R09

Code No: D109115809

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

M.Tech I Semester Regular Examinations March/April 2010

ADVANCED COMPILER DESIGN

(Computer Science & Engineering)

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

Answer any five questions

All questions carry equal marks

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1. a) Explain the phases of a compiler. – (6M)
   b) Explain with one example how identifiers and keywords are recognized by lexical analyzer. – (6M)

2. a) Distinguish top down and bottom up parsing. – (6M)
   b) Construct the operator precedence parse table for the following grammar. – (6M)
   $S \rightarrow i\ E\ t\ S \mid i\ E\ t\ S\ e\ S \mid a$
   $E \rightarrow b|c|d$ where a, b,c,d,e,i,t are terminals.

3. a) Construct SLR parsing table for the following grammar. – (6M)
   $E \rightarrow E + T|T$
   $T \rightarrow TF|F$
   $F \rightarrow F^*|a|b$
   b) Construct canonical LR parse table for the following grammar –(6M)
   $S \rightarrow Aa|bAc|bBa$
   $A \rightarrow d$
   $B \rightarrow d$

4. a) Translate the expression – (a+b)*(c+d) + (a+b+c) in to quadruple, triple and indirect triple. – (6M)
   b) Write short notes on static and dynamic type checking. – (6M)

5. a) What are the self-organizing lists? How this can be used to organize a symbol table. Explain with an example. – (6M)
   b) What are the advantages and disadvantages of heap storage allocation Strategy. – (6M)

6. a) Explain code generation algorithm with the function GETREG. – (6M)
   b) Write about various object code forms – (6M)

7. a) Explain in detail the optimization technique "strength reduction". –(6M)
   b) Give a detailed account on loop optimization techniques. –(6M)

8. a) What are data flow equations? – (6M)
   b) Explain how copy propagation can be done using data flow equation ? – (6M)