GUJARAT TECHNOLOGICAL UNIVERSITY BE – SEMESTER–VIII • EXAMINATION – SUMMER • 2014

	Sub	oject Code: 183203 Date: 27-05-2014	
	Sub Tin Inst	 bject Name: Digital Signal Processing and Processor ne: 10:30 am - 01:00 pm Total Marks: 70 ructions: Attempt all questions. Make suitable assumptions wherever necessary. Figures to the right indicate full marks. 	
Q.1	(a)	For the given system determine whether system is stable, causal, linear	07
	(b)	I(x[n]) = x[n]+3u[n+1] Write down the trigonometric form of the Fourier series representation of a periodic signal. Also explain odd and even signal.	07
Q.2	(a) (b)	State and explain any three properties of Z-transform Determine the convolution and correlation of the following sequence. $X(n) = \{1,2,3,4\}$ h(n) = $\{1,2,3,4\}$	07 07
	(b)	OR Find the frequency magnitude and phase response of the second order system $y(n)-y(n-1)+3/16(y(n-2)) = x(n)-1/2(x(n-1))$	07
Q.3	(a) (b)	Given $x(n) = 2^n$ and $N = 8$, find $x(k)$ using DIT FFT algorithm. Explain Causality and stability of linear time invariant system.	07 07
Q.3	(a) (b)	Name any two properties of DFT. What are twiddle factors of the DFT. Derive the DFT of the sample data sequence $x (n) = \{1,1,2,2,3,3\}$ and compute the corresponding amplitude and phase spectrum.	07 07
Q.4	(a)	Comment on the stability of backword difference approximation for the derivative method of transformation	07
	(b)	Explain DIT FFT and DIF FFT algorithm . How can you compute DFT using FFT algorithm.	07
		OR	
Q.4	(a)	The desired response of a low-pass filter is $H_d(e^{jw}) = e^{-jwt}, -w_c \le w \le w_c$ $0, w_s \le w \le \pi$	07
	(b)	Find the filter coefficients $h_d(n)$. Also determine τ so that $h_d(n) = h_d(-n)$. State and explain advantages of DSP processor. Describe in detail characteristic of DSP system.	07
Q.5	(a)	What do you understand by pipelining? Explain in detail special addressing modes in P-DSP.	07
	(b)	Explain architected of TMS320C5X	07
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Q.5	(a) (b)	Explain all register of TMS320C5X. What do you understand by multichannel Buffered Serial port addressing mode. Explain its advantages in detail.	07 07
