

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY

MCA - SEMESTER-III • EXAMINATION – WINTER 2013

Subject Code: 2630005

Date: 12-12-2013

Subject Name: System Software

Time: 02:30 pm TO 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 terms. **07**
- (1) Operator Grammar
 - (2) Intermediate Representation (IR)
 - (3) Forward Reference
 - (4) Simple Precedence
 - (5) Macro
 - (6) Basic block
 - (7) Linking
- (b)** What is Grammar? Explain the classification of Grammars in detail. **07**
- Q.2 (a)** Construct the parser table for the following grammar using FIRST and FOLLOW set. **07**
- $E = VT'$
 $T' = *VT' \mid \epsilon$
 $V = \langle id \rangle \mid (E)$
- Also validate the string $\mid (\langle id \rangle * \langle id \rangle) \mid$ according to the given grammar.
- (b)** Discuss different types of Entry formats used in Search Data Structures. **07**
- OR**
- (b)** What is DFA? Construct the DFA for recognizing identifiers, unsigned integers and unsigned real number with fractions. **07**
- Q.3 (a)** Explain the use of OPTAB, SYMTAB and LITAB in the Assembler Pass I using suitable example. **07**
- (b)** Write the algorithm for Macro Expansion. **07**
- OR**
- Q.3 (a)** Construct the PNTAB, SSNTAB, MNT and MDT for following macro code. **07**
- ```
MACRO
EVAL &X, &Y, &Z
AIF (&Y EQ &X) .ONLY
MOVER AREG, &X
SUB AREG, &Y
ADD AREG, &Z
AGO .OVER
.ONLY MOVER AREG, &Z
.OVER MEND
```
- (b)** Write the algorithm for Second Pass Assembler. **07**
- Q.4 (a)** Discuss the role of static and dynamic pointer for accessing local and nonlocal variable in block structured language using suitable example and figure. **07**
- (b)** Write a short note on “Compilation of Expression”. **07**

**OR**

- Q.4** (a) What is difference between Local and Global optimization? Discuss the issues related to Common Subexpression Elimination in Global optimization. **07**  
(b) Explain the parameter passing mechanism in Function and Procedure calls. **07**
- Q.5** (a) What is Program Relocation? Explain Relocation algorithm in detail. **07**  
(b) List out the different loading schemes. Explain Compile-and-Go loader in detail. **07**

**OR**

- Q.5** (a) Explain the Linking for Overlays in detail. **07**  
(b) Discuss different types of Editors used as a Software Tools. **07**

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