

R09

Code No: 56031

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY, HYDERABAD

B. Tech III Year II Semester Examinations, December-2014/January-2015

COMPILER DESIGN

(Computer Science and Engineering)

Time: 3 hours

Max. Marks: 75

Answer any five questions

All questions carry equal marks

- 1.a) Explain in detail the process of compilation. Illustrate the output of each phase of compilation for the input "a = (b+c) * (b+c) * 2".
- b) Briefly explain the compiler construction tools.
2. Consider the grammar $E \rightarrow S+T \mid 3-T$; $T \rightarrow V \mid V*V \mid V+V$; $V \rightarrow a \mid b$.
 - a) Obtain the FIRST and FOLLOWS of above grammar.
 - b) Construct Predictive parsing table for above grammar.
- 3.a) Describe the conflicts that may occur during shift reduce parsing.
- b) Construct LALR parsing table for the following grammar. Show the actions of the parser for the string abab. $S \rightarrow CC$ $C \rightarrow cC$, $C \rightarrow c \mid d$.
- 4.a) Explain the detail about the specification of a simple type checker.
- b) Describe the various types of three address statements.
- 5.a) Explain the data structure used for implementing Symbol Table.
- b) How to subdivide a run-time memory into code and data areas? Explain.
6. Write short notes on the following:
 - a) Induction variable elimination
 - b) DAG representation
 - c) Loop unrolling and loop jamming.
- 7.a) Write about Data Flow Analysis of structural programs.
- b) Explain various code optimization techniques in detail.
- 8.a) Explain the code-generation algorithm in detail.
- b) Write a short note on machine dependent code optimization.

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