

**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**

$$\begin{aligned}
 E &= T E' \\
 E' &= \epsilon \mid T E' \\
 T &= V T' \\
 T' &= \epsilon \mid V T' \\
 V &= \langle \text{id} \rangle
 \end{aligned}$$

And also give the sequence of prediction made by parser for the source string like  $\mid \langle \text{id} \rangle / \langle \text{id} \rangle - \langle \text{id} \rangle \mid$ .

- (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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