CS 2420 Python Spring 2023 Test 2

Name:_____

100 Points. 10 points each. Closed book and notes. No calculator, computer, people, etc.

1. Part A. Describe the meaning of the problems in the NP category. Part B. What would it mean if someone were to successfully solve one of the NP-Complete category problems in polynomial time?

2. Convert this expression from infix to postfix: $1 + 2 / (3 * 4 - (5 + 6 / 7) + 8) - 9$

3. Evaluate this postfix expression: $3\ 5 + 7\ 4 - * 2\ 3 * / 9\ 1 - /$

4. Insert these letters into a BST: "computers are fun"

5. Delete the "c" and the "u" from the previous BST, in that order.

6. Insert these letters into a 2-3 tree: "computers are fun"

7. Delete the "p" and the "u" from the previous 2-3 tree, in that order.

8. When using the AVL tree strategy, what is the desired outcome?
   A. Full tree
   B. Complete tree
   C. Balanced tree
   D. All Values Less

9. Write code for the Linked List Traverse Method. Assume there is a class variable called self.mFirst
   ```
   def Traverse(self, callback, data):
   ```

10. Write code for the BST Traverse method and its recursive counterpart. Assume there is a class variable called self.mRoot.
    ```
    def Traverse(self, callback, data):
    ```