CSCI 1900 Test 2 – Topic Outline

Fall 2014 Test Date: 22 Oct

# Test Format

Part 1 – Definitions

I will give you a list of terms; you must give me the definition. *(~15 points)*

Part 2 – Short answer questions

Brief, to the point answer, 1-3 statement, complete sentences not necessary *(~ 15 points)*

Part 3 – Computations

**You must show work to receive credit**. *(~ 70 points)*

# Topics

The test will cover material from the lectures and the textbook. The following is a high-level overview of the topics that were covered; **it is not intended to be an all inclusive detailed list of the test questions.**

**Lectures Covered: Lectures 6 - 10**

1. Lecture 6: Integers
   1. One integer divides another
   2. mod operator
   3. Properties of divisibility
   4. Prime numbers
   5. Remainder theorem
   6. Greatest common divisor GCD
   7. Least common multiple LCM
   8. Euclid’s algorithm for GCM
   9. Converting base 10 numbers to any other base
   10. Converting numbers to base 10 from any other base
2. Lecture 7: Matrices
   1. Definition of a matrix
   2. Aij Row(i), column(j) notation
   3. Definition of a square matrix
   4. Definition of a diagonal matrix, identity matrix as a special case
   5. Zero matrix
   6. Equality of two matrices
   7. Sum of two matrices
   8. Product of two matrices
   9. Associative and Distributive law for matrix multiplication
   10. Transpose of a matrix
   11. Inverse of a matrix
   12. Boolean matrix definition
   13. Meet (AND) of two Boolean matrices
   14. Join (OR) of two Boolean matrices
   15. Venn diagrams
3. Lecture 8: Introduction to Logic
   1. Proposition
   2. Negation of a statement, notation, and truth table
   3. Conjunction of two statements and truth table
   4. Disjunction(Inclusive) of two statements and truth table
   5. Disjunction(Exclusive) of two statements and truth table
   6. Evaluating compound statements with truth table
   7. Universal Quantifier
   8. Existential Quantifier
4. Lecture 9: Conditional Statements
   1. Implication and truth table
   2. Converse
   3. Contrapositive
   4. Equivalence or Biconditional statement and truth table
   5. DeMorgan’s Law
   6. Negate an implication
   7. Negate a biconditional
   8. Tautology, contradiction, and contingency
   9. Logical Equivalence
5. Lecture 10: Methods of Proof
   1. Hypotheses and conclusion
   2. Rule of inference
   3. Tautology based proofs
   4. How to prove an equivalence
   5. Modus Pones
   6. Modus Tollens ( method of denial)
   7. Indirect method of proof
   8. Proof by contradiction

**Suggested Order of Study**

* 1. Carefully review the lectures, for the purpose of making a list of all terms and their definitions.
  2. Learn those definitions.
  3. Review all homework problems. Problems in Part 3 of the test will be similar to but not identical to the homework.
  4. Work the review problem, without referring to your notes, your book, or previously worked homework problems. Use the review problems as a tool to identify weaknesses.
  5. Download a clean copy of the ALSs relevant to the test. Complete the ALSs without referring to your notes, your book, or previously worked homework problems.
  6. Review the lecture slides and your class notes.
  7. Get a good night sleep.