

## 15-103 FINAL EXAM INFORMATION – SPRING 2008

*The following list of topics is a basic study list of things you should review for the final exam. The final will consist of 10 questions (10 pts each). The questions will be written in a similar format as you've seen on the midterm exam. NOTE: The list below contains more items than you will see on the exam, but the topics of the exam will focus on some subset of these items.*

- Algorithms - tracing an algorithm, converting an algorithm to a flowchart, reading a flowchart to analyze an algorithm, completing a missing step in a flowchart
- Data structures - how a stack and queue work, how to build a binary search tree, how to build a heap, how to store a graph
- Programming Languages - how a compiler works, EBNF notation, understanding and writing Scheme and Prolog statements
- Algorithmic Techniques - tracing a recursive computation, building and using Huffman trees, shortest path in a graph
- Correctness and Efficiency - using invariants to show a loop is correct, using induction, big O notation, comparing sorting algorithms (bubble vs. selection vs. merge)
- Tractability, Intractability and Undecidability – Boolean satisfiability, map coloring, traveling salesperson, P vs. NP, word correspondence problem, undecidability