

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.	03
	$S \rightarrow A$ $A \rightarrow Ad \mid Ae \mid aB \mid aC$ $B \rightarrow bBC \mid f$ $C \rightarrow g$	
	(b) Construct LL(1) parsing table for following grammar.	04
	$S \rightarrow iCtSeS \mid iCtS \mid a$ $C \rightarrow b$	
	(c) Construct an optimized DFA :	07
	$0^*1^*(0/1)^{\#}$	

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
