E&TC VI

B. Tech. Sem -VI (E & TC Engg.) (2014 COURSE) (CBCS) : SUMMER - 2019

SUBJECT: DIGITAL SIGNAL PROCESSING

Day : Wednesday
Date : 22/05/2019
S-2019-2777
Time: 02.30 PM TO 05.30 PM
Max Marks: 60

N.B.:

1) All questions are **COMPULSORY.**
2) Figures to the right indicate **FULL** marks.
3) Draw neat and labeled diagram **WHEREVER** necessary.
4) Assume suitable data, if necessary.

Q.1 What are the advantages of digital filter over analog signal processing? **(10)**

OR

Q.1 Explain the stability and causality frequency response of LTI system? **(10)**

Q.2 Find 8-point DFT of sequence **(10)**
X (n) = {1 2 3 4 }
Also draw magnitude and phase response?

OR

Q.2 Find Y(n) by overlap save of following sequence **(10)**
H (n) = {1,1,2,2}
X (n) = {1 -1 1 2 1 0 1 1 -4 3 2 1 0 1 1}

Q.3 Design FIR- LPF using hamming window **(10)**

$H(e^{jw}) = 1$ for $|w| \leq \pi/6$

$= 0$ otherwise

For N = 11 plot magnitude response.

OR

Q.3 Design LPF using frequency sampling method for cut off frequency of 500Hz. The sampling frequency is 2000 samples/ sec and the filter length equal to 11. **(10)**

Q.4 A analog filter with system function **(10)**

$$H(s) = \frac{S+0.1}{(S+0.1)^2+25}$$

In to digital filter by IIM method?

OR

Q.4 Design Butterworth LPF for **(10)**

$0.89125 \leq |H(e^{jw})| \leq 1; \quad 0 \leq |w| \leq 0.2\pi$

$\leq |H(e^{jw})| \leq 0.17783; \quad 0.3\pi \leq |w| \leq \pi$

Q.5 Plot the spectral characteristics of the quantization error observed in the process of rounding and truncation for fixed point representation? **(10)**

OR

Q.5 How to minimizing the finite word length effects? **(10)**

Q.6 Explain any five application of DSP? **(10)**

OR

Q.6 Explain TMS320C67XX in DSP processor? **(10)**

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