FIT1047

SUPPLEMENTARY WORKSHEET -02

WEEK 02

Task:

1. Represent the number -92 in

   a) 8-bit signed magnitude

   1101 1100

   b) 8-bit 1's complement

   1010 0011

   c) 8-bit 2's complement

   1010 0100

2. Represent the number -121 in

   a) 8-bit signed magnitude

   1111 1001

b) 8-bit 1's complement

1000 0110

c) 8-bit 2's complement

1000 0111

3. Calculate, using binary arithmetic with 8-bit 1's complement and 2's complement representation:

a) 33+92

1's: 0111 1101
2's 0111 1101

b) 33-92

1's: 1100 0100
2's: 1100 0101

c) -44+66

1's: 0001 0110
2's: 0001 0110

4. Using a truth table to show that:
   a. $\overline{x} + x = 1$ for all values of x.
   b. $y(\overline{x} + x) = y$ for all values of x and y.

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5. Boolean Expression
   a. Write a Boolean expression function for the following truth table.

Input			Output
A	***B***	***C***	***Z***
0	0	0	0
0	0	1	1
0	1	0	0
0	1	1	0
1	0	0	1
1	0	1	0
1	1	0	1
1	1	1	0

Z = (-A-BC) + (A-B-C) + (AB-C)

b. Draw the logic circuit for the Boolean function in (a)

c. Simplify the above Boolean function:

i) Using Boolean's laws

simplified expression: A-C + -A-BC

ii) Using K-map

Z = (-A-BC) + (A-B-C) + (AB-C)

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