Seat No.: ________ Enrolment No.___________

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER– VII (New) EXAMINATION – WINTER 2019

Subject Code: 2170701 **Date: 23/11/2019**

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.**

			MARKS
Q.1	**(a)**	Explain tokens, lexemes, Pattern with example.	**03**
	(b)	Distinguish between ambiguous and unambiguous grammar?	**04**
	(c)	Explain the analysis synthesis model of compilation. List the factors that affect the design of compiler. Also List major functions done by compiler.	**07**
Q.2	**(a)**	Write a regular definition for 1. The Language of all strings that do not end with 01. 2. All strings of digit that contain no leading 0's.	**03**
	(b)	Explain backtracking with example.	**04**
	(c)	Construct a DFA for a given regular expression (a|b)*abb.	**07**
		OR	
	(c)	Construct DFA without constructing NFA for following regular expression: a*b*a(a | b)b*a#.	**07**
Q.3	**(a)**	Perform the Left factoring of following Grammar. S → iEtS / iEtSeS / a E → b	**03**
	(b)	Write a brief note on input buffering techniques.	**04**
	(c)	Explain Recursive Descent Parser with example.	**07**
		OR	
Q.3	**(a)**	Explain the following: 1. Handle 2. Forward Reference 3. Conflicts in LR Parsing	**03**
	(b)	Explain non-recursive predictive parsers. Draw the block diagram of it.	**04**
	(c)	Generate the SLR parsing table for the following Grammar. S→Aa | bAc | bBa A→d B→d	**07**
Q.4	**(a)**	Define attributed grammar? Which phase of the compilation process does it facilitate? Explain with example.	**03**
	(b)	Explain Stack Allocation and Activation Record Organization in brief.	**04**
	(c)	Write down steps to set precedence relationship for Operator Precedence Grammar. Design precedence table for: E→E+E | E*E | E^E | id.	**07**
		OR	
Q.4	**(a)**	Construct a DAG for (a+b)* (a+b+c).	**03**
	(b)	Explain Error Recovery Strategies in Compiler in brief.	**04**
	(c)	Show syntax directed definition for simple desk calculator. Also show annotated parse tree for 3*5+4n, where n indicates newline.	**07**
Q.5	**(a)**	Differentiate: static v/s dynamic memory allocations.	**03**
	(b)	Discuss symbol table management in detail.	**04**

(c) Translate following arithmetic expression (a * b) + (c + d) - (a + b) into **07**
1] Quadruples
2] Triple
3] Indirect Triple

OR

Q.5 **(a)** Explain any three code optimization techniques with example. **03**
(b) Explain various parameter passing methods. **04**
(c) Explain various issues in design of code generator. **07**

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