



Printed Pages : 3

TCS502

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

PAPER ID : 1074

Roll No.

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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 bootstrapping ?
- (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.

