COMPUTER ENGINEERING DEPARTMENT

COE-202 – Fundamentals of Computer Engineering (section 02)

Student Name:
Student Number:

On the subject of Machine Representation of Numbers (Lesson 1_5):

1) (20 points) Given a machine with n = 4 bits per register. Complete the following table specifying all possible integer numbers that can be represented using unsigned, signed magnitude, 1's complement, 2's complement system.

Solution:

All possible numbers	Value in designed (+ve or –ve) of represented number			
	Unsigned	Signed-Magnitude	1's Complement	2's Complement
0000	0	0	0	0
0001	1	1	1	1
0111	7	7	7	7
1110	14	-6	-1	-2
1111	15	-7	-0	-1

On the subject of Complement Arithmetic (Lesson 1_6):

2) (10 points) Using the Radix complement system, compute (M-N) and (N-M), where M=$(072532)_{10}$ and N=$(003250)_{10}$

3) (10 points) Using the diminished Radix complement system, compute (M-N) and (N-M), where M=$(072532)_{10}$ and N=$(003250)_{10}$

Solution: