Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

M. E. - SEMESTER – II • EXAMINATION – SUMMER • 2013

Subject code: 1722603 **Date: 03-06-2013**

Subject Name: DSP Architecture and Programming

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 in detail how VelociTI architecture of the C6000 platform achieves high performance.	**07**
	(b)	List the variety of memory and peripheral options are available for the C6000 Platform and explain their significance.	**07**
Q.2	**(a)**	Explain following TMS320C67x processor instructions with an example. (i) INTSP (ii) LDW (iii) NORM	**07**
	(b)	Explain in detail single precision floating point data representation. Convert following data format into single precision floating point data. (i) $(-999.6)_{10}$ (ii) $(452.12)_7$	**07**
		OR	
	(b)	Explain various addressing modes of TMS320C67x processor with examples. Write short code to initialize C67x processor for circular addressing mode with buffer size 8 KB using size field-0 and register A5.	**07**
Q.3	**(a)**	Explain resource constraints on Long (40-Bit) Data in detail.	**07**
	(b)	Discuss the importance of parallel operations and conditional operations in programming with example.	**07**
		OR	
Q.3	**(a)**	What do you mean by pipelining? Explain in detail with each stage.	**07**
	(b)	List and explain in brief with examples, different ways of invoking assembly language in C-code.	**07**
Q.4	**(a)**	Write an assembly language program using C67x processor to find numbers of negative data among randomly stored Ten half-words from memory location 2000H onwards. Store result to location 3000H.	**07**
	(b)	Write a C program that calls an assembly function to calculate the following: $y = \sum 3x!$, where x = 1 to 7.	**07**
		OR	
Q.4	**(a)**	Write an assembly language program using C67x processor to maximum number among randomly stored Ten words from memory location 500H onwards. Store result to location 200H.	**07**
	(b)	Write an assembly language program using C67x processor that calls an assembly function to convert little-endian data format to big-endian data format for FIVE words stored at memory location 5000H onwards. Store result to location 6000H onwards	**07**
Q.5	**(a)**	List McBSP supported functions and explain them in brief.	**07**
	(b)	Write short note on DSP system design Using FPGA.	**07**
		OR	
Q.5	**(a)**	Explain in detail, 1-Dimensional Transfer Data Frame of EDMA.	**07**
	(b)	Write short note on code optimization.	**07**

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