number

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ENS1161 Computer Fundamentals

Test 8

$^{10}/_{10}$.

(a)   Find the 8-bit 2's complement form for the number -98.

1	0	0	1	1	1	1	0

✓   2

(b)   (i)   Add the 8-bit binary numbers 1000 1100 and 1001 1001, and find the values of the C, N and V flags.

8-bit Output							
0	0	1	0	0	1	0	1

✓

4

C	N	V
1	0	1

✓

(ii)   By interpreting the addition in terms of **unsigned** integers, convert the answer to a decimal number

C = 1: output is 16-bit.

0000 0001 0010 0101
= 125_{16}
= 293_{10} ✓   2

(iii)   By interpreting the addition in terms of signed integers, convert the answers to a decimal number.

N = 0, V = 1: output is negative 16-bit

1111 1111 0010 0101
0000 0000 1101 1010 1s complement
0000 0000 1101 1011 add 1
= DB_{16}
= -219_{10} ✓

2

[2 + 4 + 2 + 2 = 10 marks]