Code No: D0503 **R09**

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
M.Tech II - Semester Examinations, March/April 2011
ADVANCED COMPILER DESIGN
(COMPUTER SCIENCE)

Time: 3hours **Max. Marks: 60**

Answer any five questions
All questions carry equal marks
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1. a) Distinguish between the phases and passes of a compiler.
   b) Explain the bootstrapping process with a suitable diagram. [8+4]

2. a) For the following grammar, explain the actions of a shift reduce parser in parsing the string **$id_1 + id_2 * id_3$**

   E → E + E
   E → E * E
   E → (E)
   E → **id**

   b) Explain with example the preprocessing required for predictive parsing. [6+6]

3. a) Construct SLR parsing table for the following grammar:

   S → Aa | bAc | dc | bda
   A → d

   b) Explain how LR parser handles errors and provides recovery. [6+6]

4. a) Explain syntax directed translation with an example.
   b) What are the differences between synthesized and inherited attributes? [8+4]

5. a) Explain the contents of symbol table.
   b) What are storage allocation strategies? Explain the same. [6+6]

6. a) Explain a simple strategy and the algorithm to generate assembly or machine code from quadruples.
   b) What are the principal sources of code optimization? [6+6]

7. Discuss in detail different loop optimization techniques for code optimization with examples. [12]

8. Explain the following:
   a) Data flow equations.
   b) DAG representation of basic blocks.
   c) LEX. [12]

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