GUJARAT TECHNOLOGICAL UNIVERSITY
BE- SEMESTER–VII (NEW) EXAMINATION – WINTER 2024

Subject Code:2170701   **Date:04-12-2024**
Subject Name: Compiler Design
Time:10:30 AM TO 01:00 PM   **Total Marks:70**

Instructions:
1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**
4. **Simple and non-programmable scientific calculators are allowed.**

			MARKS
Q.1	**(a)**	Define: Compiler, Assembler, and Interpreter.	**03**
	(b)	Compare: Parse tree and Syntax tree.	**04**
	(c)	Explain the phases of compiler with an example.	**07**
Q.2	**(a)**	Explain role of Lexical Analyzer and its input buffering techniques	**03**
	(b)	Illustrate an Ambiguous grammar with an example.	**04**
	(c)	Construct NFA for the following RE using Thomson's construction method and then convert it to DFA (a|b)*abb	**07**

OR

	(c)	Construct Shift Reduce Parser for the String id+ id*id. Consider following grammar E→E + T | T T→T * F | F F→id	**07**

Q.3	**(a)**	Define the term Regular Expression. Write down the regular expression for the string start with 1 and end with 0, over $\sum=\{ 0 , 1\}$	**03**
	(b)	Explain Finite Automata and its types	**04**
	(c)	Define the term Parser. Difference between Top Down Parser and Bottom up Parser.	**07**

OR

Q.3	**(a)**	Define: Token, Pattern and Lexeme.	**03**
	(b)	Demonstrate Left recursion from the following grammar and rewrite the Grammar. S -> Aa | b A -> Ac | Sd | ε	**04**
	(c)	Construct predictive parsing table for the following grammar. E → E + T/ T E → T * F / F F → (E) | id	**07**

Q.4	**(a)**	What is intermediate code? Explain its advantage.	**03**
	(b)	Explain Left Factoring with the help of example.	**04**
	(c)	Demonstrate quadruple, triple and indirect triple with suitable example.	**07**

OR

Q.4 (a) Classify Error Recovery Strategies in Compiler and Explain any one. **03**
    (b) Explain Handle and Handle Pruning. **04**
    (c) Discuss various code optimization techniques. **07**

Q.5 (a) Describe Symbol Table Management. **03**
    (b) Explain the structure of an activation record with all its components. **04**
    (c) Discuss synthesized and inherited attributes. Write example of SDD for a desk calculator. **07**

OR

Q.5 (a) Compare: Static v/s Dynamic Memory Allocation **03**
    (b) Explain Peephole Optimization. **04**
    (c) Discuss generic issues in the design of code generation. **07**

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