

**Computer Science  
Comprehensive Examination  
Formal Languages  
Spring 2000**

- 1) Prove that the regular languages are closed with respect to union (i.e., that given two regular languages, the union of those two languages is also regular).
- 2) Prove that the context-free languages are closed with respect to Kleene star (\*).
- 3) Prove that the recursive languages are closed with respect to intersection.
- 4) What is the purpose of the pumping lemma for regular languages?
- 5) State the pumping lemma for regular languages.
- 6) Give an example of a language that is not recursive.