GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER– VII (NEW) EXAMINATION – WINTER 2021

Subject Code:2170701   **Date:23/11/2021**

Subject Name:Complier Design

Time:02:30 PM TO 05:00 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.**

Q.1	**(a)**	Define the following terms. 1) Compiler 2) Interpreter 3) Preprocessor	**03**
	(b)	What is regular expression? Give all the algebraic properties of regular expression.	**04**
	(c)	Explain analysis phase of the compiler with example.	**07**
Q.2	**(a)**	Explain grouping of phases in compiler.	**03**
	(b)	Draw Transition diagram of following: 1) Relational operators. 2) Unsigned Operator.	**04**
	(c)	Explain subset construction method for constructing DFA from an NFA with an example.	**07**
		OR	
	(c)	Draw DFA from regular expression without constructing NFA. (a | b)* abb#.	**07**
Q.3	**(a)**	What is ambiguous grammar? Discus with suitable example.	**03**
	(b)	Explain the stack implementation of shift reduce parser with the help of example.	**04**
	(c)	Construct LL(1) parsing table for the following Grammar and parse the string (a, a)$ using the parsing table. S -> (L) | a L-> L , S | S	**07**
		OR	
Q.3	**(a)**	Differentiate top down parsing and bottom up parsing.	**03**
	(b)	What is Inherited attribute? Explain with suitable example	**04**
	(c)	Show that the following grammer S-> AaAb | BbBa A -> ϵ B -> ϵ is not SLR(1).	**07**
Q.4	**(a)**	What is operator grammar? Given an example.	**03**
	(b)	What is the need of intermediate code? Explain quadruple, triple and indirect triple with suitable example.	**04**
	(c)	Write and explain the generic issues in the design of code generators.	**07**
		OR	
Q.4	**(a)**	What is the difference between parse tree and syntax tree? Write appropriate grammar and draw parse as well as syntax tree for a + a * a.	**03**
	(b)	Explain various parameter passing methods	**04**
	(c)	Write a context free grammar for arithmetic expressions. Develop a syntax directed definition for the grammar. Draw an annotated parse tree for the input expression: 3*2+5n.	**07**

Q.5 **(a)** Explain how panic mode and phrase level error recovery can be implemented. **03**

(b) Write a Syntax-directed definition for flow-of-control statement. **04**

(c) Explain symbol table management. **07**

OR

Q.5 **(a)** Define the following terms. **03**
      1) Basic block   2) DAG   3) Flow graph

(b) Explain Dynamic storage allocation technique. **04**

(c) Explain various code optimization techniques. **07**

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