

Code No.: 09A51201

Jawaharlal Nehru Technological University Hyderabad

B.Tech. III Year I Semester Examinations

May/June - 2013

AUTOMATA AND COMPILER DESIGN

(Information Technology)

R09

Time: 3 Hours

Max. Marks: 75

*Answer any FIVE Questions
All Questions carry equal marks*

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1. (a) Construct finite automata for the regular expression $1(01 + 10)^*00$.
(b) Show that $L = \{a^{2n} \mid n < 0\}$ is regular. [10+5]

2. (a) Define derivation tree. Explain about LMD and RMD.
(b) Construct a derivation tree for the string abcd from the grammar.
 $S \rightarrow aAB, A \rightarrow bC, B \rightarrow d, C \rightarrow cd$. [7+8]

3. Construct LALR parsing table for the grammar $S \rightarrow L = R/R, L \rightarrow * R/ID, R \rightarrow L$. [15]

4. (a) Construct an annotated parse tree for $3*5 + 4n$.
(b) Construct a DAG for the expression $a + a*(b - c) + (b - c)*d$. [7+8]

5. (a) Explain in brief about substitutions, instances and unification.
(b) Explain about the procedure for checking polymorphic functions. [7+8]

6. (a) Explain in brief about static storage allocation strategy.
(b) List out the limitations of static storage allocation strategy. Explain possible solutions to overcome these limitations. [8+7]

7. Explain in detail about principal sources of optimization. [15]

8. (a) Define basic block? Explain in brief about the algorithm for partitioning the basic blocks.
(b) Explain in brief about the structure preserving transformation of basic blocks. [8+7]