

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-V (NEW) EXAMINATION – WINTER 2021****Subject Code:2150708****Date:14/12/2021****Subject Name:System Programming****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.

			MARKS
Q.1	(a)	Explain types of grammar.	03
	(b)	Explain lexical analysis of language processor.	04
	(c)	What is Symbol table? Explain how one can organize Symbol table using Linear Data Structure?	07
Q.2	(a)	Describe the level of System Software.	03
	(b)	Define Following terms: 1. System Software 2. Semantic Gap 3. Specification Gap 4. Execution Gap	04
	(c)	Explain Left recursion, Left factoring and backtracking in top down parsing.	07
OR			
	(c)	Develop an LL (1) parser table for the following grammar and Parse the string using the parsing table: (id*id) + (id*id) E->TA A->+TA ε T->VB B->*VB εV->id (E)	07
Q.3	(a)	How compiler implements scope rules?	03
	(b)	Develop regular expression and DFAs for the following kind of strings: 1). a real number with optional integer and fraction part 2). a comment string in the C++ language.	04
	(c)	List various phases of a language processor. Explain roles of phases of Language Processor. Also explain symbol table.	07
OR			
Q.3	(a)	Explain attributes of formal parameters in macro with syntax.	03
	(b)	Describe the use of REPT and IRP statement.	04
	(c)	Explain use and field of following tables of macro. KPD TAB, MDT, EVTAB, SSTAB	07
Q.4	(a)	Explain attributes of formal parameters in macro with syntax.	03
	(b)	Given following expression: $x = -a * b + -a * b$ Write three address codes for the expression.	04
	(c)	Write operator precedence table for arithmetic operators "+", "*", "-", "/" "(", ")". Parse following expression using the table. id * (id + id) / (id * id)	07
OR			
Q.4	(a)	Explain following terms with suitable example. (1) Expansion time variable (2) Positional parameter	03

- (b) An assembly program contains the statement **04**
 X EQU Y + 25
 Indicate how the EQU statement can be processed if
 (1) Y is a back reference
 (2) Y is a forward reference
- (c) List out and explain various optimizing transformations of a compiler by giving suitable examples. **07**
- Q.5** (a) Explain the difference between top-down parsing and bottom-up parsing. **03**
 (b) Explain the Difference between Variant-I and Variant-II with example. **04**
 (c) Explain recursive descent parsing algorithm. **07**
- OR**
- Q.5** (a) Explain Bootstrap loader. **03**
 (b) Explain design of an editor. **04**
 (c) What is interpreter? Explain pure & impure interpreters. **07**
