Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–III • EXAMINATION – WINTER 2013

Subject Code: 130704 Date: 26-11-2013

Subject Name: Computer Organization and Architecture

Time: 02.30 pm - 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)**	Define register transfer language. Draw and explain the block diagram for transfer of data from R1 to R2 when control p = 1.	**07**
	(b)	Draw and explain the 4-bit binary adder-subtractor circuit.	**07**
Q.2	**(a)**	List and explain functionalities of the basic computer registers and memory.	**07**
	(b)	What is an Instruction Cycle? Draw its flow chart.	**07**
		OR	
	(b)	List memory reference instructions and explain any one with example.	**07**
Q.3	**(a)**	Write an ALP for swapping two numbers. Indicate the comments also.	**07**
	(b)	Explain the difference between hard wired control and micro programmed control. Give microinstruction format.	**07**
		OR	
Q.3	**(a)**	What is the basic functionality of an assembler? Explain its first pass.	**07**
	(b)	Explain Booth multiplication algorithm.	**07**
Q.4	**(a)**	What is stack organization? Explain push and pop micro-operations.	**07**
	(b)	What are status register bits? Draw and explain the block diagram showing all status registers.	**07**
		OR	
Q.4	**(a)**	List the addressing modes. Explain any one with example.	**07**
	(b)	What is overlapped register window? How window size and register file size is computed?	**07**
Q.5		Attempt ANY FOUR	**14**
	(a)	Characteristics of RISC	
	(b)	SIMD and MIMD	
	(c)	Vector operation	
	(d)	Gray code	
	(e)	Subroutine call and return with micro-operations.	
	(f)	Zero address instructions.	
	(g)	Convert (A + B) * [C * (D + E) +F] into prefix and postfix notation.	
	(h)	Perform (-35) + (-40) in binary with negative numbers in 2's complement format.	

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