O.P.Code: 16EC422 | R16 | H.T.No.

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech III Year II Semester Supplementary Examinations May/June-2024
DIGITAL SIGNAL PROCESSING
(Electronics and Communication Engineering)

Time: 3 Hours **Max. Marks: 60**

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

UNIT-I

1	a	Determine the linear convolution for the two sequences x(n)={3,2,1,2},h(n)= {1,2,1,2}	CO1	L1	7M
	b	Explain the power signal and Energy signal	CO1	L2	5M
		OR			
2	a	Explain frequency analysis of discrete-time systems.	CO1	L2	6M
	b	Determine magnitude and phase response for the system described by the difference equation: $y(n)=\frac{1}{2}x(n)+x(n-1)+\frac{1}{2}x(n-2)$	CO1	L3	6M

UNIT-II

3	a	Construct Radix-4 DIF FFT algorithm with neat sketch.	CO2	L2	7M
	b	Compare DFT and FFT algorithms.	CO2	L4	5M
		OR			
4		Formulate the DFT by divide and conquer approach	CO2	L1	12M

UNIT-III

5		Consider the system $y(n) = y(n - 1) + 2y(n - 2) + x(n)+3x(n-1)$ (i) Find H(z) (ii) Realize using direct form-I and directform-II.	CO3	L1	12M
		OR			
6	a	Illustrate the realization of the IIR filter in cascade form.	CO3	L1	6M
	b	Explain representation of structures using signal flow graphs.	CO3	L2	6M

UNIT-IV

7	a	Compare features of different windowing functions.	CO4	L4	6M
	b	Determine the order and the pole of the low pass filter that has a 3-dB attenuation at 500 Hz and an attenuationof 40 dB at 1000 Hz.	CO4	L1	6M
		OR			
8		Describe the frequency transformation in digital filters.	CO4	L1	12M

UNIT-V

9		Design an ideal HPF with desired frequency response. $H_d(e^{jw})=1, \pi/4 \leq |w| \leq \pi$ $0, |w| \leq \pi/4.$ Find the values of h(n) for N=11 and also find H(Z) using Hanning window technique.	CO5	L3	12M
		OR			
10	a	Discuss about Asymmetric FIR filters.	CO5	L1	6M
	b	What are the effects of windowing?	CO5	L1	6M

*** END ***