

[Time:2.30 Hrs]

[Marks:75]

Please check whether you have got the right question paper.

- N.B:**
1. All question are compulsory.
 2. Figures to the right indicate full marks.

Q.1 Attempt any Three of the following:

15

- a. Explain the regular language with its closure properties?
- b. Write down the definition of Finite Automata? Explain the Finite Automata Model and Finite Automata Construction?
- c. Describe the Deterministic finite automata?
- d. Write down the step for conversion of regular expression to finite automata with example?
- e. Write down the step for MINIMIZING THE STATES OF DFA?
- f. What is derivation. With the help of example briefly describe the Rightmost Derivation?

Q.2 Attempt any Three of the following:

15

- a. Explain the role of the Parser?
- b. Explain the Stack Implementation of Shift-Reduce Parsing?
- c. Write down the computation and Algorithm of LEADING and computation and Algorithm of TRAILING?
- d. Describe Top-Down Parsing- Recursive Descent Parsing?
- e. Write down the rule for FIRST() and FOLLOW()?
- f. Explain the Constructing SLR parsing table?

Q.3 Attempt any Three of the following:

15

- a. Briefly describe the SYNTAX-DIRECTED TRANSLATION?
- b. List the schemes of Syntax Directed Translation (SDT)? Explain the following term,
 - i) Postfix Translation Schemes
 - ii) Parser-Stack Implementation of Postfix SDT's
- c. What is difference between S-attributed SDT and L-attributed SDT?
- d. Describe the Type-checking Expressions and Type-checking Declarations?
- e. Explain the basic block and traces?
- f. Explain the Stack Frames?

Q.4 Attempt any Three of the following:

15

- a. Explain the Dag Representation of Basic Blocks?
- b. With the help of example explain Dominators?
- c. With help of example explain the Loop-invariant computations? Write down the its Usage?
- d. Write a short note on data analysis ?
- e. Explain the Bit vector and basic block?
- f. Write down the short note on alias analysis?

Q.5 Attempt any Three of the following:

15

- a. With the help of example explain the STRUCTURE OF COMPILER?
- b. Define the rule for the Precedence Relations
- c. Describe the LIVENESS ANALYSIS?
- d. Describe the TRANSLATION TO INTERMEDIATE CODE?
- e. Compute First and follow for the following:

S → ABBA

A → a

A → ε

B → b

B → ε

- f. Explain the representation of three-address code?

*****END*****