Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

MCA - SEMESTER–III • EXAMINATION – WINTER • 2014

Subject Code: 2630005 Date: 05-01-2015

Subject Name: System Software

Time: 10:30 am - 01:00 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 following terms : **07**

1. Application Domain
2. IRR
3. Sequencing Symbol
4. SSM
5. Impure Interpreter
6. Data type
7. APTAB

(b) 1. List advantages of Assembly language over machine language. **03**

2. Explain with suitable example : Derivation and Reduction. **04**

Q.2 **(a)** 1. Discuss how Display array is useful to access nonlocal variable. **04**

2. Write short note on Extended stack model. **03**

(b) What is Bottom up parsing? List Naïve bottom up parsing algorithm. Also discuss disadvantages of this algorithm. **07**

OR

(b) Define Lexical Analysis. List all notations used in regular expression. Draw DFA and STT for an input token $a^{+}b^{*}(cd)^{+}$. **07**

Q.3 **(a)** Write short note on Advanced assembler directives. Also draw design of all data structures used in Assembler pass-I. **07**

(b) 1. Demonstrate with suitable example – use of mixed types of parameter in a Macro. **03**

2. Explain with suitable example – expansion time loop in a Macro. **04**

OR

Q.3 **(a)** Give format of IC token used for label, Mnemonic, operand1 and operand2 parts of an assembly statement. Also list assembler pass-II algorithm. **07**

(b) Show all data structures created during Macro preprocessor pass II. Also list macro pass II algorithm. **07**

Q.4 **(a)** Explain the role of Operand descriptor and Register descriptor in compilation of an expression. Also explain how quadruple is used to store IC of an expression. **07**

(b) 1. Explain with example: compilation of control structure. **03**

2. Explain with example: Backtracking in parsing. **04**

OR

Q.4 **(a)** Write short note on “Available expression” and “Live variable”. **07**

(b) 1. Write short note on Scope rule of a variable. **03**

2. Write short note on Analysis phase of a Toy compiler. **04**

Q.5 **(a)** What is Program relocation and Linking? List and explain program relocation algorithm. **07**

(b) 1. Write short note on absolute loader and relocatable loader. **04**

2. Write short note on User Interface. **03**

OR

Q.5	**(a)**	Define these terms w.r.t. linker: ENTRY, EXTRN, Binary program, Address sensitive instruction, Linking, Overlay, Loading.	**07**
	(b)	1. When loader will perform relocation? Also explain compile and go loader.	**04**
		2. Write short note on Debug monitor.	**03**

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