

Time: 2:30 Hours

Total marks : 60

1. Attempt any three questions from each section
2. Answers to the two sections must be written in the 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.

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| Q1 | Attempt Any two of the following. | 12 |
| A | What is a compiler? Explain the various phases of compiler in detail with a neat diagram. | 6 |
| B | Explain in brief: input buffering and lexical analyzer. | 6 |
| C | Write a note on input buffering? | 6 |
| D | Differentiate between NFA and DFA? | 6 |
| Q2 | Attempt Any two of the following. | 12 |
| A | Explain left recursion & left factoring with example. | 6 |
| B | Compute First and follow for the following:
$S \rightarrow ABBA$
$A \rightarrow a$
$A \rightarrow \epsilon$
$B \rightarrow b$
$B \rightarrow \epsilon$ | 6 |
| C | What is left recursion? Eliminate the left recursion from the following grammar,
$S \rightarrow Aa \mid b$
$A \rightarrow Ac \mid Sd \mid \epsilon$ | 6 |
| D | Explain left recursion & left factoring with example. | 6 |

- Q3 Attempt Any two of the following. 12
- 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 Let a grammar be $S \rightarrow AA$ 6
 $A \rightarrow aA \mid b$ construct LR(0) for the same.
- C Consider the operator precedence relation matrix given below and parse the 6
 string: $id + id * id$
- | | id | + | * | \$ |
|----|----|---|---|----|
| id | < | < | < | < |
| + | < | < | < | < |
| * | < | < | < | < |
| \$ | < | < | < | < |
- D Describe in detail the syntax directed translation of case statements. 6
- Q4 Attempt Any two of the following. 12
- A Explain briefly the symbol table. 6
- B Explain basic blocks in compiler Design. 6
- C Write three address code for the following code $a = b * -c + b * -c$. 6
- D What is code motion? List various conditions imposed to make the code 6
 motion legal.
- Q5 Attempt Any two of the following. 12
- A Differentiate between machine dependent and machine independent 6
 optimization?
- B Explain Peephole optimization in detail. 6
- C Explain activation tree in runtime environment. 6
- D Explain the principal source of optimization in detail. 6
