

GUJARAT TECHNOLOGICAL UNIVERSITY**MCA - SEMESTER-III • EXAMINATION – SUMMER 2013****Subject Code: 630005****Date: 22-05-2013****Subject Name: System Software****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) Answer the following: **07**
 Define:

1. Language Processor
2. Binding
3. Scanning and Parsing
4. Expression tree
5. Format of quadruple
6. Linked time address
7. Grammar

(b) State true or false and justify your answer: **07**

- a. Stack is used as an allocation data structure.
- b. RD parser is a top-down parser.
- c. Whenever a macro is called the macro code gets executed.
- d. An object module is a binary program.
- e. Derivation is same as bottom-up parsing.
- f. LTORG is an imperative statement.
- g. AGO falls under lexical substitution.

Q.2 (a) 1. Discuss the various types of assembly statements. **03**
 2. Write a short note on Debug Monitors **04**
 (b) Explain the various data structures used during Pass-I and Pass-II of an assembler. **07**

OR

(b) Write a short account on the front end and back end processing of a toy compiler. **07**

Q.3 (a) (i) What is a macro? Give the various types of parameters used in macro definition. **04**
 (ii) Write a brief account on Expansion time variables. **03**
 (b) What are device drivers? Give the detailed classification of device drivers. **07**

OR

Q.3 (a) For the given macro create the various data structures required for the macro call INCR A, 5, AREG **07**
 MACRO
 INCR &MEM_VAL, &INCR_VAL, ®
 MOVER ®, &MEM_VAL
 ADD ®, &INCR_VAL
 MOVEM ®, &MEM_VAL
 MEND

- (b) Give the difference between character device drivers and block device drivers. Also list and explain any three entry points of character device drivers. **07**
- Q.4** (a) (i) Explain Variant – I and Variant – II for IC generation **04**
(ii) What are overlays? **03**
- (b) Consider the following expression: $a + b * c ^ d / e$. **07**
Construct the corresponding triple and quadruple format of the above expression.
- OR**
- Q.4** (a) 1. Give differences for the following: **04**
a. Allocation data structures and Search data structures
b. Literals and Declare constant
2. Write a short note on extended stack model. **03**
- Q.4** (b) Write a short note on code optimization **07**
- Q.5** (a) Using the following LL(1) grammar show whether the following strings are valid or not: **07**
 $E ::= TE'$
 $E' ::= -TE' \mid \epsilon$
 $T ::= VT'$
 $T' ::= /VT' \mid \epsilon$
 $V ::= <id>$
Input String:
1) $<id> - <id> / <id>$
2) $<id> / <id> - <id>$
- (b) Write a short note on: **07**
a. Object Module
b. Self-locating programs
- OR**
- Q.5** (a) Using the following grammar of RD Parser show whether the following strings are valid or not: **07**
 $E ::= T \{ + T \}^*$
 $T ::= V \{ * V \}^*$
 $V ::= <id>$
Input String:
1) $<id> * <id> * <id>$
2) $<id> + <id> * <id> <id>$
- (b) Define the following: **07**
a. Public Definitions
b. External variables
c. Translated origin
d. Program relocation
e. Address sensitive instruction
f. Load time address
g. Absolute loader
