Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

MCA - SEMESTER–III • EXAMINATION – WINTER 2013

Subject Code: 630005 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)** Do as directed. **07**

1. In the Assembly instruction BC LT, BACK, the BACK is _____.
2. What is the use of ORIGIN statement in Assembly Language?
3. What do EVNTAB store in Macro processor?
4. Which statement is used to manipulate the expansion time variable's value in Macro?
5. If linked_origin = translated_origin**,** which task can be eliminated by linker?
6. Which kind of program can execute in any area of the memory?
7. What is the outcome after first pass of two pass translator?

(b) 1. Explain the features of Assembly Language. **03**

2. Define the terms (a) Overlay (b) Macro **02**
3. Explain the terms (a) Specification gap (b) Execution gap **02**

Q.2 **(a)** Write an algorithm of 1st pass of 2-pass assembler. **07**

(b) Explain status of every stage of parsing operation for given string **07**
|- <id> +<id> * <id> -| using Operator precedence parser.

OR

(b) According to the grammar **07**
E::= T + E | T
T::= V* T | V
V::= <id>
Validate the given string <id> + <id> *<id> using top down parsing and discuss the drawbacks of above technique.

Q.3 **(a)** Explain nested macro call expansion performed by Macro preprocessor using extended stack model with example. **07**

(b) 1. Explain different type of parameter available in Macros' definition with example. **03**

2. Explain classification of Grammar. **04**

OR

Q.3 **(a)** Write a macro named MSUM which add two given numbers as parameter (i.e. FIRST, SECOND) and save the result in to the third one (i.e. THIRD). Macro prototype statement is **07**
MSUM &FIRST,&SECOND,&THIRD
Macro call statement is as below,
MSUM ONE, TWO, THREE.
Show all the table entry of 2-pass macro preprocessor after first pass for the given macro definition.

	(b)	1.	Explain types of statements in assembly language with example.	**03**
		2.	Write a short note on design of an editor.	**04**
Q.4	**(a)**		Explain all the components of object module of a program.	**07**
	(b)	1.	What is address sensitive instruction? Explain with example.	**03**
		2.	Explain the terms (a) Translated origin (b) Linked origin (c) Load origin (d) Relocation factor	**04**
			OR	
Q.4	**(a)**	1.	Write a short note on non-relocatable and relocatable programs.	**04**
		2.	Compare variant I and variant II.	**03**
Q.4	**(b)**	1.	Explain types of device driver.	**04**
		2.	Explain the need of Backpatching in single pass assembler.	**03**
Q.5	**(a)**		What is value number? What is its role in compiler's local optimization phase?	**07**
	(b)	1.	Explain different parameter passing techniques in high level language.	**04**
		2.	Explain static and dynamic memory allocation.	**03**
			OR	
Q.5	**(a)**		Explain code optimization techniques with examples.	**07**
	(b)		Explain accessing local and nonlocal variables in block structure language.	**07**

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