Seat No.: _____   Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY
M.C.A -IIIrd SEMESTER–EXAMINATION – MAY- 2012

Subject code: 630005   **Date: 28/05/2012**
Subject Name: System Software (SS)
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   Answer the following in brief.   **14**
   1. Define the control structure.
   2. Define macro.
   3. What is the job of linker?
   4. What is linked address?
   5. Define overlay.
   6. What is object module?
   7. What is the purpose of derivation operation?
   8. What is a device driver?
   9. What is an expression tree?
   10. What is the format of Triples?
   11. What is the use of BC instruction in assembly language?
   12. What do you mean by nonterminal symbol?
   13. Define finite state automaton.
   14. What are tokens?

Q.2 **(a)** Generate IR (Intermediate Representation) for the following program and show   **07**
            the steps for doing lexical analysis, syntax analysis and semantic analysis:
                 int i;
                 float a, b;
                 a=b + i ;
        (b) What is parsing? What are the basic problems faced by the Top-down parser?   **07**
            Explain in brief.
                                        OR
        (b) (1) Differentiate top-down parsing and bottom-up parsing.   **04**
            (2) Write a regular expression for a real number with optional fraction.   **03**

Q.3 **(a)** Write an algorithm for the 1st pass of a two-pass assembler.   **07**
        (b) Differentiate between static memory allocation and dynamic memory   **04**
            allocation.
        (c) Explain the three features of assembly language that makes it better than   **03**
            machine language.
                                        OR
Q.3 **(a)** Explain non-relocatable, relocatable and self-relocating programs.   **07**
        (b) Differentiate between compilation and interpretation.   **04**
        (c) Define programming language grammar.   **03**

Q.4 **(a)** Explain code optimization phase of compiler in detail.   **07**
        (b) Differentiate between pure and impure interpreter.   **04**
        (c) What are the kinds of statements in assembly language program?   **03**

Q.4	**(a)**	Explain the design and operation of an interpreter.	**07**
	(b)	Differentiate between search data structure and allocation data structure.	**04**
	(c)	What is the function of loader? Define an absolute loader.	**03**

Q.5	**(a)**	Discuss the points to be taken care while designing a macro preprocessor.	**07**
	(b)	What is the importance of user interface in system software development?	**04**
	(c)	What are the main activities of synthesis phase?	**03**

OR

Q.5	**(a)**	Explain the different types of device drivers.	**07**
	(b)	Explain the facilities provided by Debug monitors.	**04**
	(c)	Which grammar is suited for programming language specification? Define it.	**03**

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