General information:

The exam is comprehensive and includes:
• 25% material from guide 1
• 25% material from guide 2
• 50% material from this guide

The exam will include theory and applications. It is not enough to know how to solve the problems that were given as homeworks, you need to know and understand the concepts too. The book section or lecture where the topic can be found is shown in brackets.

Topics:

1. Partial Orderings
   (a) Definition of a poset [book 9.6]
   (b) Total order [book 9.6]
   (c) Hasse diagram [book 9.6]
   (d) Maximal and Minimal elements [book 9.6]

2. Functions
   (a) Definition of function [book 2.3]
   (b) Domain, codomain and range [book 2.3]
   (c) One to one (injective), onto (surjective), bijections [book 2.3]
   (d) Function composition [book 2.3]
   (e) Inverse [book 2.3]

3. Modeling Computation
   (a) Definition of DFA [lecture 22, lecture 23]
   (b) Computation tracing [lecture 23]
   (c) DFA design [lecture 23]
   (d) Regular languages and operations [lecture 24]
   (e) Build DFA that accepts union of regular languages [lecture 24]
   (f) NFA definition and design [lecture 25]
   (g) Building DFA equivalent to a given NFA [lecture 26]
   (h) NFA epsilon and regular language closure [lecture 27]
   (i) Regular expressions [lecture 27]
   (j) Turing Machine definition and tracing [book 13.5 pages 888-892]