Seat No.: _____ Enrolment No._____

# GUJARAT TECHNOLOGICAL UNIVERSITY

**MCA - SEMESTER–III • EXAMINATION – SUMMER • 2015**

**Subject Code: 630005** **Date: 19-05-2015**

**Subject Name: System Software**

**Time: 02:30 pm - 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.**

**Q.1** **(a)** Define the following: **07**

1. Language Processor
2. Compiler
3. Binding
4. Macro
5. Device Driver
6. Grammar
7. Heap

**(b)** What are device drivers? Explain various types of device drivers. **07**

**Q.2** **(a)** Construct the operator precedence table for the operators given in the expression a+b*c+d. Now using this table check the validity of the string. Also show the steps to construct the AST. **07**

**(b)**
1. What is the role of a debug monitor? **03**
2. Give the classification of grammar. **04**

**OR**

**(b)**
1. Write a short account on editors **03**
2. Write a brief account on search data structures. **04**

**Q.3** **(a)**
1. Clearly mention the problems faced in a top down parsing with backtracking. **03**
2. Differentiate between the following: **04**
   a. Literals and Declare Constant
   b. Imperative Statement and Assembler Directive

**(b)** Write a short note on Code Optimization. **07**

**OR**

**Q.3** **(a)**
1. Construct a DFA for Integers. Also give the corresponding regular expression. **03**
2. Differentiate between the following: **04**
   a. LL parsing and Recursive descent parsing
   b. Program controlled memory allocation and Automatic controlled memory allocation

**(b)** Consider the following expression: **a + b * c + d * e $ f** **07**
Construct the triple, quadruple and indirect triple for the above expression.

**Q.4** **(a)** Explain the various data structures needed for the processing of a macro. Give the detailed description of each table and explain each field of the table. **07**

**(b)**
1. Write a brief account on various types of formal parameter used in macro. **04**
2. Mention clearly the advantages and limitations of using macro over sub-routines. **03**

**OR**

| | | | |
|---|---|---|---|
| **Q.4** | **(a)** | What do you understand by nested macros? With the use of the stack model explain nested macros. Give proper example to support your answer. | **07** |
| | **(b)** | 1. What expansion time variables are available in macros? | **04** |
| | | 2. List and explain any three advanced macro facilities. | **03** |
| **Q.5** | **(a)** | 1. Write a brief account on overlays | **04** |
| | | 2. Explain in brief about the MS-DOS linker | **03** |
| | **(b)** | Write an algorithm to explain the program relocation. | **07** |

**OR**

| | | | |
|---|---|---|---|
| **Q.5** | **(a)** | Define the following terms:<br>1. Linked origin<br>2. Translated origin<br>3. Relocation factor<br>4. Linker<br>5. Loader<br>6. Absolute loaders<br>7. Public definitions | **07** |
| | **(b)** | 1. What do you understand by self-relocatable, non-relocatable and relocatable programs? | **03** |
| | | 2. What is object module? Explain in brief. | **04** |

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