Southeast University Examination Paper (C)

Course Name	Principles of Compiling	Examination Term	18-19-2	Score	
Related Major	Mid-Term Self Test	Examination Form	Close test	Test Duration	120 Mins

There are 5 problems in this paper. You can write the answers in English or Chinese on the attached paper sheets.

1. Please construct a context-free grammar **with ε-free productions** for the following language (20%).

   L={$a^n \omega b^n$| n≥0, $\omega \in (c,d,e,f)$* and the numbers of c's and d's and e's occurred in ω are **even** }

2. Please construct a **DFA with minimum states** for the following regular expression. (20%)

   ((aa*|bb*)*(a|b))*(a|b*)

3. Please **eliminate the left recursions (if there are)** and **extract maximum common left factors (if there are)** from the following context free grammar, and then decide **the resulted grammar** is whether a LL(1) grammar by **constructing the related LL(1) parsing table.**(20%)

   S→Sa|Ab

   A→Ac|Bd

B→Se|f|Cg

C→Bh|j

4. Please **construct a LR(1) parsing table for the following ambiguous grammar with the additional conditions(You determine the required additional conditions by yourself)**.(20%)

E→E and E|E or E|not E|(E)|b

5. Please prove that if a context-free grammar G is a LL(1) grammar, then it must be a LR(1) grammar.(20%)