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

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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:

$E \rightarrow TA \qquad A \rightarrow +TA/\in \qquad T \rightarrow FB \qquad B \rightarrow {}^{*}FB/\in \qquad F \rightarrow (E)/id$

3 Construct the canonical LR parsing table for the following grammar. Show the actions of the parser for the string cdd.

$S \rightarrow CC \qquad C \rightarrow cC/d$

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

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