| Seat No.: | Enrolment No |
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## **GUJARAT TECHNOLOGICAL UNIVERSITY**

M.C.A -III<sup>rd</sup> SEMESTER-EXAMINATION – MAY- 2012

| Subj     | ect c      | ode: 630005 Date: 28/05/2012   | 2  |
|----------|------------|--|----|
| Subj     | ect N      | Name: System Software (SS)   |    |
| •        |            | :30 pm – 05:00 pm Total Marks: 70  | 0  |
| Instr    |            | -  |    |
|          |            | empt all questions.  |    |
|          |            | ke suitable assumptions wherever necessary.  |    |
|          |            | ures to the right indicate full marks.   |    |
|          | 8-         |  |    |
| 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?  |    |
|          |            | <ul><li>12. What do you mean by nonterminal symbol?</li><li>13. Define finite state automaton.</li></ul>   |    |
|          |            | 13. Define finite state automaton.  14. What are tokens?   |    |
|          |            | 14. What are tokens:   |    |
| Q.2      | (a)        | Generate IR (Intermediate Representation) for the following program and show the steps for doing lexical analysis, syntax analysis and semantic analysis: int $i$ ; float $a$ , $b$ ; $a=b+i$ ;  | 07 |
|          | <b>(b)</b> |  | 07 |
|          |            | Explain in brief.  |    |
|          |            | OR   |    |
|          | <b>(b)</b> |  | 04 |
|          |            | (2) Write a regular expression for a real number with optional fraction.   | 03 |
| 0.2      | (-)        | White an also with on Countly 18th and a Countly 18 | 07 |
| Q.3      | (a)        | Write an algorithm for the 1 <sup>st</sup> pass of a two-pass assembler.   | 07 |
|          | <b>(b)</b> | Differentiate between static memory allocation and dynamic memory allocation.  | 04 |
|          | (c)        | Explain the three features of assembly language that makes it better than  | 03 |
|          | (0)        | machine language.  | US |
|          |            | OR   |    |
| Q.3      | (a)        | Explain non-relocatable, relocatable and self-relocating programs.   | 07 |
| <b>~</b> | (b)        | Differentiate between compilation and interpretation.  | 04 |
|          | (c)        | Define programming language grammar.   | 03 |
|          | (-)        | 1 - 0 0 0 0 - 0 - 0 - 0  |    |
| Q.4      | (a)        | Explain code optimization phase of compiler in detail.   | 07 |
| ~        | <b>(b)</b> | Differentiate between pure and impure interpreter.   | 04 |
|          | (c)        |  | 03 |

## OR

| Q.4 | (a)        | Explain the design and operation of an interpreter.                        | 07 |
|-----|------------|--|----|
|     | <b>(b)</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>(b)</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>(b)</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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