

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

PAPER ID : 2476

Roll No.

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B.Tech.

(SEMESTER-VI) THEORY EXAMINATION, 2012-13

COMPILER DESIGN

Time : 3 Hours]

[Total Marks : 100

Section – A

1. Attempt **all** question parts : 10 × 2 = 20
- (a) Differentiate between dynamic loaders and linkers.
 - (b) Give the parse tree for the statement $a = b * c + 60$.
 - (c) What is bootstrapping a compiler ?
 - (d) What are rational preprocessors ?
 - (e) Explain proper prefix, proper suffix and proper substring with examples.
 - (f) Draw the transition diagram for identifiers.
 - (g) What is the need for separating the parser from scanner ?
 - (h) Describe language denoted by the following regular expression : $(1 + 0)^*$.
 - (i) What are the code optimization techniques ?
 - (j) What are Synthesized and Inherited Attributes ?

Section – B

2. Attempt any **three** question parts : 10 × 3 = 30
- (a) Write the algorithm for moving forward pointer in “input buffering” scheme.
 - (b) What are the lexical-error recovery actions ?
 - (c) What is the use of intermediate code during compilation ?
 - (d) Write role of flow of control statement.
 - (e) Explain the process of translating an assignment statement.



Section - C

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- Attempt **all** question. 10 × 5 = 50
3. Attempt any **two** parts : 5 × 2 = 10
- (a) What is Left Recursion ? Write the rules to eliminate left recursion.
 - (b) How is scope information represented in symbol table ?
 - (c) Explain Machine-Independent Optimization.
4. Attempt any **one** part : 10 × 1 = 10
- (a) Show that the following grammar is unambiguous :
 $S \rightarrow aSb \mid bSa \mid b$
For a string **abbbaabbbaaab** draw a parse tree.
 - (b) What is the role of lexical analyzer ? Enumerate the issues handled by a lexical analyzer.
5. Attempt any **one** part : 10 × 1 = 10
- (a) Define a Quadruple. How it is different from triples ? Convert the following expression into three address code and quadruple.
 $S = (a + b) / (c - d) * (e + f)$
 - (b) Write the prefix and postfix expression for $A = (20 + (-5) * 6 + 12)$. Also convert the expression "a or b and not c" into three address code.
6. Attempt any **one** part : 10 × 1 = 10
- (a) What are the three storage allocation strategies ? Explain each in detail.
 - (b) Construct DAG for the following expression $(a + b) - (e - (c + d))$.
7. Attempt any **two** parts : 5 × 2 = 10
- (a) Explain the phases of the compiler in detail. Write down the output of each phase for the expression $a = b * c + 50$. Standard precedence for operators may be used.
 - (b) Discuss the issues in a programming language design that affects the storage management.
 - (c) Explain the concept of Global data-flow analysis.