

Code: R7411904

R07

B.Tech IV Year I Semester (R07) Supplementary Examinations, May 2013

AUTOMATA AND COMPILER DESIGN

(Electronics and Computer Engineering)

Time: 3 hours

Max. Marks: 80

Answer any FIVE questions
All questions carry equal marks

- 1 (a) Define a regular expression. List any five identities (algebraic laws) for regular expressions.
(b) Discuss in detail about Lex tool.
- 2 (a) Define a context free grammar. Find CFG generating the following languages:
(i) Language of arithmetic expressions over integer values with +, -, * and / operations.
(ii) Language of string over {0, 1} where the string has unequal number of 0's and 1's.
(b) Find the first and follow sets for the following grammar:
$$E \rightarrow TA \quad A \rightarrow +TA/\epsilon \quad T \rightarrow FB \quad B \rightarrow *FB/\epsilon \quad F \rightarrow (E)/id$$
- 3 Construct the canonical LR parsing table for the following grammar. Show the actions of the parser for the string cdd.
$$S \rightarrow CC \quad C \rightarrow cC/d$$
- 4 (a) What is the use of a dependency graph for annotated parse trees? Explain with an example.
(b) Write three address code for the following C-program statements:
If (a < b) { if (b < C) x = 1 } else x = 10.
- 5 (a) Give a brief notes on type checking, type systems and type conversions.
(b) Explain about type checking of arithmetic expressions.
- 6 What are the different storage allocation strategies? Explain in detail.
- 7 Explain in detail about peephole optimization techniques.
- 8 Write short notes on:
(a) Back patching
(b) Loop unrolling
