Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

M. E. - SEMESTER – II • EXAMINATION – SUMMER • 2014

Subject code: 1722603 Date: 20-06-2014

Subject Name: DSP Architecture and Programming

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)**	Do as directed.	
		(i) List various assembler directives supported by C67x Processors. Explain in brief any two among them.	**03**
		(ii) Explain in brief, the significance of SAT and EN bit of CSR.	**02**
		(iii) The offset value is left shifted by 2 bit into ADDAW instruction, justify.	**02**
	(b)	Draw and explain functional block diagram of TMS320C67x processor in detail.	**07**
Q.2	**(a)**	Explain following TMS320C67x processor instructions with an example. (i) ZERO (ii) MPYHSLU (iii) LDDW	**07**
	(b)	Explain in detail floating point data representation. Convert $(4572.23)_8$ data format into single and double precision floating point data format.	**07**
		OR	
	(b)	Explain in detail circular addressing modes of TMS320C67x processor. Write short code to initialize C67x processor for circular addressing mode with: (i) Buffer size 4 KB, size field-0, register A7 and (ii) Buffer size 1 KB, size field-1, register B7.	**07**
Q.3	**(a)**	Explain Fetch and Execute packets of VLIW architecture in detail.	**07**
	(b)	ñLinear assembly code programming provides a compromise between coding effort and coding efficiencyò Justify with an example.	**07**
		OR	
Q.3	**(a)**	Discuss in detail on register writes and reads constraints.	**07**
	(b)	Explain in detail execution of following instruction/code: (i) [A1] B .S2 Loop (ii) sum = arrayAdd(a, b);	**07**
Q.4	**(a)**	Write an assembly language program using C67x processor to find Correlation between two sequence x[n]={2,3,4} and h[n]={4,7}. ŷ ŷ	**07**
	(b)	List features of McBSP and explain them with significance in C67x processor.	**07**
		OR	
Q.4	**(a)**	Write an assembly language program using C67x processor that calls an assembly function to convert TEN Half word data stored from memory location 1000H onwards into 2ôs complement data. Store result at location 2000H onwards. Use function named as twosComplement.	**07**
	(b)	Write short note on interrupts of 67x processor.	**07**
Q.5	**(a)**	Write a C program that calls an assembly function named findFacto to compute sum = 1! + 2! + 3! + 4! using C67x processor.	**07**
	(b)	What do you mean by code optimization? Explain in brief about code optimization steps.	**07**
		OR	
Q.5	**(a)**	Write a C program that calls an assembly function named findSquare to compute result = $P^2 + Q^2 + P^2Q^2$ using C67x processor. Where P=10 and Q=12.	**07**
	(b)	Write short note on DTMF tone detection.	**07**

****