Department of Communication and Computer Engineering
Faculty of ICT
CCE1012

Tutorial   Computer Arithmetic

1.   A logic system is to be used in a game. There are four participants. If two or more of them give the same answer a lamp lights, otherwise the light remains off.
Work out the required truth-table and hence use karnaugh map techniques to minimise the output logic function.

2.   Minimise using Karnaugh maps the following logic system, given in minterms.
$$F(A,B,C,D) \ = \ \Sigma \, (0, 1, 6, 7, 8, 9, 12, 13)$$

3.   Use two's complement arithmetic with a 6 bit representation. What is the representation for the following decimal integers.

        (i)   23   (ii)   -14   (iii) –1   (iv)   31

        What is the valid range for the 6-bit reprersentation?

4.   Multiply the following two integers in 5-bit two's complement representation using Booth's algorithm. Show clearly the working steps of the operation.
        Multiplicand 11   Multiplier – 6

5.   A floating point representation uses one sign bit, six bits for the mantissa and five bits for the exponent. The mantissa uses normalised representation and the exponent uses two's complement excess code. Give the representation for the following decimal numbers.
       (i) 11.2   (ii) - 3.25   (iii) 0.04