

**C 3157**

B.E./B.Tech. DEGREE EXAMINATION, MAY/JUNE 2007.

Sixth Semester

(Regulation 2004)

Computer Science and Engineering

CS 1352 — PRINCIPLES OF COMPILER DESIGN

(Common to B.E. (Part-Time) Fifth Semester Regulation 2005)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Define a preprocessor.
2. What are the issues in Lexical Analysis?
3. Eliminate the left recursion from the following grammar  
 $A \rightarrow Ac/Aad/bd/c.$
4. What are the disadvantages of operator precedence parsing?
5. Write the properties of intermediate language.
6. What is back patching?
7. What are the applications of DAG?
8. Give the primary structure preserving transformations on Basic Blocks.
9. What do you mean by code motion?
10. Draw the diagram of the general activation record and give the purpose of any two fields.

PART B — (5 × 16 = 80 marks)

11. (a) (i) Write about the phases of compiler and by assuming an input and show the output of various phases. (10)
- (ii) Explain briefly about compiler construction tools. (6)

Or

- (b) (i) Construct the NFA from the  $(a/b)^*a(a/b)$  using Thompson's construction algorithm. (10)
- (ii) Explain about Input buffering technique. (6)
12. (a) (i) Construct predictive parsing table for the grammar (10)
- $S \rightarrow (L)/ a$
- $L \rightarrow L, S/S.$
- (ii) What are the different strategies that a parser can employ to recover from syntax errors? (6)

Or

- (b) (i) Construct the CLR parsing table from
- $S \rightarrow AA$
- $A \rightarrow Aa/b.$  (10)
- (ii) Write Operator-precedence parsing algorithm. (6)
13. (a) (i) Write about implementation of three addressing statements. (8)
- (ii) Give the syntax-directed definition for flow of control statements. (8)

Or

- (b) (i) How Back patching can be used to generate code for Boolean expressions and flow of control statements. (10)
- (ii) Write short notes on procedure calls. (6)

14. (a) (i) Write in detail about the issues in the design of a code generator. (10)

(ii) What are steps needed to compute the next use information? (6)

Or

(b) (i) Discuss briefly about DAG representation of basic blocks. (10)

(ii) Explain the characteristics of peephole optimization (6)

15. (a) (i) Describe the principal sources of optimization. (8)

(ii) Write about Data flow analysis of structural programs. (8)

Or

(b) (i) What are the different storage allocation strategies ? Explain. (10)

(ii) Write short notes on parameter parsing. (6)

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(10)

(6)

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