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Question Paper Code : Z 9349

5 Year M.Sc. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2009.

Computer Technology

XCS 362 — COMPILER DESIGN

(Common to 5 Year M.Sc Software Engineering)

(Regulation 2003)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Why is synthesis phase separated from analysis phase?
2. What is meant by lexical analysis?
3. What is the language that is generated by the grammar $S \rightarrow aAa \mid bBb, A \rightarrow aAa \mid c, B \rightarrow bBb \mid c$?
4. List the disadvantages of LL(1) grammars.
5. What is a control stack. Write its structure.
6. What is meant by dangling reference?
7. Define back patching.
8. List the various intermediate languages used for code generation.
9. Write the steps for constructing leaders in basic blocks.
10. What are the issues in code generation?

PART B — (5 × 16 = 80 marks)

11. (a) Describe the design of a translator for a simple expression. (16)

Or

- (b) Write elaborately on input buffering and the role of symbol table in analysis phase. (16)

12. (a) Perform predictive parsing for the following grammar

$$S \rightarrow iEtSS' \mid a, S' \rightarrow eS \mid \epsilon, E \rightarrow b. \quad (16)$$

Or

- (b) (i) Discuss error recovery in operator precedence parsing. (10)
(ii) Compare and contrast regular expression and context free grammars. (6)

13. (a) Write notes on the following :

- (i) Symbol table and its role in compiler. (8)
(ii) Parameter passing mechanism in procedure calls. (8)

Or

- (b) Discuss the storage allocation methods used in the phases of compiler. (16)

14. (a) Describe the assignment statement and its translation scheme. (16)

Or

- (b) Explain the translation scheme for processing the declaration of variables including arrays and records. (16)

15. (a) Explain how optimization is done in basic blocks. Explain with an example. (16)

Or

- (b) Discuss the principal sources of optimization in detail. (16)