## **GUJARAT TECHNOLOGICAL UNIVERSITY** MCA - SEMESTER-III • EXAMINATION – WINTER • 2015

## Subject Code:2630005 Date:02/01/ 2016 Subject Name: System Software Time:10.30 am to 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. 07 0.1 (a) Do as directed i) Translator is used to bridge specification gap (True / False) ii) Assembler is used to convert higher level language program into machine language (True/False) iii) Bottom up parser is used in Assembler for Syntax Analysis (True/False) iv) Top down parser is using Reduction for parsing (True/False) v) Define Side effect in a function call vi) Define Ancestor in a Control Flow Analysis vii) Define PL Domain (b) Differentiate between followings i) Translator and Interpreter 03 ii) Positional Parameter and Keyword Parameter 02 iii) Static pointer and dynamic pointer 02 (a) What is Sequencing Symbol? Which tables are used to process it? List steps 07 0.2 about how to process it in Macro pass I when it will come in i) Label part of a statement ii) Operand part of a statement (b) Explain Triple and Quadruple. Generate triple and quadruple entries for the 07 expression $|-a \uparrow b + c * d / e - f - |$ OR (b) Define Code Optimization and basic block. List advantages of code 07 optimization. Also explain various optimization transformations. **Q.3** (a) List and explain advantages of Assembly language over machine language. List 07 all types of statements used in assembly language and explain declarative statements with example. i) Explain various steps of front end of a Language processor with 04 **(b)** example. ii) ii) Explain AIF, AGO and ANOP with suitable example. 03 OR

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	START	100
Х	DC	'10'
А	MOVER	DREG, ='3'
	ADD	DREG, Y
	MOVEM	DREG, X
	MOVER	AREG, ='0'
	LTORG	
Ζ	EQU	X+1
В	PRINT	Ζ
	MOVER	BREG,='0'
	MOVER	CREG,='0'
	ORIGIN	X-1
Y	DC	·3'
	ORIGIN	B+4
	STOP	
	MOVER	DREG,='0'
	END	А

- **(b)** i) Define Language processor. List and explain various types of a language 04 processor
  - ii) What is MEC? List an algorithm to maintain MEC during macro 03 expansion.
- 0.4 List and explain all the notations used in a Regular expression. Draw DFA 07 **(a)** diagram and State Transition Table for the expression  $(xy)^*(w)^+yz(t)^*$ . i) Explain all data structures in Assembler. **(b)** 04
  - ii) Write short note on compilation of control structure (if...else and while) 03 OR
- Show Operator precedence matrix for + , \* , / , |- and -|. Trace Operator 07 **Q.4 (a)** precedence parser for the input : |-a/b + c \* d - |
  - i) How value number can be used for common subexpression elimination? **(b)** 04 Explain with example. 03
    - ii) Explain operand descriptor and register descriptor with example.
- Q.5 **(a)** Define Translated origin, linked origin and load origin. Write short note on 07 object module. (b) Explain design of an editor and types of editor. 07

## OR

(a) i) Write short note on Self relocating programs. 03 **Q.5** ii) Write short note on linking for overlays. 04 (b) i) Write short note on Allocation Data Structure. 03 ii) What do you mean by Loading? Explain absolute loader. 04

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