

C 6156

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Name.....

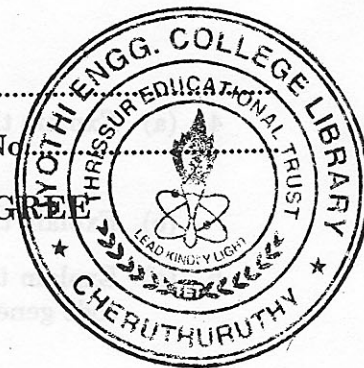
Reg. No.....

**SIXTH SEMESTER B.TECH. (ENGINEERING) DEGREE
EXAMINATION, JUNE 2010**

Computer Science

CS 04 605—COMPILER DESIGN

(2004 admissions)



Time : Three Hours

Maximum : 100 Marks

Answer all questions.

1. (a) List down the errors identified in the lexical analysis phase and the possible error-recovery actions.
 - (b) Define a deterministic finite automator DFA and regular expression.
 - (c) What are the advantages offered by grammars to language designers and compiler writers ?
 - (d) What is left recursion ? How is eliminated ? Explain with examples.
 - (e) Construct a parse tree and syntax tree for the expression $((a) + (b))$ using the production rules $E \rightarrow E + E \mid (E) \mid a \mid b$.
 - (f) Write the syntax directed translation scheme for a simple desk calculator.
 - (g) With example explain the two representations of the syntax tree.
 - (h) Draw and explain the organization of the code optimizer.
- (8 × 5 = 40 marks)
2. (a) Explain the different phases of a compiler. Taking a small program fragment list down the outputs generated at each phase.

Or

- (b) Construct a minimum-state DFA for the regular expression $(0/1)^* (10/01) (011)$.
3. (a) Construct predictive parsing table for the following grammar :-

$S \rightarrow A$
 $A \rightarrow aB/Ad$
 $B \rightarrow bBC/f$
 $C \rightarrow g$

Parse the string $abfg$ using the constructed parser.

Or

- (b) Explain the stack implementation of shift-reduce parsing technique with suitable example.

Turn over

4. (a) Explain the process of type checking and type conversion done for arithmetic expressions.

Or

(b) Explain the run time storage allocation scheme for 'C' languages.

5. (a) Explain the different information required about the target machine for designing a good code generator.

Or

(b) What is a basic block? Write the algorithm to partition a sequence of TAC into basic block and explain the same with example.

(4 × 15 = 60 marks)

