Midterm Examination, Spring Semester- 2018-19

Compiler Design (CSN 352)

Indian Institute of Technology Roorkee

Name:
Roll No.

Total marks: 25
Time: 1:30 h

Q1- Compute the minimum number of states required to design a DFA which accepts the language $L=(a|b)^*a(a|b)^{10}$. [2]

Q2-Construct the transition graph for DFA handling the patterns **a, abb, a* b$^+$** and find legal lexemes in the input string "aaba". [5]

Q3- Consider the following CFG-

E -> E+T|T
T-> T*F|F
F-> (E)|**id**

shortcut technique for checking LL grammar.

The given CFG is LL grammar or not? Also give the reason. [1]

Q4- Write five sentences of the language defined by the CFG given in **Q3**. [1]

Q5- Consider the following CFG-

S-> 0|A
A-> AB
B->1

Eliminate all productions containing useless symbols from the grammar. [2]

Q6- Consider the following CFG-

S-> Aa|b
A->Ac|Sd|epsilon

Eliminate left recursion from the given grammar. [2]

Q7- Give an LAG for array declaration, for example, **int** x[3][4]. Draw the dependency graph (for type association) for the given example. [6]

Q8- Consider the grammar

S'->S
S->aAd|bBd|aBe|bAe
A->c
B->c

Construct LR(1) parsing table for the given grammar and convert the LR(1) parsing table to a valid LALR(1) parsing table. [5]

Q9- Mention the type of conflicts a parser can have. [1]

In LL, conflicts will arise due to ambiguous or parser not being strong enough.
In LR, SR,RR conflict can arise.