R16

Reg. No: | | | | | | | | | | |

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech IV Year I Semester Regular Examinations Nov/Dec 2019
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 Determine the circular convolution for the two sequences $x_1(n)=\{1,2,-2,4\}$, $x_2(n)=\{1,2,-1,3\}$ using concentric circles method.   **7M**
   b Explain the classification of discrete-time signals.   **5M**

OR

2 a Explain frequency analysis of discrete-time systems.   **6M**
   b Determine magnitude and phase response for the system described by the difference equation: **6M**
      $y(n)=0.5x(n)+x(n-1)+0.5x(n-2)$

UNIT-II

3 Compute 8-point DFT of the sequence $x(n)= \{1,2,-3,-4,0,3,2,1\}$ using radix-2 DIT-FFT algorithm.   **12M**

OR

4 Formulate the DFT by divide and conquer approach.   **12M**

UNIT-III

5 a Explain lattice & lattice-ladder structure for IIR digital filter.   **6M**
   b Discuss transposed structures.   **6M**

OR

6 Realize system with following difference equation   **12M**
      i)   Cascade form
      ii) Parallel form.

UNIT-IV

7 Describe the IIR filter design approximation using Bilinear Transformation method.   **12M**

OR

8 Describe the frequency transformation in digital filters.   **12M**

UNIT-V

9 Design a FIR low pass filter satisfying the following specifications   **12M**
   $\alpha_p \leq 0.1$ dB; $\alpha_s \geq 44.0$ dB; $\omega_p= 20$ rad/sec; $\omega s=600$ rad/sec and $\omega_{sf}=100$ rad/sec.

OR

10 a Discuss about characteristics linear phase FIR filters.   **6M**
    b What are the effects of windowing?   **6M**

*** END ***