

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.	03
$S \rightarrow aSbS bSaS \epsilon$	
(b) Write rule(s) to check grammar is left recursive or not. Remove left recursive from the following grammar. $S \rightarrow aBDh$ $B \rightarrow Bb c$ $D \rightarrow EF$ $E \rightarrow g \epsilon$ $F \rightarrow f \epsilon$	04
(c) Construct the SLR parsing table for the following Grammar. $E \rightarrow E+T T$ $T \rightarrow T * F F$ $F \rightarrow (E) id$	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. $S \rightarrow CC$ $C \rightarrow cC$ $C \rightarrow d$	07

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- 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 **07**
1. Quadruples 2. Triples 3. Indirect triples
- 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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