Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

B. E. - SEMESTER – III • EXAMINATION – WINTER 2012

Subject code: 130704 **Date: 03-01-2013**

Subject Name: Computer Organization and Architecture

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 4-bit Arithmetic Circuit with its Function Table.	**07**
	(b)	What is Logic Microoperations? List out different logic microoperations that can be performed with two binary variables.	**07**
Q.2	**(a)**	Explain how basic computer registers are connected to a common bus using a diagram.	**07**
	(b)	Draw the flowchart for Instruction Cycle and briefly explain it.	**07**
		OR	
	(b)	Draw the flowchart for Memory-Reference Instructions.	**07**
Q.3	**(a)**	Explain the following terms: 1) Pseudoinstruction 2) Address Symbol Table 3) Assembler	**07**
	(b)	Demonstrate the process of Second Pass of Assembler using a suitable diagram.	**07**
		OR	
Q.3	**(a)**	Explain Microprogram Sequencer for a control memory using a suitable block diagram.	**07**
	(b)	What is Stack? Explain Register Stack using a block diagram of a 64-word stack. Also explain Push & Pop operations for the same.	**07**
Q.4	**(a)**	Explain various types of Instruction Formats with examples.	**07**
	(b)	Discuss the Instruction Pipelining with example.	**07**
		OR	
Q.4	**(a)**	List out major characteristics of CISC and RISC. Also explain Overlapped register windows for RISC.	**07**
Q.4	**(b)**	Explain different types of Addressing Modes.	**07**
Q.5	**(a)**	What is Array Processors? Explain Attached Array Processors and SIMD Array Processors.	**07**
	(b)	Explain BCD Adder with its block diagram.	**07**
		OR	
Q.5	**(a)**	Explain the Booth Multiplication Algorithm in depth.	**07**
	(b)	Explain Addition and Subtraction with Signed-Magnitude Data and also show its Hardware Implementation.	**07**

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