

**GUJARAT TECHNOLOGICAL UNIVERSITY**  
**BE – SEMESTER (SYLLABUS) EXAMINATION- WINTER 2017**

**Subject Code: 2150708**

**Date: 13/11/2017**

**Subject Name: System Programing**

**Time: 10.30AM to 01.00PM**

**Total Marks: 70**

**Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

	<b>MARKS</b>
<b>Q.1*</b> (a) Explain different kinds of system software.	<b>03</b>
(b) Define the following terms: 1)Backpatching 2)Simple phrase grammar 3)Left recursion 4)Top-down parsing	<b>04</b>
(c) Which activity reduce specification gap? Explain with suitable example. Who will reduce execution gap?	<b>07</b>
<b>Q.2</b> (a) Draw a flowchart of maintaining Table of Incomplete Instruction (TII) in assembler.	<b>03</b>
(b) Construct a deterministic finite automata for $(0 1)^*011$	<b>04</b>
(c) Write algorithm for practical approach of top down parsing.	<b>07</b>
<b>OR</b>	
(c) Construct predictive parsing table for following grammar: E->BA A-> &BA € B->>true false	<b>07</b>
<b>Q.3</b> (a) Explain the data structure of single pass assembler.	<b>03</b>
(b) Explain the use of intermediate code with example in assembler and also mention field of it.	<b>04</b>
(c) Construct an operator precedence matrix for the operators of a grammar for expressions containing arithmetic, relational and Boolean operator.	<b>07</b>
<b>OR</b>	
<b>Q.3</b> (a) Explain the difference between literal and constant in assembler with its syntax. Why POOLTAB is requiring?	<b>03</b>
(b) Which data structure is used for automatic dynamic allocation and memory access? Explain with suitable example.	<b>04</b>
(c) Give suitable example for nested macro call with its data structure.	<b>07</b>
<b>Q.4</b> (a) Explain use of value number in local optimization.	<b>03</b>
(b) Give suitable example for macro by using conditional expansion or expansion time loops.	<b>04</b>
(c) Explain Self relocating program and overlay structure program.	<b>07</b>
<b>OR</b>	
<b>Q.4</b> (a) Explain pure and impure interpreter.	<b>03</b>
(b) Explain the front end of toy compiler with suitable example.	<b>04</b>
(c) Draw the expression tree for the string $f+(x+y)*((a+b)/(c-d))$ by their evaluation order and mention register required label in each node.	<b>07</b>

- Q.5** (a) Explain working of triple, quadruples and indirect triples with example. **03**  
(b) Explain attributes of formal parameter and expansion time variable in macro. **04**  
(c) Define the following terms **07**  
1) Translation time address: 2) Linked time address 3) Load time address: 4) Translated origin: 5) Linked origin: 6) Load origin: 7) Interpreter

**OR**

- Q.5** (a) Explain operand descriptor and register descriptor for  $a*b$ . **03**  
(b) Explain absolute loader in detail. **04**  
(c) Explain Naïve Bottom up parsing algorithm with example and also mention which problem occurs during parsing. **07**

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