



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 ?

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- (b) Explain the following :
  - (c) Explain the following. Give examples also :
    - (i) Constructing LR parsing tables.
    - (ii) Constructing LALR parsing tables.
    - (iii) Lexical phase errors.
    - (iv) Syntactic phase errors.
- How do you implement the LR parsing tables ?  
Why do we need LR parsing tables ?

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

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

- (a) Explain the following in the organization of the code optimizer :
  - (a) What is the intermediate code in Syntax-directed Translation ? What is a syntax tree ? **3**
  - (i) Control flow analysis. **3**  
Give an example of syntax tree.
  - (ii) Data flow analysis **3**
  - (b) What is the postfix translation ? Explain it with a suitable example. **4**
  - (iii) Transformations **4**
- (b) Explain the optimization of basic blocks. Also explain the DAG representation of basic blocks.
  - (i) Effect of the statements that alter the flow of control (of a program) in Syntax-directed translation.
- (c) Explain what constitutes a loop in a flow graph and how will you do loop optimizations in the code optimization of a compiler.
  - (i) 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.

