Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VII (NEW) EXAMINATION – WINTER 2021

Subject Code:3170701 Date:22/12/2021

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)**	Define following terms: i. Compiler ii. Interpreter iii.Token	**03**
	(b)	Explain activation tree?	**04**
	(c)	Explain a rule of Left factoring a grammar and give Example.	**07**
Q.2	**(a)**	Explain input buffering methods.	**03**
	(b)	Define the following terms and give suitable example for it. i. Augmented Grammar ii. LR(0) Item iii.LR(1) Item	**04**
	(c)	Draw the DFA for the regular expression (a|b)*abb using set construction method only.	**07**
		OR	
	(c)	Draw NFA from regular expression using Thomson's construction and convert it into DFA. (a | b)* a b* a	**07**
Q.3	**(a)**	Describe Ambiguous Grammar with example.	**03**
	(b)	Design FIRST and FOLLOW set for the following grammar. S→ 1AB | ε A→1AC | 0C B→0S C→1	**04**
	(c)	Explain operator grammar. Generate precedence function table for following grammar. E -> EAE | id A -> + | *	**07**
		OR	
Q.3	**(a)**	Differentiate Top Down Parsing and Bottom up parsing	**03**
	(b)	Explain error recovery strategies used by parser.	**04**
	(c)	Construct CLR parsing table for following grammar. S -> aSA | € A -> bS | c	**07**
Q.4	**(a)**	Explain various issues in design of code generator.	**03**
	(b)	Explain the following parameter passing methods. 1. Call-by-value 2. Call-by-reference 3. Copy-Restore 4. Call-by-Name	**04**
	(c)	Explain Peephole Optimization.	**07**
		OR	

Q.4	**(a)**	Draw a DAG for expression: a + a * (b – c) + (b – c) * d.	**03**
	(b)	Compare: Static v/s Dynamic Memory Allocation.	**04**
	(c)	Translate following arithmetic expression - (a * b) + (c + d) - (a + b + c + d) into 1] Quadruples 2] Triple 3] Indirect Triple	**07**
Q.5	**(a)**	Explain symbol table. For what purpose , compiler uses symbol table?	**03**
	(b)	Explain Basic-Block Scheduling.	**04**
	(c)	Explain synthesized attributes with the help of an example.	**07**

OR

Q.5	**(a)**	Define a following: i. Basic block ii. Constant folding iii. Handle.	**03**
	(b)	Write difference(s) between stack and heap memory allocation.	**04**
	(c)	Explain Pass structure of assembler.	**07**

****