1. (5 points) One proof by induction

2. (5 points) One time complexity proof (big-O, big-Ω, big-Θ).

3. (5 points) One time complexity proof (big-O, big-Ω, big-Θ).

4. (8 points) One running time calculation for a C++ function.

5. (8 points) One running time calculation for a C++ function.

6. (8 points) One running time calculation (using recurrence relations) for a recursive C++ function.

7. (2 points each) Six diagrams of time complexity $T(n)$ and function $f(n)$, in which you must check whether $T(n)$ is $O(f(n))$, $\Omega(f(n))$, both, or neither.

8. (5 points) One True/False statement (with an explanation required) about implementing lists with arrays versus implementing lists with linked lists.

9. (8 points) One outline of an algorithm involving stacks and/or queues.

10. (12 points) One implementation of a recursive C++ member function for a binary tree class.

11. (8 points) One AVL tree creation example.

12. (8 points) One 2-3 tree creation example.

13. (8 points) One splay tree modification example.