ID_____ **ICS410-01 (071)** Dr. Mamdouh Najjar

Quiz # 2

Name:_____ Oct. 25, 2007

Question 1: (6 points)

Using the following grammar, show a parse tree for the following statement.

A = B * (C * (A + B))

<assign> → <id> = <expr>
<id> → A | B | C
<expr> → <expr> + <term> | <term>
<term> → <term> * <factor> | <factor>
<factor> → (<expr>) | <id>

Question 2: (4 points)

Modify the above grammar to add a unary minus operator that has higher precedence than either + or *.

Question 3: **(4 points)**

Convert the following EBNF to BNF:
(Note letters in capitals are non-terminals)

S → A { b A }
A → a [b] A

Question 4: **(6 points)**

Given the following statement:

"Attribute grammars are a formal approach to both describing and checking the correctness of the static semantics rules of a program"

a. What is meant by ***static semantics rules of a program***?

b. Evaluate the use of attribute grammars for a compiler writer.