Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VII (NEW) EXAMINATION – WINTER 2022

Subject Code:3170701 Date:18-01-2023

Subject Name:Complier 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)**	What is compiler? What is front-end and back-end of compiler?	**03**
	(b)	Write a brief note on input buffering techniques.	**04**
	(c)	Explain input, output and action performed by each phases of compiler with example.	**07**
Q.2	**(a)**	Define Handle, Handle pruning, Ambiguous grammar.	**03**
	(b)	Explain error recovery strategies.	**04**

	(c)	Define token, lexeme and pattern. Identify the lexemes that makes up the tokens for the following code
		const p = 10;
		if(a < p)
		{ a++ ;
		If(a== 5)
		continue ;
		}
			07

		OR	
	(c)	Construct deterministic finite automata without constructing NFA for following regular expression. (a/b)*abb*.	**07**
Q.3	**(a)**	What is lexical analysis? Which are the tasks performed by lexical analyzer.	**03**
	(b)	Give the rule to remove left recursive grammar. And Eliminate left recursion from following grammar. S → Aa | b A → Ac | Sd | f	**04**
	(c)	Show the following grammar is LR(1) but not LALR(1). S->Aa ⎪bAc ⎪Bc⎪bBa A->d B->d	**07**
		OR	
Q.3	**(a)**	Write RE the following language.. 1. All string of 0's and 1's that do not contain 11. 2. All string of 0's and 1's that every 1 is followed by 00	**03**
	(b)	What is left factoring in CFG? Perform the Left factoring of following Grammar. S → iEtS / iEtSaS / a E → b	**04**

	(c)	Construct SLR parsing table for the following grammar : $S \rightarrow (L) \mid a$ $L \rightarrow L,S \mid S$	**07**
Q.4	**(a)**	Define : 1) synthesized attribute 2) inherited attribute	**03**
	(b)	Construct syntax tree and DAG for following expression: X = a * (b+c)- (b+c)* d	**04**
	(c)	Give syntax directed definition for simple desk calculator. Also show annotated parse tree for 6*5+7n,	**07**
		OR	
Q.4	**(a)**	Write a short note on Symbol table management.	**03**
	(b)	Explain dynamic memory allocation strategy.	**04**
	(c)	Translate the expression –(a+b)*(c+d)*(a+b*c) into Quadruples, Triples, and Indirect triples	**07**
Q.5	**(a)**	Compare: Static v/s Dynamic Memory Allocation.	**03**
	(b)	Explain Activation Record.	**04**
	(c)	Explain any three code-optimization technique in detail.	**07**
		OR	
Q.5	**(a)**	Explain Basic Block and Flow Graph with example.	**03**
	(b)	Explain various parameter passing methods.	**04**
	(c)	Explain various issues in design of code generator.	**07**

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