Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

ME – SEMESTER II– • EXAMINATION – SUMMER - 2017

Subject Code:2725402 Date:30/05/2017

Subject Name: Digital Signal Processors: Architecture & Programming

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)**	i. Differentiate between Fixed Point and Floating Point Processor.	**03**
		ii. Explain term Precision and dynamic range in context of Fixed point and floating point DSP.	**04**
	(b)	Explain different On Chip Peripherals used in PDSP.	**07**
Q.2	**(a)**	i. Brief about different memory access schemes used in PDSP.	**04**
		ii. How data is stored in IEEE format for floating point? Explain with suitable example.	**03**
	(b)	Describe Finite Word Length effects occurs in PDSP system.	**07**
		OR	
	(b)	Perform addition of following two 4 bit number & represent it in Q.3 format. Also check the overflow flag for result. 1. -0.5 + 0.875 2. (4) + (-7) 3. (-0.375) + (-0.625)	**07**
Q.3	**(a)**	Give brief notes on Arithmetic instructions used for programming of 'C 54x.	**07**
	(b)	Describe various addressing modes of 'C54X processor with suitable examples.	**07**
		OR	
Q.3	**(a)**	Give Architectural Overview of TMS 320C54X Processor.	**07**
	(b)	Describe special addressing modes used for optimizing DSP Code.	**07**
Q.4	**(a)**	Explain different types of operations performed in different functional unit of TMS 320C67X.	**07**
	(b)	Draw functional block diagram & explain features of 'C67X processor.	**07**
		OR	
Q.4	**(a)**	Explain structure and working of data path of TMS 320C67X processor. Also write AMR and CSR.	**07**
	(b)	Describe following on chip peripheral used in TMS 320C67X (1) McBSP (2) HPI (3) DMA/EDMA (4) EMIF.	**07**
Q.5	**(a)**	Explain basic structure of second order IIR Filter. Write C Program to Implement IIR Filter in the floating point processor.	**07**
	(b)	Write brief note on different types of Hardware Interfacing used in DSP.	**07**
		OR	
Q.5	**(a)**	Write a short note on data representation and arithmetic used in Fixed point and Floating point processor.	**07**
	(b)	Write C Program to perform the linear convolution of two sequences with suitable example.	**07**

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