Non-exhaustive list of topics you should know for the exam!

1 Sets

- What is a language?
- concatenation of two sets of strings
- power of a set of strings

2 Regular Expressions

- definition of regular expressions
- What is the language of a regular expression?
- When are two regular expressions are equal?
- *nullable*, *der*, *zeroable*, *rev*
- induction principle of regular expressions
- tokens, maximal munch rule
- regular expression for complement language
- tokenisation

3 Automata

- DFA, NFA
- What is the language recognised by a DFA?
- Reg → NFA
- NFA → DFA (subset construction)
- DFA minimisation (Hopcroft's algorithm)
- complement DFA
- completion of an automaton
- DFA → Reg (Brzozowsky's algorithm, equational systems, Arden's lemma)

4 Grammars

- ambiguous grammars

- parse trees

- ASTs

- CYK algorithm