(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : 1074   Roll No. [ ][ ][ ][ ][ ][ ][ ][ ][ ][ ]

B.Tech

(SEM V) ODD SEMESTER THEORY EXAMINATION 2009-10
COMPILER DESIGN

Time : 3 Hours]   *[Total Marks : 100*

Note :   *Attempt all questions.*

1   Attempt any **two** parts of the following :   **10×2=20**

    (a)   Explain all the necessary phases and passes in a compiler design. Write down the purpose of each pass. What is bootstraping ?

    (b)   What do you understand by lexical-analyzer generator and LEX-compiler.

    (c)   Write short notes on :

        (i)   Context free grammars. Give the examples of context free grammars.

        (ii)   Parse trees. Give an example of parse tree.

2   Attempt any **two** parts of the following :   **10×2=20**

    (a)   Explain about basic parsing techniques. What is top down parsing ?

(b) Explain the following :

   (i) Constructing SLR parsing tables.

   (ii) Constructing LALR parsing tables.

(c) How do you implement the LR parsing tables ? Why do we need LR parsing tables ?

3   Attempt any **two** parts of the following :   10×2=20

(a) What is the intermediate code in Syntax-directed Translation ? What is a syntax tree ? Give an example of syntax tree.

(b) What is the postfix translation ? Explain it with a suitable example.

(c) Explain the following :

   (i) Effect of the statements that alter the flow of control (of a program) in Syntax-directed translation.

   (ii) Role of Array-references in the arithmetic expressions in syntax-directed translation.

4   Attempt any **two** parts of the following :   10×2=20

(a) What information is represented by symbol tables ? Explain the data structure for symbol tables.

(b) Explain the Implementation of simple stack allocation scheme while Run-Time administration.

(c) Explain the following. Give examples also :

   (i) Lexical phase errors

   (ii) Syntactic phase errors.

5   Attempt any **two** parts of the following :   10×2=20

(a) Explain the following in the organization of the code optimizer :

   (i) Control flow analysis.   3

   (ii) Data flow analysis   3

   (iii) Transformations.   4

(b) Explain the optimization of basic blocks. Also explain the DAG representation of basic blocks.

(c) Explain what constitutes a loop in a flow graph and how will you do loop optimizations in the code optimization of a compiler.

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