Code: 9A12501

R09

B.Tech III Year I Semester (R09) Supplementary Examinations June 2017

AUTOMATA & COMPILER DESIGN

(Common to CSS & IT)

Time: 3 hours Max. Marks: 70

Answer any FIVE questions

All questions carry equal marks

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1 (a) Design DFA for the following languages:

(i) $L = \{X | X \epsilon \{a, b, c\} * and\ n_b(X) is\ even\}$

(ii) $L = \{(01)^i 1^{2j} | i \geq 1, j \geq 1\}$

(b) Convert the following DFA to a regular expression by state elimination technique.

δ	0	1
→ p	s	p
q	p	s
r	r	q
*s	q	r

2 (a) What is an ambiguous grammar? And show that following grammar is ambiguous.

$S \rightarrow aB|bA$

$A \rightarrow aS|a|bAA$

$B \rightarrow b|bS|aBB$

(b) Give and explain the formal definition of a CFG.

3 (a) Explain in detail how the sequence of moves made by the shift reduce parser for the string id+id*id are obtained.

(b) Explain canonical LR parsing.

4 (a) What are synthesized and inherited attributes? Construct annotated parse tree for the input string 5*6+7.

(b) What is the conceptual view of the syntax-directed translation?

5 (a) What is static checking? Give and explain any four examples for static checking.

(b) Write a note on type checking.

6 (a) Explain the use of loops in flow graphs.

(b) Write a note on run-time storage management.

7 (a) With a diagram, explain the process of code optimization. Also give the classification of optimization.

(b) Explain the use of flow graphs.

8 (a) Write the machine instruction implementation for the following three-address statements:

(i) A = B – C.

(ii) a = *b.

(b) Explain the use of DAG representation.

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