

Printed Pages : 2

ECS-603

(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

- 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 **abbbaabbbbaaab** 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.