Seat No.: _____ *Enrolment No._____*

GUJARAT TECHNOLOGICAL UNIVERSITY

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

Subject code: 2712608 **Date: 12-01-2015**

Subject Name: Digital Signal Processors: 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) ñThe number of delay slots can be reduced by one, if result of ADDDP instruction is used as sourceò, Justify. **02**

(ii) List common support files required to develop most of the applications using DSK6713 board on CCSE. **02**

(iii) ñVelociTI architecture of the C6000 platform of DSP processor achieves high performanceò, justify the statement. **03**

(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 and list one specific scenario where it is appropriate. **07**

(i) RSQRDP (ii) EXT

(b) Describe the significance of floating point data representation for signal processing with an example. Convert 0x45D63300 SP floating point number to double precision floating point data format. **07**

OR

(b) Explain in detail addressing modes of TMS320C67x processor. Configure C67x processor for circular addressing mode with: (i) Buffer size 8 MB, size field-0, register A5 and (ii) Buffer size 8 KB, size field-1, and register B5. **07**

Q.3 **(a)** What do you mean by pipelining? Explain in detail with each stage. **07**

(b) Describe the significance of CSR and IRP control registers. Write short code to disable mask-able interrupts globally. **07**

OR

Q.3 **(a)** Discuss the importance of parallel operations and conditional operations in programming with example. **07**

(b) Describe the significance of ISTP and IER control registers. Write short code to enable and disable INT4. **07**

Q.4 **(a)** Write an assembly language program using C67x processor to find Convolution between two sequence x[n]={1,6,0,5} and h[n]={2,6,9}. **07**

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(b) Write short note on C67x processor Timers. **07**

OR

Q.4 **(a)** Write an assembly language program using C67x processor that calls an assembly function to find number of Oneôs (1ôs) for TEN 16-bit (Half word) data stored from memory location 200H to 213H. Store result at location 300H onwards. Use function named as findOnes. **07**

(b) Explain in detail, 1-Dimensional Transfer Data Frame of EDMA. **07**

Q.5 **(a)** Write a C program using C67x processor that calls an assembly function, named findPower to compute: $y = \sum x^x$, where x = 1 to 4. **07**

(b) Write short note on code optimization. **07**

OR

Q.5	**(a)**	Write a C program that calls a linear assembly function named mulArray to multiply two arrays having size of FIVE elements.	**07**
	(b)	Write short note on DSP system design Using FPGA.	**07**

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