

TIME: 3 Hours

Marks: 75

N.B:

1. Attempt any three questions from each section
2. Answers to the two sections must be written in same answer sheet.
3. Figures to the right indicate full marks.
4. Assume additional data if necessary but state the same clearly.
5. Symbols have their usual meanings and tables have their usual standard design unless stated otherwise.
6. Use of Simple calculators and statistical tables is allowed.

Section I

- 1 A Define : 6
 1) Ambiguity 2) Finite Automata 3) Parser
- B Define regular expression and draw the transition diagram for the following expressions 6
 1) ab^*cbb 2) $(0^* + 1) . (01^*)$
- 2 A Explain call by reference, call by value and call by Name. 6
- B Explain backtracking with suitable example 6
- 3 A Consider the following grammar. 6
 $S \rightarrow iCtS$
 $S \rightarrow iCtSeS$
 $S \rightarrow a$
 $C \rightarrow b$
 Show the step by step derivation of the string $ibtibtaea$ and also draw the parse tree for the string.
- B What is left recursion? Eliminate the left recursion from the following grammar. 6
 $S \rightarrow Aa \mid b$
 $A \rightarrow Ac \mid Sd \mid \epsilon$
- 4 A Consider the following grammar. 6
 $E \rightarrow TE' \quad E' \rightarrow +TE' \mid \epsilon$
 $T \rightarrow FT' \quad T' \rightarrow *FT' \mid \epsilon$
 $F \rightarrow (E) \mid id$
 Define and compute FIRST and FOLLOW for each non-terminal.
- B Write the method for finding precedence function. Consider the matrix and find the precedence function for the same. 6
- | | | | | |
|----|-----|-----------|-----------|-----------|
| | id | + | * | \$ |
| id | | $\cdot >$ | $\cdot >$ | $\cdot >$ |
| + | $<$ | | $<$ | $\cdot >$ |
| * | $<$ | $\cdot >$ | | $\cdot >$ |
| \$ | $<$ | $<$ | $<$ | |
- 5 A Explain recursive descent parser with suitable example. 6
- B Consider the operator precedence relation matrix of Q 4(b) and parse the string: 6
 $id + id * id$

Section II

- 6 A Illustrate the evaluation of postfix expression using stack. 6
- B Write and explain the quadruple code for following expressions/statement:
P < Q OR T > S OR T < U 7
- 7 A Explain the advantage and disadvantages of self-organizing list 6
- B Explain briefly the symbol table 7
- 8 A Explain loop optimization with suitable example. 6
- B What is code motion? List various conditions imposed to make the code motion legal. 7
- 9 A Write the code sequence for the following expression 6
W:=(A-B) +(A-C) +(A-C)
- B Explain constant folding by giving example. 7
- 10 A What is loop unrolling? Give example 6
- B Differentiate between machine dependant and machine independent optimization? 7
