**60-266 Lab 8**

NAME: STUDENT NUMBER:

OBJECTIVES:

i) Understand binary multiplication.

ii) To learn to implement binary multiplication using arithmetic shift and add operations.

iii) To learn to access and manipulate bits using various shift/rotate operations

**Problem**: a) Multiply a 16-bit unsigned integer (03B2 h) by 12 using arithmetic shift and add operations. The result should be in register **ax**.

b) Move the most significant 4 bits of **ax** into the *least* significant 4 bits of **bx**. The most significant 4 bits of **bx** as well as the contents of **ax** should remain unchanged.

**Hints**:

* Multiplying a number by 2*n* is equivalent to shifting it to the left *n* times.
* 12 = 8 + 4 = 23 + 22
* Not discussed in class: The SHLD instruction can be used to perform a shift operation without modifying the source.
  + Students can use SHL however.