Seat No.: _____ *Enrolment No._____*

GUJARAT TECHNOLOGICAL UNIVERSITY

M. E. - SEMESTER – I • EXAMINATION – WINTER • 2014

Subject code: 714103N **Date: 03-12-2014**

Subject Name: Digital Signal Processor 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)**	Define the following terms with example with reference to discrete time systems: (i)Causality (ii) Stability (iii) Linearity	**[7]**
	(b)	Write the main advantages of digital signal processing.	**[7]**
Q.2.	**(a)**	Explain the decimation in time algorithm for 8 point FFT.	**[7]**
	(b)	Compare overlap add and overlap save methods.	**[7]**
		OR	
	(b)	Explain the finite word length effect in digital filters.	**[7]**
Q.3.	**(a)**	Explain Von Neumann architecture and Harvard architecture with block diagram.	**[7]**
	(b)	Explain Very Long Instruction Word architecture with proper block diagram.	**[7]**
		OR	
Q.3.	**(a)**	Write at least five addressing modes used in programmable DSPs and explain any two of them.	**[7]**
	(b)	Explain the following on-chip peripherals with reference to programmable DSPs: (i)TDM serial port (ii) Host Port (iii) ADC	**[7]**
Q.4.	**(a)**	Draw only the internal bus architecture of TMS320C5X.	**[7]**
	(b)	Explain the Central Arithmetic Logic Unit and Auxiliary Register ALU of TMS320C5X.	**[7]**
		OR	
Q.4.	**(a)**	Give the brief description of the following 5X instructions: LACB, LDP, PAC, BLDP, MPY, ANDB, ROL	**[7]**
	(b)	Write an assembly program to convolve the two sequences x(n), y(m) of length N=5 and M=3 respectively. x(n)=1, 2, 3, 2, 1 and y(m)=3, 4, 5	**[7]**
Q.5.	**(a)**	Write the main features of TMS320C6X processors.	**[7]**
	(b)	Draw only the internal architecture of TMS320C6X processor.	**[7]**
		OR	
Q.5.	**(a)**	Write the short note on Multi channel buffered serial port.	**[7]**
	(b)	Explain any one application with detail where DSP processor is utilized.	**[7]**

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