

Student Name: _____ **Score:** _____/50

Problem 1 (10 pts)

For the following infix expression, write the equivalent postfix expression:

$(a + b) * c / d$

Problem 2 (10 pts)

6, 21, 35, 3, 6, 2, 13

is added to a stack, in the order given, which of the following is the top of the stack?

Problem 3 (10 pts)

The peek operation changes the stack.

(True/False)

Problem 4 (10 pts)

What is the advantage of an implementation of a stack that uses List over the implementation that uses array?

Problem 5 (10 pts)

The symbol A^nB^n is standard notation for the string that consists of n consecutive A 's followed by n consecutive B 's. The formal grammar of this language is,

$\langle \text{legal-word} \rangle = \text{empty string} | A \langle \text{legal-word} \rangle B$

Now, the pseudocode for a recognition method for this language is as follows:

```
isAnBn(in w: string) :Boolean
    //returns true if w is of the form AnBn
    //otherwise returns false

    if (the length of w is zero){
        return true
    }
    else if (w begins with the character A and ends with the
character B){
        return isAnBn(XYZ)
    }
    else{
        return false
    }
}
```

To complete above pseudocode, specify the input parameter for the recursive call isAnBn() to replace **XYZ**.