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 → A
A → Ad | Ae | aB | aC
B → bBC | f
C → g

(b) Construct LL(1) parsing table for following grammar. **04**

S → iCtSeS | iCtS | a
C → b

(c) Construct an optimized DFA : **07**

0*1*(0/1)#

OR

(c) Show that following regular expressions are equivalent by constructing optimized DFA. **07**
(0/1)*
(0*/1*)*

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: **07**
ans=a+b*c/2.0

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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