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

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–V (NEW) - EXAMINATION – SUMMER 2017

Subject Code: 2150708 **Date: 03/05/2017**

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		**Short Questions**	**14**
	1	Define : Language Processor.	
	2	_____ phase performs type checking task. [a] Lexical Analysis [b] Syntax Analysis [c] Semantic Analysis	
	3	Define : Parse tree.	
	4	State True/False : Code optimization phase is optional phase of compiler.	
	5	Which phase of compiler will generate error if semicolon is missing in a c program?	
	6	Define : intermediate code.	
	7	Define : Pattern.	
	8	State True/False : Top Down parsers can never work with left recursive grammar.	
	9	Define: symbol Table.	
	10	Define: Semantic Gap.	
	11	Define : Backpatching.	
	12	State True/False : “Single pass assemblers cannot handle forward references.”	
	13	Define : Macro Assembler.	
	14	State True/False : Symbol table is used to store mnemonics and opcodes.	
Q.2	**(a)**	Eliminate left recursion from following grammar. S → A A → Ad | Ae | aB | aC B → bBC | f C → g	**03**
	(b)	Construct LL(1) parsing table for following grammar. S → iCtSeS | iCtS | a C → b	**04**
	(c)	Construct an optimized DFA : 0*1*(0/1)#	**07**

OR

	(c)	Show that following regular expressions are equivalent by constructing optimized DFA. (0/1)* (0*/1*)*	**07**
Q.3	**(a)**	What is Peephole optimization? Explain any two optimization transformations in detail.	**03**
	(b)	Define and explain different intermediate code representations.	**04**
	(c)	What is main task of semantic analysis phase? Explain inherited and synthesized attributes in detail with example.	**07**
		OR	
Q.3	**(a)**	Define: L-Attributed definition in detail.	**03**
	(b)	State different storage allocation strategies. Explain static allocation and stack allocation in detail.	**04**
	(c)	Generate Quadruple, Triple, Indirect Triple for following expression: ans=a+b*c/2.0	**07**
Q.4	**(a)**	What is program relocation? How relocation is performed by linker?	**03**
	(b)	Write and explain the algorithm for macro expansion.	**04**
	(c)	Explain in brief design of a Two Pass Assembler.	**07**
		OR	
Q.4	**(a)**	What is overlay? Explain the execution of an overlay structure program.	**03**
	(b)	Explain in brief self relocating programs.	**04**
	(c)	Explain in detail any two advanced assembler directives.	**07**
Q.5	**(a)**	Explain Types of grammar in detail.	**03**
	(b)	Compare and Contrast macro preprocessor and macro assembler.	**04**
	(c)	Explain in brief design the linker.	**07**
		OR	
Q.5	**(a)**	Define: Ambiguous grammar. Also state example of same.	**03**
	(b)	Explain and compare two variants of intermediate code.	**04**
	(c)	Explain in brief the design of a macro assembler.	**07**

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