Seat No. _____

KADI SARVA VISHWAVIDYALAYA

BE SEMESTER-VII (New) Examination March - 2025

Subject Name: Compiler Design **Subject Code: CE701-N**

Date: 27/03/2025 **Time: 12:30 pm to 03:30 pm** **Total Marks: 70**

Instructions:

1. Answer each section in a separate answer sheet.
2. Use of scientific calculator is permitted.
3. All questions are Compulsory.
4. Indicate clearly, the option you attempt along with its respective question number.
5. Use the last page of the main supplementary for rough work.

Section-I

Q-1 (A) Explain phases of the compiler with suitable diagram. [5]

(B) Draw DFA for the regular expression (0|1)*011# using a subset construction method. [5]

(C) What do you mean by left recursion and how it is eliminated? Explain with an example. [5]

OR

(C) Differentiate Top Down Parsing and Bottom up parsing. [5]

Q-2 (A) Consider the following grammar and construct a CLR parsing table. [5]

S -> AA

A -> aA | b

(B) Consider the following grammar: [5]

S -> aSbS | bSaS | ϵ

Construct FIRST and FOLLOW for the grammar and also check that the given grammar is LL(1) or not.

OR

Q-2 (A) Explain input buffering techniques in detail. [5]

(B) Construct SLR parsing table for the following grammar: [5]

$E \rightarrow E + T \mid T$

$T \rightarrow T * F \mid F$

$F \rightarrow id$

Q-3 (A) What do you mean by type conversion? Explain type conversion in detail. [5]

(B) Explain annotated parse tree with suitable example. [5]

OR

Q-3 (A) Explain different error recovery strategies in detail. [5]

(B) Explain recursive descent parsing with suitable example. [5]

Section-II

Q-4 (A) Write quadruple, triples and indirect triples representation for a given expression: [5]
$a = b * - c + b * - c$

(B) Explain DAG concept with suitable example. [5]

(C) Explain Peephole Optimization. [5]

OR

(C) Explain dead code elimination with the help of example. [5]

Q-5 (A) Compare: Static v/s Dynamic Memory Allocation. [5]

(B) Explain various issues in the design of code generator. [5]

OR

Q-5 (A) Explain Pass structure of assembler in detail. [5]

(B) Write a short note on: Symbol Table Management [5]

Q-6 (A) Justify why code optimization is required in the compilation process. [5]

(B) Explain pass-by-value and pass-by-reference in detail. [5]

OR

Q-6 (A) Explain global data flow analysis in detail. [5]

(B) Define Macro. Explain Macro expansion in detail. [5]