

The first CS122 test will cover the materials from sets & functions, propositional and predicate logic, and inference rules.

1. Sets & Functions

- N, Z, Q, R
- Sets: equivalence, union, intersection, difference, universal set
- Cardinality
- Subsets and Proper Subsets
- Tuples
- Cartesian product
- Power set
- Bitstrings
- Function
 - Definition
 - Increasing
 - Strictly increasing
 - One to one

2. Propositional & Predicate Logic

- Definition of a proposition
- Definition of a predicate
- Logic connectors such as: negation, and, inclusive or, exclusive or, conditional, bi-conditional
- How to prove equivalence using truth tables
- Definition of a tautology, contingency, & contradiction and how to show in a truth table
- Universal quantifier
- Existential quantifier
- Equivalences involving negation of universal and existential quantifiers

3. Rules of Inferences

- Definition of rules of inference
- Use truth tables to determine if a rule of inference is valid or not valid
- Be able to derive a conclusion by applying rules of inferences to the premises

NOTE: The basic rules of inference and logical equivalences will be given to you.