Seat No.: _____ **Enrolment No._____**

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–V (NEW) - EXAMINATION – SUMMER 2018

Subject Code:2150708 Date:02/05/2018

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.**

			MARKS
Q.1	**(a)**	What is the difference between System Software and Application software?	**03**
	(b)	Define following terms: 1) Assembler 2) Macro 3) Parsing 4)Interpreter	**04**
	(c)	Explain Life cycle of source program with neat sketch.	**07**
Q.2	**(a)**	Explain memory allocation in block structured language.	**03**
	(b)	Explain in detail any two advanced assembler directives.	**04**
	(c)	Given a grammar, E →TA, A → +TA | ε T →VB B →*VB | ε V →id | (E) Develop an LL (1) parser table and parse following string using the parsing table. id * (id + id)	**07**

OR

	(c)	Given the source program:	**07**

```
        START   100
A       DS      3
L1      MOVER   AREG, B
        ADD     AREG, C
        MOVEM   AREG, D
D       EQU     A+1
L2      PRINT   D
        ORIGIN  A-1
C       DC      '5'
        ORIGIN  L2+1
        STOP
B       DC      '19'
        END     L1
```

(a) Show the contents of the symbol table at the end of Pass I.
(b) Explain the significance of EQU and ORIGIN statement in the program and explain how they are processed by the assembler.
(c) Show the intermediate code generated for the program.

Q.3	**(a)**	Compare various intermediate code forms for an assembler.	**03**
	(b)	Describe following data structures: OPTAB, SYMTAB, LITTAB and POOLTAB.	**04**
	(c)	Explain use and field of following tables of a macro KPDTAB, MDT, EVTAB, SSTAB	**07**

OR

Q.3	**(a)**	Explain following terms with suitable example. 1. Expansion time variable 2. Positional parameter	**03**
	(b)	Explain Left recursion, Left factoring in top down parsing	**04**
	(c)	What is operator precedence parsing? Show operator precedence matrix for following operators: +, - , *, (,). Parse following string: |- <id> + <id> * <id> -|	**07**
Q.4	**(a)**	Define forward references. How it can be solved using back-patching.	**03**
	(b)	Explain triple and quadruple representation with example.	**04**
	(c)	What is program relocation? How relocation is performed by linker? Explain with example.	**07**

OR

Q.4	**(a)**	Explain the term loader with its basic function.	**03**
	(b)	Explain types of grammar.	**04**
	(c)	Explain with examples - expansion time variables, expansion time Statements - AIF and AGO for macro programming. Show their usage for expansion time loop by giving example.	**07**
Q.5	**(a)**	Explain any three Code Optimization Techniques.	**03**
	(b)	Define: L-Attributed definition in detail.	**04**
	(c)	By taking the example of factorial program explain how activation record will look like for every recursive in case of factorial (3).	**07**

OR

Q.5	**(a)**	Explain lexical analysis of language processor	**03**
	(b)	Explain the terms Binding and Binding Times.	**04**
	(c)	Explain the drawbacks and benefits of Interpretation	**07**

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