Reg. No:

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech IV Year I Semester Supplementary Examinations November-2020
DIGITAL SIGNAL PROCESSING
(Electrical & Electronics Engineering)

Time: 3 hours   Max. Marks: 60

(Answer all Five Units **5 x 12 = 60** Marks)
UNIT-I

1	**a**	Find impulse response of the system described by the difference equation.	**6M**
	b	Find 4-point DFT of the sequence x(n)={1,4,-3,2}.	**6M**

OR

2	**a**	Find the natural response of the system described by the difference equation:	**7M**
		y(n)+ 2y(n-1)+y(n-2)=x(n)+x(n-1) with initial conditions y(-1)=y(-2)=1.	
	b	Justify how DFT can use as a linear Transform.	**5M**

UNIT-II

3	Compute IDFT of the sequence	**12M**
	x(n)= { 7,-0.707-j0.707,-j, 0.707-j0.707,1, 0.707+j0.707,j,-0.707+j0.707}.	

OR

4	How do you compute DFT using	**12M**
	i) The Goertzel Algorithm ii)The chrip-z Transform	

UNIT-III

5	Consider the system $y(n) = y(n - 1) + 2y(n - 2) + x(n)+3x(n-1)$ Find	**12M**
	i) H(z) ii) Realize using direct form-I and direct form-II.	

OR

6	**a**	Explain conversion from lattice structure to direct form.	**8M**
		$H(Z)= 1+2Z^{-1}-3Z^{-2}-4Z^{-3}+5Z^{-4}$	
	b	Explain conversion from lattice structure to direct form.	**4M**

UNIT-IV

7	**a**	Explain the features of Chebyshev approximation.	**6M**
	b	Discuss the location of poles for Chebyshev filter.	**6M**

OR

8	Using the bilinear transform, design a high pass filter, monotonic in pass band with cut off frequency of 100Hz and down 10dB at 350 H. The sampling frequency is 5000Hz.	**12M**

UNIT-V

9	Design a filter with $H_d(e^{j\omega}) =e^{-j3\omega}$ $-\pi/4 \le \omega \le \pi/4$	**12M**
	$=0$ $\pi/4 \le \omega \le \pi$	
	Using Hamming window with N =7	

OR

10	Design an ideal HPF with desired frequency response	**12M**
	$H_d(e^{jw})= 1, \pi/4 \le |w| \le \pi$	
	$0, |w| \le \pi/4$	

*** END ***