

2013

COMPILER DESIGN

Time : 3 hours

Full Marks : 70

Instructions :

- (i) The marks are indicated in the right-hand margin.
- (ii) There are **NINE** questions in this paper.
- (iii) Attempt **FIVE** questions in all.
- (iv) Question No. 1 is compulsory.

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1. Answer any seven questions from the following : 2×7=14
- (a) What is the difference between a compiler and an interpreter?
 - (b) What do you mean by token?
 - (c) What is the role of the lexical analyzer?
 - (d) What is bottom-up parsing?
 - (e) Discuss static vs. dynamic checking.
 - (f) What is nested lexical scoping?
 - (g) What do you mean by DAG representation?

- (h) Explain lexical-phase errors.
- (i) What do you mean by code movement optimization?
2. (a) Explain the phases of a compiler. 7
 (b) Describe compiler writing tools. 7
3. (a) Discuss lexical analysis and its tool. 7
 (b) What is context-free grammar? Explain top-down and bottom-up parser. 7
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4. (a) Design LL(1) parse table for the following grammar : 7
 $S \rightarrow aAc d | BCe$
 $A \rightarrow b | \epsilon$
 $B \rightarrow Cf | d$
 $C \rightarrow fe$
- (b) Why is LR parsing attractive? Explain. 7
5. Write short notes on the following :
 4+3+4+3=14
- (a) Recursive evaluators
 (b) Type conversion
 (c) Ordered list
 (d) Hash table akubihar.com

6. (a) Discuss various approaches to symbol table organisation. 7
 (b) Explain translation of assignment statements. 7
7. (a) What factors affect code generation? Explain. akubihar.com 7
 (b) Write and explain heuristic for ordering nodes of DAG. What is peephole optimization? Explain. 7
8. (a) Write an algorithm for code generation. 7
 (b) Discuss code optimization phases. What is dead code optimization? Explain. 7
9. Explain the following terms : 4+4+6=14
 (a) Loop optimization
 (b) Local optimization
 (c) Iterative dataflow analysis

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