Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

MCA. Sem-III Regular Examination January 2011

Subject code: 630005 Subject Name: System Software

Date: 07 /01 /2011 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)** Explain the difference between Derivation and Reduction by taking suitable example. **07**

(b) Discuss the following terms.

i. Editors **03**

ii. Debug Monitors **04**

Q.2 **(a)** Generate the parser table for an LL(1) parser for following Grammar using FIRST and FOLLOW technique. **07**

E = T E'
E' = - T E' | ε
T = V T'
T' = / V T' | ε
V = < id >

And also give the sequence of prediction made by parser for the source string like ├ < id > / < id > - < id > ┤.

(b) Why an Allocation Data Structure used? How the memory areas are allocated and deallocated by various types of allocation data structure. **07**

OR

(b) How can you differentiate DFA with FSA? Build the DFA for regular expression (a|b)*bb(a|b)*. **07**

Q.3 **(a)** Explain ORIGIN, EQU and LTORG assembler directives in detail. **07**

(b) What is an overall procedure for compilation of expression? Briefly explain the use of Operand Descriptors and Register Descriptors in expression compilation. **07**

OR

Q.3 **(a)** Discuss Pass I of the assembler in detail. **07**

(b) Explain with example - The role of static and dynamic pointer for accessing local and nonlocal variable in block structured language. **07**

Q.4 **(a)** Write a short note on "Code Optimization". **07**

(b) Construct all data structures for Macro given below **07**

```
      MACRO
      MCA       &X , &Y , &REG = BREG
      AIF       (&Y  EQ  0 )        .ERR
      MOVER     &REG , &X
      DIV       &REG , &Y
.ERR  MEND
```

Also generate the statements for these two Macro call.

i. MCA 5 , 5 , REG = AREG

ii. MCA 2 , 0

OR

Q.4	**(a)**	Explain the Algorithm for Macro Expansion.	**07**
	(b)	Explain the procedure for expansion of Nested Macro calls in detail.	**07**
Q.5	**(a)**	What is Program Relocation? Explain the use of EXTRN and ENTRY statements in linking.	**07**
	(b)	What do you understand by Device Driver? What is the significance of init(), open(), intr(), and poll() entry points in Device Driver.	**07**

OR

Q.5	**(a)**	What is the advantage of Overlay? How it works? Explain in detail.	**07**
	(b)	Discuss different types of Device Driver by drawing suitable figure.	**07**

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