USN |__|__|__|__|__|__|__|__|__|__| 06CS63

Sixth Semester B.E. Degree Examination, June/July 2014
Compiler Design

Time: 3 hrs.   Max. Marks:100

Note: *Answer FIVE full questions, selecting*
atleast TWO questions from each part.

PART – A

1 a. Explain the various phases of a compiler with neat diagram. Mention the input and output of each phase. **(10 Marks)**
   b. Draw transition diagram to recognize
      i) relop
      ii) unsigned number. **(10 Marks)**

2 a. Given the grammar
      $E \rightarrow E + T \mid T$
      $T \rightarrow T * F \mid F$
      $F \rightarrow (E) \mid id$
      Construct predictive parsing table and show the moves made by the predictive parser on the input string id * id. **(16 Marks)**
   b. Explain error recovery strategies during syntax analysis. **(04 Marks)**

3 a. Given the grammar $E \rightarrow (E) \mid id$ construct
      i) LR (0) automaton
      ii) SLR (1) parse table
      iii) Moves made on the string (id). **(15 Marks)**
   b. Write the algorithm to construct SLR parsing table. **(05 Marks)**

4 a. Given the following grammar
      $S \rightarrow CC$
      $C \rightarrow cC/d$
      i) Construct set of LR(1) items
      ii) Construct canonical LR(1) parsing table
      iii) Construct LALR parsing table using LR(1) items. **(15 Marks)**
   b. Explain Yacc source program parts. **(05 Marks)**

PART – B

5 a. With an example, explain the concept of syntax directed definition. Write the syntax directed definition of a simple desk calculator. **(10 Marks)**
   b. Write the annotated parse tree for 3 * 5 + 4 n **(05 Marks)**
   c. For the grammar $E \rightarrow E_1 + T /E_1 - T \mid T$
      $T \rightarrow (E) \mid id \mid num$
      Construct the syntax tree for a – 4 + c. **(05 Marks)**

6 a. Obtain the directed acyclic graph for the expression a + a * (b – c) + (b – c) * d. Also give the sequence of steps for constructing the same. **(08 Marks)**

   b. For a = b * – c + b * – c represent using
i) Three – address code
ii) Quadruples
iii) Triples. **(12 Marks)**

7 a. Explain the run time storage scheme for C++ language. Give the structure of activation record and explain with suitable example. **(12 Marks)**

   b. Write short notes on :
i) Memory manger
ii) Performance metrics of garbage collector. **(08 Marks)**

8 a. Explain the issues in the design of code generator. **(08 Marks)**

   b. Write the intermediate code and C source code to set a 10 × 10 matrix to identity matrix. **(12 Marks)**

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