Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE- SEMESTER–VII (NEW) EXAMINATION – WINTER 2020

Subject Code:2170701 Date:19/01/2021

Subject Name:Compiler Design

Time:10:30 AM TO 12:30 PM Total Marks: 56

Instructions:

1. **Attempt any FOUR questions out of EIGHT questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

			MARKS
Q.1	**(a)**	Compare and contrast compilers and interpreters.	**03**
	(b)	Write a short note on LEX Tool.	**04**
	(c)	Explain phases of compilers with suitable example.	**07**
Q.2	**(a)**	Define terms: pattern, lexeme, token	**03**
	(b)	Write any one method used in lexical analyzer for buffering the input.	**04**
	(c)	Construct nondeterministic finite automata by using Thomson's Construction for following regular expression. Show the sequence of moves made in processing the input string ababbab. (a|b)* abb	**07**
Q.3	**(a)**	Consider the following grammar to construct leftmost and right most derivation for the sentence abab. S→aSbS|bSaS|ε	**03**
	(b)	Write rule(s) to check grammar is left recursive or not. Remove left recursive from the following grammar. S→aBDh B→Bb|c D→EF E→g| ε F→f| ε	**04**
	(c)	Construct the SLR parsing table for the following Grammar. E→ E+T | T T→ T*F | F F→ (E) | id	**07**
Q.4	**(a)**	Write rule(s) to check grammar is operator grammar or not.	**03**
	(b)	Explain any two error-recovery strategies.	**04**
	(c)	Construct LALR parsing table for the following grammar. S -> CC C -> cC C -> d	**07**

Q.5	**(a)**	Define : 1) synthesized attribute 2) inherited attribute	**03**
	(b)	Explain any two parameter passing methods.	**04**
	(c)	Write SDD for arithmetic expression and Construct annotated parse tree for the input expression (4*7+1)*2 .	**07**
Q.6	**(a)**	What is activation record?	**03**
	(b)	What is Intermediate form of the code? What are the advantages of it?	**04**
	(c)	Construct syntax directed translation scheme and definition that translate arithmetic operation from infix to postfix in which an operator appears before its operand as for example xy- is a positive notation for x-y . Give annotated parse tree for the input 9-5+2 and 9-5*2.	**07**
Q.7	**(a)**	Explain any two issues in design of code generator	**03**
	(b)	Compare: static v/s dynamic Memory Allocation.	**04**
	(c)	Translate the expression **–(a+b)*(c+d)+(a+b+c)** into 1. Quadruples 2. Triples 3. Indirect triples	**07**
Q.8	**(a)**	What are the limitations of static storage allocation?	**03**
	(b)	Write a short note on Symbol table management.	**04**
	(c)	Write any two methods of code-optimization in detail.	**07**

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