Code: 9A12501

R09

B.Tech IV Year I Semester (R09) Supplementary Examinations, May 2013

AUTOMATA AND COMPILER DESIGN

(Electronics and Computer Engineering)

Time: 3 hours Max. Marks: 70

Answer any FIVE questions

All questions carry equal marks

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1 (a) What is lexical analysis? What is its role in compiler design? Explain with examples.
(b) Design a DFA for recognizing the language generated by a(a + b)* ab.

2 (a) Show that the following grammar ambiguous.
S → SaS / b
(b) Explain the purpose of the syntax analysis.
(c) Write about error recovery in predictive parsing.

3 (a) Write about error recovery in LR parsers.
(b) Construct the canonical collection of LR(1) items for the following grammar.
S → L=R / R L → *R / id R → L

4 Write syntax directed translation scheme for generating three address code statements for assignment statements and mixed mode assignment statements. Give one example for each.

5 (a) Distinguish static and dynamic type checking.
(b) Discuss in detail about semantic analysis phase.

6 (a) Explain the storage organization.
(b) Explain the stack allocation strategy with example.

7 (a) Convert the following arithmetic expression into syntax tree and three address code b*3(a + b).
(b) What are loop invariant components? Explain how they affect the efficiency of program.

8 Generate optimal code for following assignment statements.
x = a + b + c
x = (a * -b) + (c – (d + e))
x = (a / b – c) / d
x = a + (b + c / d * e) / (f * g = h * i)

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