Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

M.E –IIst SEMESTER–EXAMINATION – JULY- 2012

Subject code: 1722603 **Date: 10/07/2012**

Subject Name: DSP Architecture and Programming

Time: 10:30 am – 13:00 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)**	Answer the following.	
		(i) List various data types supported by C67x Processors.	**01**
		(ii) The last p-bit in a fetch packet is always 0, justify.	**02**
		(iii) Explain in brief, the significance of PGIE and GIE bit of CSR.	**02**
		(iv) The offset value is left shifted by 3 bit into ADDAD instruction, justify.	**02**
	(b)	List and explain in brief the features of C6x series of Digital Signal Processors.	**07**
Q.2	**(a)**	Explain following TMS320C67x processor instructions with an example. (i) CLR (ii) CMPGTU (iii) MPYHL	**07**
	(b)	Explain in detail circular addressing modes of TMS320C67x processor. Write short code to initialize C67x processor for circular addressing mode with buffer size 1 KB using size field 1 and register B6.	**07**
		OR	
	(b)	Explain in detail double precision floating point data representation. Convert following data format into double precision floating point data. (i) -350.2 decimal number (ii) 0x42C90000 SP floating point number	**07**
Q.3	**(a)**	Discuss in detail on register writes and reads constraints.	**07**
	(b)	Explain in brief about pipelining with stalling effect for following: FP-1 with four EPs, FP-2, FP-3 and FP-4 each contains one EP.	**07**
		OR	
Q.3	**(a)**	Write short note on interrupts of TMS320C67x processor.	**07**
	(b)	Explain in detail execution of following instruction/code: (i) B IRP (ii) result = func1(a, b, c);	**07**
Q.4	**(a)**	Write an assembly language program using C67x processor to find numbers of odd data among randomly stored Ten words from memory location 0500H onwards. Store result to location 0600H.	**07**
	(b)	Write a C program using C67x processor that calls an assembly function to calculate: $y = \sum 5x^2$, where x = 1 to 10.	**07**
		OR	
Q.4	**(a)**	Write an assembly language program using C67x processor to convert five SP floating point data stored from memory location 1000H onwards into DP floating point data format at location 2000H onwards.	**07**
Q.4	**(b)**	Write program using C67x processor to add two arrays using C calling linear assembly function.	**07**
Q.5	**(a)**	Write short note on following. (i) HPI (ii) McBSP	**07**
	(b)	List and discuss applications of Digital Signal Processors.	**07**
		OR	
Q.5	**(a)**	Explain in brief with example about various procedures for code optimization.	**07**
	(b)	Write short note on beat detection.	**07**

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