Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

M. E. - SEMESTER – I • EXAMINATION – WINTER 2012

Subject code: 714204N Date: 16-01-2013

Subject Name: Advanced DSP System & Architecture (Major Elective –I)

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)**	Classify Discrete-Time systems.	**07**
	(b)	Explain periodicity, linearity and symmetry properties of DFT.	**04**
	(c)	List different properties of fourier transform.	**03**
Q.2	**(a)**	Draw and explain Direct-Form and Parallel-Form structures of IIR systems.	**07**
	(b)	Explain frequency analysis of signals using the DFT.	**07**
		OR	
	(b)	Draw and explain Radix-4 FFT algorithms.	**07**
Q.3	**(a)**	What is the use of FFT algorithm in linear filtering and correlation?	**07**
	(b)	Explain the design of linear phase FIR filters by using frequency sampling method.	**07**
		OR	
Q.3	**(a)**	Write a short note on: Hilbert transformers.	**07**
	(b)	How to design IIR filter by using bilinear transformation?	**07**
Q.4	**(a)**	Explain the following terms: (i) Multiplier and multiplier accumulator(MAC) (ii) Multiple access memory (iii) VLIW architecture	**07**
	(b)	Introduce code composer studio in brief. Explain debugging procedure in CCS.	**07**
		OR	
Q.4	**(a)**	Write steps of code generation in CCS.	**05**
	(b)	Explain interrupts of TMS320C6x processor.	**02**
	(c)	Explain functional units of TMS320C6x and its instructions.	**07**
Q.5	**(a)**	Explain arithmetic fixed point instructions of TMS320C6x processor.	**07**
	(b)	Explain data formats and data format conversion instructions of TMS320C6x processor.	**07**
		OR	
Q.5	**(a)**	Write an assembly language program for complex number multiplication for target TMS320C6x.	**07**
	(b)	Write a short note on: DSP Applications.	**07**

****