Southeast University Examination Paper (in-term)

Course Name Principles of Compiling Examination Term _____ Score _____

Related Major Computer & Software 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 context-free grammars **with ε-free productions** for the following languages (20%).

   (1){i|i∈N(Natural number), and i is a palindrome, and (i mod 5)=0}

   (2){ω| ω∈(a,b,c,d)* and the numbers of a's ,b's and c's occurred in ω are **even**, and ω **starts with a or c , ends with d** }

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

   (((a|b)*a)*(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%)

Surname_____

Student No._____

Please obey the rules of examination. If you violate the rules, your answer sheets will be invalid

S→iEtS|iEtSeS|a

E→E and F|F

F→ F or G|G

G→b

4. Please **construct a LR(1) parsing table for the following ambiguous grammar with the additional conditions** that **all θ_i (i=1,2) has the properties of right associative law**, and **θ_2 has lower precedence than θ_1.**(20%)

   E→E θ_1 E| E θ_2 E |(E)|i

5. Please show that **if a grammar G is a LL(1) grammar, then G must be a LR(1) grammar (**20%):