MA/CSSE 473 – Design and Analysis of Algorithms **In-class Quiz Day 04**

Name:_____ Score:____/ 9 circle your Section # 01(3rd) 02 (4th)

1. Gauss's algorithm for multiplying two complex numbers replaces _____ integer multiplications by _____.

2. What is the recurrence relation for the Gaussian Divide and Conquer multiplication algorithm?

   What is its solution?

3. State in your own words the (Ordinary) Principle of Mathematical induction.

4. Prove: For all N≥0, $\sum_{i=1}^{N} i \cdot 2^i = 2^{N+1}(N-1)+2$

5. Prove that any amount of postage that is 24 cents or more can be obtained using only 5-cent stamps and 7-cent stamps

6. An Extended Binary Tree with n internal nodes has _____ external nodes.

7. Prove the statement from the previous question using (strong) induction, based on the definition of EBT.

8. Tell me about anything from today's lecture that you found confusing or feel that we need to spend more time on. Be as specific as you can, (or write N/A).

9. What questions do you have (from today's lecture, from the reading, or from the course in general)? Or write N/A.