

Exam. Code: 0918
Sub. Code: 33446

2056
B.E. (Computer Science and Engineering)
Sixth Semester
CS-604: Compiler Design

Time allowed: 3 Hours

Max. Marks: 50

NOTE: Attempt five questions in all, including Question No. 1 which is compulsory and selecting two questions from each Section.

x-x-x

- Q1. a) How does a parser detect syntax errors? 10
b) Differentiate between top-down and bottom-up parsing.
c) Draw the structure of a symbol table.
d) Differentiate between static and dynamic storage allocation.
e) Construct a simple syntax tree for: $a + b * c$

Section - A

- Q2. a) Draw a neat diagram showing the different phases of a compiler. Explain the function of each phase briefly. 6
b) Perform LR parsing for the input string: $id + id$ 4
- Q3. a) Given the grammar: 5
 $S \rightarrow AB$
 $A \rightarrow aA \mid \epsilon$
 $B \rightarrow bB \mid \epsilon$
Compute FIRST and FOLLOW sets for all non-terminals.
b) Explain the structure of a YACC program with suitable example. 5
- Q4. a) Design a lexical analyzer to recognize identifiers, keywords, and constants. 5
b) Given grammar: 5
 $E \rightarrow E + E \mid E * E \mid id$
Show that the grammar is ambiguous using a suitable string.

P.T.O.

(2)

Section - B

- Q5. a) Explain the role of synthesized and inherited attributes in Syntax Directed Tree. Give suitable example 5
b) Define Syntax tree. Explain the role of syntax trees in intermediate code generation. 5
- Q6. a) Explain different representations of intermediate code with examples 4
- Quadruples
 - Triples
 - Indirect triples
- b) Generate three-address code (TAC) for the expression: $a = b + c * d - e$ 6
- Q7. Explain code optimization techniques with examples: 10
- Common Subexpression Elimination
 - Loop Unrolling
 - Dead Code Elimination
 - Constant Folding
 - Strength Reduction

x-x-x